



2 December 2021  
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### **Submission on Application No. RM18.004**

This submission is provided on behalf of the Otago Fish and Game Council (Fish and Game). For additional information please contact Nigel Paragreen using the details below.

#### **Submitter Details**

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A handwritten signature in black ink that reads "N. Paragreen". It is positioned above a dotted line.

2 December 2021

#### *Introduction*

- [1] Fish and Game is the statutory manager of sports fish and game bird resources within Otago. It holds functions and responsibilities set out in the Conservation Act 1987. The organisation's functions include managing, maintaining and enhancing the sports fish and game resources of Otago in the recreational interests of anglers and hunters; representing the interests and aspirations of anglers and hunters in the statutory planning process; and advocating the interests of the Council, including its interests in habitats. This submission has been developed in line with these functions.
- [2] Due to the popularity of angling in New Zealand, the demographic Fish and Game represents when carrying out its statutory functions is significant; however, this is not always obvious. The 2013/2014 Active NZ Survey conducted by Sport and Recreation New Zealand reported that 19.5% of respondents had been fishing (including both marine and freshwater angling) in the past 12 months<sup>1</sup>. The survey found fishing had a higher rate of participation than rugby, tramping, football, cricket and basketball for men; and that fishing had a higher participation rate than netball, tennis, snow sports and tramping for women. Within Otago, license sales have exceeded 10,000 licenses in the past two decades and in the last decade has increased

<sup>1</sup> Sport and Recreation New Zealand. 2015. *Sport and Active Recreation in the Lives of New Zealand Adults: 2013/14 Active New Zealand Survey Results*. Wellington: Sport New Zealand.

to over 20,000 licenses across all categories. Participation rates estimated from the National Angling Survey (**NAS**)<sup>2</sup> between 1994 and 2015 show that total freshwater fishing effort in the Otago Fish and Game region ranged from 180,860 to 215,430 angler-days over the fishing season.

- [3] As required by the Conservation Act 1987, Fish and Game has prepared a Sports Fish and Game Management Plan for Otago<sup>3</sup> (**SFGMP**), which has guided the development of this submission. This document describes the sports fish and game bird resources in the region and outlines issues, objectives and policies for management over the period. It may be useful for decision makers when considering this application.

#### *Executive Summary*

- [4] Fish and Game submits that varying the drawdown rate will alter the operating regime of the lake.
- [5] The applicant has refused to provide information as to how the new operating regime will affect lake levels.
- [6] Fish and Game expects that the new operating regime will allow for the lake to be drawn down to lower levels more frequently and/or for a greater duration.
- [7] Fish and Game has identified a number of adverse effects that would result if this were the case:
- a. lower ecological productivity for the brown trout population, in part due to dewatering of macrophyte beds which predominantly occur within the top 3 meters from the crest height and take some time to recolonise;
  - b. increased extent of mud flats between the shore and the water, creating access difficulty for safety hazards anglers, whether they access the lake on foot or by boat; and
  - c. increased safety risks while boating, as mudflats are exposed in lower water levels.
- [8] Fish and Game opposes the application in full and seeks that it be declined, as the adverse effects arising from the altered operating regime cannot be determined from the information provided.
- [9] In the case that the consent is granted, Fish and Game seek alternative relief in that conditions be imposed such that the varied drawdown rate will not create additional adverse effects over that of the current operating regime.

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<sup>2</sup> Unwin, M. J. 2016. *Angler Usage of New Zealand Lake and River Fisheries*. Christchurch: National Institute of Water and Atmospheric Research.

<sup>3</sup> Otago Fish and Game Council. 2015. *Sports Fish and Game Management Plan for Otago Fish and Game Region 2015 - 2025*. Dunedin: Otago Fish and Game Council.

### *Consultation to date*

- [10] Fish and Game has been engaged in consultation with the applicant since late 2017 and has invested considerable time working in good faith to find solutions to issues raised.
- [11] The decision to end consultation was not supported by Fish and Game. Development and discussions on key points, such as understanding the new operating regime of the lake and developing the monitoring program, were cut short as a result.
- [12] Despite this, Fish and Game thanks the applicant for the opportunity for consultation.

### *Lake Onslow and patterns of use*

- [13] Fish and Game has a keen interest in Lake Onslow. The lake hosts a brown trout fishery that is highly valued due to the high rate of catch, size of fish and proximity to populated areas. This was detailed in by Conland<sup>4</sup> and Stark and Hayes<sup>5</sup> in reports which considered during the hearing for 2001.475 and 2001.476.
- [14] Those comments of those observers remain true today. Angling use, as measured via NAS between the 1994/1995 and 2014/2015 seasons, has remained high at the lake, with over >1,000 angling days per year estimated, with use in some being dramatically greater.<sup>6</sup>
- [15] The SFGMP categorises the lake as a regionally important sports fishery, with the following characteristics:

Lake Onslow – A regionally important sports fishery				
Setting	Natural			
Activities	Fly	Spin	Bait	Troll
Users	Local	Regional	Junior	Commercial

Table 1: Information from the SFGMP summarising the Lake Onslow fishery

- [16] While the opinion of only one user, the below description of the lake by Mr Dungey<sup>7</sup> is a relatively good summary:

*"Anglers fish from the whole Onslow shoreline and all of the lake trolling. As summer warms the deeper water is preferred as fish move to cooler temperatures. There are fish everywhere! All of the lake is "high use" moderated by fish activity according to*

<sup>4</sup> Conland, M. (2006). *Recommending report for 2001.475 - 2001.483, 2001.485, 2001.486 and 2001.488 – 2001.491*. Dunedin: The Otago Regional Council.

<sup>5</sup> Stark, J. D., & Hayes, J. W. (1997). *Freshwater Biological Assessment of Environmental Effects for the Proposed Central Electric Ltd Horseshoe Bend Hydro-electric Scheme on the Teviot River, Central Otago*. Nelson: Cawthonr.

<sup>6</sup> Unwin, M. J. 2016. *Angler Usage of New Zealand Lake and River Fisheries*. Christchurch: National Institute of Water and Atmospheric Research.

<sup>7</sup> Section 92 Response 2 September 2021, pg 10 – 11.

*insect activity/life history. It is an anglers Eldorado if your visit coincides with a cicada hatch and this event is watched for closely by keen anglers. Fishing success is also moderated by skill and weather. In the winter use is low with few anglers and a few game bird hunters. In winter Onslow can be very bleak and very cold and snow can block the access road from Millers Flat."*

(my ~~strikethrough~~ added to indicate the incorrect part of the statement, see below)

- [17] It is critical to note that Fish and Game disagrees with Mr Dungey's statement that fishing pressure moves to deeper water in late summer. It is Fish and Game's experience that anglers aspire to continue fishing the shallows of the lake during this time. This becomes increasing difficult as the lake drops and mud flats become more prominent.
- [18] Mr Dungey has also produced a helpful and accurate map<sup>8</sup> showing activities and access points around the lake. This map is replicated in Figure 1, below.



Figure 1: recreation activities in and around Lake Onslow

- [19] Anglers access the lake via foot or boat. The western shore is easily accessed on foot, whereas the northern, eastern and southern shores are typically accessed by boat. Anglers often walk the shore to fish, covering variable distances from tens of meters to kilometres. When accessed by boat, anglers often disembark at a site and walking along the shoreline in the same fashion.
- [20] Trolling, in which a fishing line is dragged behind a boat under power, is another popular angling method on the lake.

<sup>8</sup> Section 92 Response 2 September 2021, pg 11.

- [21] The lake also hosts a population of koura which are also recreationally targeted. Fish and Game does not regulate this fishery but understands it is of value to mana whenua and the wider public for harvest and recreation.

#### *Historic Water Level at Lake Onslow*

- [22] The applicant has characterised lake levels to typically operate between the -1 to -3 meter range, with levels falling to -5 meters roughly once a decade.<sup>9</sup> Fish and Game note that this description is conservatively low, as the lake level is often held towards the higher end of that range.
- [23] In addition, the lake level has been held considerably and consistently higher from 2011 onwards, with lake levels rarely dropping below the -2 meter mark. Fish and Game's experience is that the high, stable lake levels from 2011 onwards have created a more productive fishery. While there have been low level events, they have been rare and short.
- [24] This change occurred only a few years after the consents were issued in December 2006, setting in place the current operating regime.
- [25] The table below provides a more detailed picture of lake levels, in the form of exceedance percentages. It shows the percent of time (measured in days) that the lake has been above given levels since 1990 and 2011. The data for this analysis was supplied by the applicant during consultation and I have amended the data to remove duplicate readings for single dates and to remove data collected before lake levels were measured at least daily, as these both skewed the results.

#### **Percent of the time lake levels were higher than indicated levels**

	-0.5	-1	-1.25	-1.5	-1.75	-2
January 1990 – October 2018	30.2%	52.6%	61.6%	68.6%	76.0%	82.2%
January 2011 – October 2018	45.6%	76.6%	86.4%	91.0%	92.8%	94.5%
	-2.5	-2.7	-3	-4	-5	
January 1990 – October 2018	91.3%	94.8%	99.0%	99.9%	100.0%	
January 2011 – October 2018	99.9%	0.0%	100.0%	100.0%	100.0%	

Table 1: Percent of time lake levels were higher than indicated levels.

- [26] When Fish and Game talk of low lake level events in this submission, it is in reference to events which draw the lake down to or past the -2 or -2.5 meter marks. While this represents only half of the minimum operating lake level, it coincides with a significant reduction in the size of the lake, exposing macrophyte beds and large tracts of mud.
- [27] The applicant has stated that the drawdown rate becomes more of a restriction as lake levels get low.<sup>10</sup> Fish and Game infers from this that the drawdown rate of 200mm/week is currently providing mitigation against the full adverse effects generated by frequent, large or long

<sup>9</sup> Notification report, page 28.

<sup>10</sup> Notification report, page 29.

duration low lake level events by making it more difficult to discharge large amounts of water when the lake is already low.

- [28] Fish and Game has been broadly satisfied with the 200mm/year drawdown rate to date and would be comfortable for it to remain in place.

#### *Impacts of low lake levels on anglers*

- [29] When Lake Onslow is drawn down, mud flats are exposed. Anglers must traverse them to get to the lake edge. This can be difficult, unpleasant and unsafe, with the risk of slipping or getting caught in the mud.
- [30] By way of example, the photograph in Figure 2 shows an angler waist deep in mud at the Lake. The deep footprints either side of the stream give an indication of soft nature of mud near wetted areas. Mud flats detract from the angling experience, can restrict angling opportunities and can pose a life-threatening hazard, particularly for the very old, very young or unfit anglers.



Figure 2: an angler waist deep in mud at lake Onslow<sup>11</sup>

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<sup>11</sup> Photo Credit: Morgan Trotter, 27 January 2018

- [31] The rate of drawdown matters substantially when it comes to traversing mud flats. A slow drawdown rate will cause the shore to gradually recede, allowing recently exposed mud to dry out and become firmer underfoot. The less soft, wet mud, the easier and safer it is to traverse. Conversely, a quicker drawdown will cause the shoreline to recede faster, leaving more soft, wet mud in its wake for anglers to traverse.
- [32] The applicant has suggested that access to the southern, eastern and northern shores of the lake will be less sensitive to the appearance of mud flats, as they are often accessed by boat. In Fish and Game's experience, this is incorrect as anglers still seek to disembark and walk the shoreline. While doing so, they must also traverse the mud flats.
- [33] In addition, at low lake levels anglers in boats can have difficulty finding a place to disembark safely. If the mud is deep and soft, jumping out of the boat can cause a person to get stuck. Access to sections of the lake may become difficult or impossible if no safe landing point can be found nearby.
- [34] By way of example, an account of the difficulty in landing and disembarking a boat safely in a mud flat is provided by Mr Dixon, of Fish and Game. This account comes from a spawning survey undertaken in May of 2021. The relevant survey report is attached in Appendix 3 of this submission.

***"Comments: Access to the outlet of Boundary creek was made by boat. Landing the boat was difficult due to the lake being 2.5m down from normal. The boat bottomed out in mud 2m from shore (photo. 1<sup>12</sup>). Note: Access to and from the boat was a challenge and could be considered dangerous when boating alone on the lake during low lake levels."***

*(emphasis from the original quote)*



Figure 3: Mr Dixon after disembarking from a boat at Lake Onslow.

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<sup>12</sup> Please note, this is listed as Figure 3 for the purpose of this submission.

- [35] When boating, there are also several underwater hazards, such as rocks, that anglers must be aware of when navigating the lake by boat, even when the lake is full. As the lake level gets lower, mud flats become exposed, or sit closer to the surface. The latter can be difficult to see when piloting a boat, meaning the risk of beaching the boat on a mud flat increase as lake levels are lowered. Once beached, it can be difficult to remove and dangerous to push the boat back in without getting stuck in the mud.
- [36] To be clear, this hazard is increased with a lower lake level on any given day, and is not isolated to changes to lake levels that may occur while an angler is boating on the lake.
- [37] An impact of lesser danger for anglers, but still close to their heart, is the impact on visual amenity. Anglers appreciate and gain utility from being in beautiful settings. Often, the act of fishing is less about the fish and more about the surrounds. The lake when full is a wonder but at low levels, when the mudflats are sprawling, the visual amenity suffers.
- [38] The combined result of the issues discussed in this section is that anglers are very sensitive to lower lake levels because of the impact to recreational amenity and danger they pose.

#### *Impact of lower lake levels on ecology*

- [39] Fish and Game's experience is that the most productive lake fisheries are not subject to large degrees of variation.
- [40] While it is agreed that a degree of variation can be positive, and that rewetting of lake edges can lead to a temporary flourish of macroinvertebrate activity.<sup>13</sup> As discussed below, there are also drawbacks. Whether the overall effect of varied lake levels is positive or not is ultimately a function of the scale, duration and frequency of the variation.
- [41] Benthic littoral macrophytes in lakes can be negatively affected by fluctuating lake levels. Low water levels can damage or kill macrophytes by exposing them to wave activity and through desiccation. The negative effects are made worse with increased depth of drawdown and longer periods of low lake levels. Invertebrate communities associated with the macrophytes will be negatively affected as low levels expose macrophyte beds.
- [42] Unlike the quick flourish for macroinvertebrates when new shoreline is rewetted, it may take months for macrophyte to regrow. Chironomid and worm species are able to live in fine sediment (rewetted mud flats) without macrophytes and are faster to recolonise than caddis, snail, damselfly species but do not offer the same food value to salmonids.
- [43] Mr James confirms this effect and identifies that macrophytes occur at Lake Onslow "within the top 2 m[eters] of the lake and are sparse below 3 meters".<sup>14</sup> This is broadly consistent with the anecdotal experience of Fish and Game.

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<sup>13</sup> Application, page 54.

<sup>14</sup> James, M. (2018). Review of Pioneer Energy Ltd Amendment to Consent for Lake Onslow. Christchurch: Aquatic Environmental Sciences Ltd. Comment on Paragraph 1.

- [44] If the varied drawdown rate were to enable the applicant to increase the degree, frequency and/or duration of low lake levels, macrophytes will be more affected by dewatering, impacting on food supply for aquatic species that feed on macroinvertebrates.
- [45] This issue has been considered in part within the ecological analyses of Messers Dungey and James and Ms Coates; however, their conclusions rely on the applicant's claim that varied drawdown will do little to affect the operating regime.
- [46] In addition to this, as the shoreline moves further away from the permanently dry vegetation, inputs from the land including terrestrial insects and organic material are reduced. This includes cicadas which are a significant food source for trout in mid/ late summer. Cicada hatches also drive the most important annual recreation event for anglers at the lake as they chase brown trout feeding on cicadas. As a result, low lake levels during cicada hatches may have adverse effects both ecologically and recreationally.

*Issue: how will the variation affect the operating regime and lake levels?*

- [47] Fish and Game's primary concern is that the variation will change the operating regime of the lake, allowing for the lake to be:
  - a. drawn down to lower levels quicker
  - b. drawn down to lower levels more frequently; and/or
  - c. drawn down to lower levels for a longer duration.

From this, the above identified ecological and recreational amenity impacts will flow.

- [48] During consultation, Fish and Game has asked the applicant to provide details on how the new operating regime will affect the lake levels, compared to that which have been seen previously. To date, the applicant has refused to provide such information.
- [49] In a further information request dated 23 September 2021,<sup>15</sup> the applicant refuses a similar request from the consent officer. For this, the applicant provides the following explanation:

*"You are correct in that theoretically lake levels can remain lower for longer under the proposed increased drawdown scenario. As you're also aware, under the proposal lake levels would still remain within the consented baseline (i.e. minimum operating lake level will remain 679.9 masl). Additionally, as we've indicated in previous responses, drawdown above the currently consented 0.2 m/week is unlikely to be exercised all the time, ...*

*Thus we must put any request for additional information on effects of achieving lower lake levels for longer into the above context. Based on the above, and on the considerable amount of information and effects assessments undertaken to date, I don't consider that a slightly longer duration at lower lake levels would significantly adversely impact natural and human use values associated with Lake Onslow or the Teviot River. Providing quantifiable scenarios of effects based on average rainfall data,*

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<sup>15</sup> Section 92 Response 23 September 2021, pg 1.

*lake depth data, draw down rates, etc would be beyond the scope of the application on this basis, and would require considerable time and resources to develop an acceptable model that would provide any reliable estimates or scenarios.”*

- [50] Fish and Game submits that the applicant's reasoning is incorrect. The varied drawdown rate constitutes an alteration to the current operating regime because:

- a. The operating regime determining the degree, frequency and/or duration of low lake levels is more than the minimum lake level, and is more accurately described as being dependant on conditions restricting:
  - i. the minimum operating level,
  - ii. the rate of drawdown, and
  - iii. the rate of discharge.
- b. There is no evidence to substantiate the claim that the variation will be rarely used, nor are there consent conditions which would ensure will be the case, the applicant is asking parties to take this reasoning on trust.

- [51] Similar issues are identified by Dr Booth, who states:<sup>16</sup>

*“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.”*

...

*“Furthermore, the proposed change may result in the lake remaining at low levels for a longer duration than at present, albeit the Applicant states this likelihood is low.”*

- [52] The logic in (a), above, is also supported by the consent conditions for 2001.475, in which both the minimum operating water level and the drawdown rate are listed within the same ‘Lake Levels’ heading.

- [53] The relationship between the factors in (a), above, is further supported by recognition within the *Regional Plan: Water for Otago (RPW)*. Policy 6.5.3 seeks to:

*“limit the operating levels of any controlled lake...”*

The Explanation and Principle Reasons for Adopting sections for Policy 6.5.3 clearly link lake levels and their rate of change under the term ‘operating levels’: <sup>17</sup>

*“Explanation*

*Changes in the levels of lakes **and the rate of change** can adversely affect the matters identified in (a) to (e) of the policy. It is important to consider new proposals to manage*

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<sup>16</sup> Booth, K. (2021). Pioneer Energy Limited Consent Amendment for Lake Onslow: Audit of the application with respect to amenity values. Nelson: Lindis Consulting. Pages 5 and 8.

<sup>17</sup> I note elsewhere in this submission, I have used the term ‘operating regime’ to describe the same concept.

*lake levels and new consents for existing dams, in order that appropriate conditions can be set to avoid or mitigate these adverse effects. These conditions will address extremes in lake levels, **and the rates of change of such levels**. It is also important when considering an activity affected by this policy that consideration is given to Policy 6.5.2.*

*Principal reasons for adopting*

*This policy is adopted to provide for the protection of the matters (a) to (e) above, which can be adversely affected by inappropriate lake levels and their rates of change”*

*(my emphasis in bold)*

- [54] It is also important to note that the consenting officer has provided a description of when the applicant expects to use the varied drawdown, which is most likely to occur during low rainfall years and/or when the lake is already at low levels.<sup>18</sup>
- [55] Fish and Game submits that the intended timing of the varied drawdown makes it more likely that the applicant will result in an increased degree, frequency and/or duration of low lake levels, compounding on the adverse effects of low lake levels experienced by users currently.
- [56] However, without an understanding of the new operating regime and its relationship with creating or exacerbating adverse effects, understanding the scale of adverse effects is not possible.
- [57] This is acknowledged by the consenting officer, who states:<sup>19</sup>

*“There is uncertainty on exactly when the greater draw down rate will be required and future forecasting may be impossible. The extent of environmental effects will be a function of the frequency of use.”*

Curiously, the consenting officer still makes conclusions about the scale of adverse effects despite this acknowledgement. Fish and Game submits that this is in error.

- [58] For Fish and Game, the discussion in this section confirms what should be obvious: changing the rate of drawdown will affect the operating regime of Lake Onslow, leading to adverse effects. The extent to which the operating regime will change is unknown, as the applicant has refused to provide this information, and so too are the scale of adverse effects.
- [59] Fish and Game submits that the application is fundamentally deficient.

*Issue: to what extent is lake level a function of rainfall and inflows?*

- [60] I note that rainfall and inflows are also influential in determining lake levels, yet they are not factors the applicant can control. The applicant can actively manipulate the lowering of lake

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<sup>18</sup> Notification report, page 8.

<sup>19</sup> Notification report, page 28.

levels using the factors identified as part of the operating regime, with the external forces of rainfall and inflows determining the degree to which levels rise.

- [61] However, the applicant has used rainfall as a reason to absolve them of responsibility with respect to creating adverse effects on lake users.
- [62] By way of example, Mr Dungey, in a response to a further information request from 17 August 2018, has stated that the duration of low lake levels is “*outside the control of scheme as it depends on rainfall for recharge...*”<sup>20</sup>.
- [63] Fish and Game submits that this statement is misleading. The applicant has direct control how quickly and to what extent the lake is drawn down, within the consent conditions. This control is independent of rainfall and inflows. If the applicant were to choose to discharge more water more frequently through a given summer, the lake fall to a lower level quicker than if they had chosen to discharge more conservatively that summer. The result would be that choosing one a high discharge strategy over a conservative one would lead make it more likely that the lake is held at lower levels before it is refilled by autumn rains.
- [64] The duration of low level events is therefore not solely dependant on rainfall or inflows. The same logic can be applied to the scale and frequency of low lake level events.

#### *Sensitivity of the lake footprint to changes in lake level*

- [65] The Lake Onslow context, adverse effects are likely sensitive to changes in the lake level. The Lake has a large ~5 meter operating range and much of the lake is shallow, meaning that as water is drawn down large tracts of habitat is rapidly dewatered and mud flats are left exposed.
- [66] Ramping calculations for Lake Onslow, submitted by the applicant as further information requests, provides an indication of just how shallow the lake is:
  - a. when the lake is full it covers an average of 11,400 (presumably) hectares of open water;
  - b. when the lake is drawn down by -3 meters it covers an average 5,784 hectares of open water, meaning an average of 5,616 hectares of mud flat are exposed; and
  - c. when the lake is drawn down by -5 meters it covers an average 3,090 hectares of open water, meaning and average of 8,310 hectares of mud flat are exposed; and
- [67] The applicant has been unwilling to provide Fish and Game with substantiated information on how the operating regime will be altered by the application or how that will translate to changes in the lake footprint. However, when asked about the lake’s footprint at different levels, the applicant did provide the map now shown in Appendix 1 of this submission. From the map, it can be seen that substantial tracts of the lake become mudflat when the lake is drawn down to the -2.7 meter mark.

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<sup>20</sup> Response to further information request 17 August 2018, Question 1.

- [68] The further information request from 23 September 2021 provides some additional helpful information that can be used to gleam what the lake looks like at different levels. The applicant has provided measurements of exposed lakebed at differing lake levels based on recent ecological survey work. It gives an approximation of the extent of what users and Fish and Game would call ‘mud flats’ at specific sites around the lake. This information is replicated in Appendix 2 of this submission.
- [69] The information presented in this section, plus in Appendices 1 and 2 demonstrate that the footprint of the lake is, in many places, very sensitive to changes in lake level. This means that changes to the lake level as a result of the varied drawdown, and thus operating regime, are more likely to cause the adverse effects identified in this submission.

*Issue: has recreation been adequately assessed by the application?*

- [70] In her summary,<sup>21</sup> Dr Booth finds that the “...applicant has not adequately assessed amenity values and potential effects from the proposed change upon those values.”
- [71] Fish and Game agrees with this statement. The varied drawdown will affect the operating regime of the lake in a way that is able to cause the lake to be drawn down lower, more frequently and/or for longer durations. If this occurs, it will lead to potentially dangerous adverse effects on anglers accessing the lake via foot and boat. The applicant has consciously chosen *not* to provide information on the nature of the new operating regime with respect to lake levels and by extension, refused to characterise the nature of adverse effects on recreation.
- [72] In her summary,<sup>22</sup> Dr Booth goes on to state that land-based recreational activities are unlikely to be materially affected by the proposed change. It is assumed she is referring here to angling when accessing the lake via foot.
- [73] Fish and Game does not agree with this conclusion. It appears to be based on the comment by Mr Dungey that angling pressure moves off the flats of the lake in late summer. Fish and Game’s experience is that this is incorrect. Anglers still fish shallow waters during late summer – albeit with increasing difficulty and hazard. Mr Dungey’s observation of people fishing deeper water where mud flats are not prominent may instead be a sign of anglers being forced out of shallow water due to the emergence of mud flats.
- [74] Furthermore, Mr Dungey’s comment is not relevant to years when low lake levels occur in early or mid-summer, when angling use is highest.
- [75] Both in late summer and in years when the lake level is low in early or mid summer, Fish and Game expects the varied drawdown to compound on the adverse effects of the existing operating regime, creating larger cumulative effects.

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<sup>21</sup> Booth, K. (2021). Pioneer Energy Limited Consent Amendment for Lake Onslow: Audit of the application with respect to amenity values. Nelson: Lindis Consulting. Question 6.

<sup>22</sup> Booth, K. (2021). Pioneer Energy Limited Consent Amendment for Lake Onslow: Audit of the application with respect to amenity values. Nelson: Lindis Consulting. Question 6.

- [76] It is important to be mindful that Dr Booth's assessment was not able to be informed by a full suite of information from the application. When addressing information gaps in Question 2 of her analysis, she states that:

*"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"*

- [77] In this submission and at hearing, Fish and Game (and likely the Teviot Angling Club) are providing such qualitative accounts. Fish and Game expects that this will further inform Dr Booth's analysis, including the conclusion that land based recreation is not materially affected. Fish and Game submits that it is.
- [78] In terms of the scale of the adverse effect from the varied drawdown on angling (both land and water based), the lack of information on the new operating regime with respect to lake levels makes it very difficult for Fish and Game to make an assessment.
- [79] Fish and Game cautiously note that:
- a. the scale of adverse effects will be affected by the large scale of use, which may constitute thousands of angler days in a given year; and
  - b. the scale of adverse effects are sensitive where the application poses an additional risk to human safety, as a small additional contribution to the risk of injury or death constitutes a comparatively major adverse effect.
- [80] Fish and Game notes Dr Booth's assessment<sup>23</sup> that the impacts on visual amenity have not been assessed within the application. Fish and Game agrees with this assessment and Dr Booth's conclusion that the impacts are less material than the impacts on recreational generally. As the impacts on recreation are potentially much more significant than anticipated by Dr Booth, Fish and Game submits that adverse effects on visual amenity should not be discounted.

*Issue: what's the point of monitoring and how effective will the monitoring programme be?*

- [81] As discussed above, Fish and Game's primary concern is with adverse effects flowing from changes to the operating regime – particularly with respect to low lake levels. It has been established in this submission that the applicant was not willing to inform that concern.
- [82] To address the lack of information, a suggestion that arose during consultation was to gather information on the adverse effects of the proposal via an adaptive management regime. This approach creates a situation where the information on adverse effects is gathered *after* a consent is granted. Fish and Game agreed to explore the concept in a last-ditch attempt to avoid a hearing.

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<sup>23</sup> Booth, K. (2021). Pioneer Energy Limited Consent Amendment for Lake Onslow: Audit of the application with respect to amenity values. Nelson: Lindis Consulting. Question 6.

[83] During discussions, three clear issues arose with the concept:

- a. Unless the varied drawdown rate reverts back to 200mm/week after the trial, a decision maker is required to review the information in the application and determine whether the varied drawdown is acceptable to be continued in the long term. This is difficult to achieve fairly, and in collaboration with the parties, without causing the consent conditions to become *ultra vires*. The ‘no more than minor’ proposition currently proposed is inherently flawed.
- b. As in the application, the applicant refused to address adverse effects on recreation, outside those which are more closely related to ecological information. Dr Booth notes that this is currently lacking.<sup>24</sup>
- c. The related consent conditions are overly complex and difficult to understand.

These, and a range of other minor points, have not been addressed by the applicant since they put a halt to consultation and remain problematic for the success of the monitoring programme.

[84] The result is that Fish and Game does not support the monitoring programme in lieu of gathering appropriate information and establishing an accurate picture of adverse effects prior to a decision being made on the application.

[85] Fish and Game acknowledges that had the monitoring programme been successfully developed and agreed upon in consultation, not knowing the full suite of adverse effects would remain a fundamental issue may still have been problematic for the eventual decision maker.

#### *Relief sought*

[86] Fish and Game seeks that the application be declined, as the adverse effects arising from the altered operating regime cannot be determined from the information provided.

[87] In the case that the consent is granted, Fish and Game seek alternative relief in that conditions be imposed such that the varied drawdown rate will not create additional adverse effects over that of the current operating regime. Conceptual examples of such conditions might include:

- a. an additional drawdown restriction over a longer period, say 800mm/month, to provide short term flexibility without changing the medium term operating regime;
- b. an additional restriction on the frequency or duration of low lake level events; and/or
- c. an additional restriction on the duration that the varied drawdown rate can be utilised before reverting back to the 200mm/week limit.

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<sup>24</sup> Booth, K. (2021). Pioneer Energy Limited Consent Amendment for Lake Onslow: Audit of the application with respect to amenity values. Nelson: Lindis Consulting. Question 3.

- [88] The rationale for the requested outcomes are based on guidance from the relevant legislation and policy documents, most notably:
- a. the Resource Management Act 1991;
  - b. the National Policy Statement for Freshwater Management 2020;
  - c. the Otago Regional Policy Statements<sup>25</sup>;
  - d. the RPW; and
  - e. the SFGMP.

#### *Other matters*

- [89] Fish and Game notes that Dr Booth has raised the question of links between mahika kai and the trout fishery, based on a past cultural impact assessment. She also suggests that the effects on mahika kai gathering and recreational harvest may be similar, and notes that the assessment of mahika kai is weak in the application. It is not Fish and Game's place to define mahika kai species, nor the nature of adverse effects on Iwi. However, Fish and Game does acknowledge that these questions remain open and suggests it may be useful for a decision maker to explore them.
- [90] Fish and Game also notes that a finding for the Lake Onslow Battery Project's<sup>26</sup> first stage is expected to be announced next year. Largescale development of the lake in the manner proposed would likely render this variation useless. Fish and Game wishes to express its disappointment that the applicant is pushing to a costly hearing process, given the uncertainty of the Battery Project. The applicant's approach will have needlessly consumed the time, resources and energy of the parties should the battery project go ahead.

#### *Conclusion*

- [91] In summary, Fish and Game submits that varying the drawdown rate will alter the operating regime of the lake.
- [92] The applicant has refused to provide information as to how the new operating regime will affect lake levels.
- [93] Fish and Game expects that the new operating regime will allow for the lake to be drawn down to lower levels more frequently and/or for a greater duration.
- [94] Fish and Game has identified a number of adverse effects that would result if this were the case:

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<sup>25</sup> I note that there are multiple Regional Policy Statements to be considered.

<sup>26</sup> <https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/low-emissions-economy/nz-battery/>

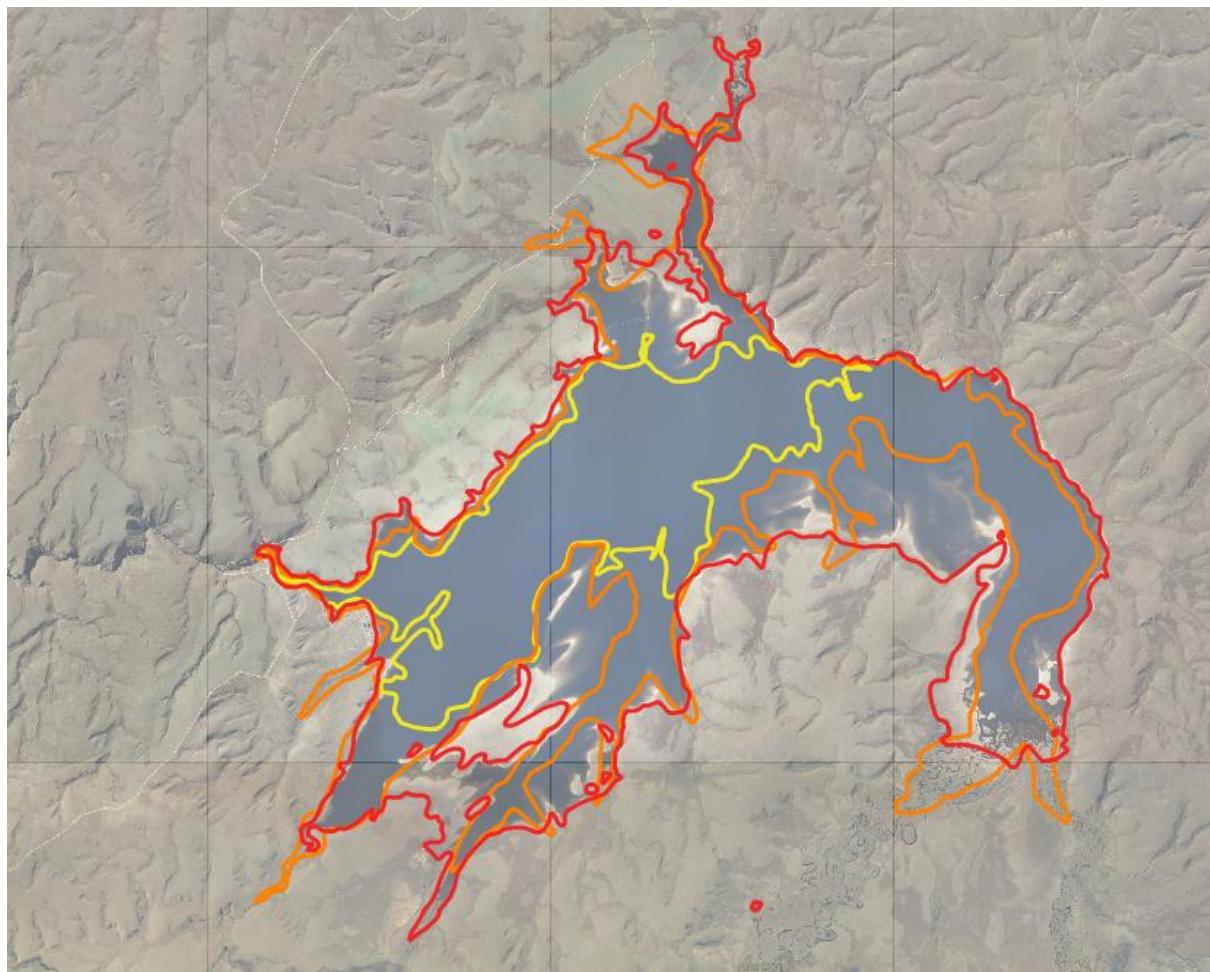
- d. lower ecological productivity for the brown trout population, in part due to dewatering of macrophyte beds which predominantly occur within the top 3 meters from the crest height and take some time to recolonise;
- e. increased extent of mud flats between the shore and the water, creating access difficulty for safety hazards anglers, whether they access the lake on foot or by boat; and
- f. increased safety risks while boating, as mudflats are exposed in lower water levels.

[95] Fish and Game seeks that the application be declined, as the adverse effects arising from the altered operating regime cannot be determined from the information provided.

[96] In the case that the consent is granted, Fish and Game seek alternative relief in that conditions be imposed such that the varied drawdown rate will not create additional adverse effects over that of the current operating regime. Conceptual examples of such conditions might include:

- d. an additional drawdown restriction over a longer period, say 1000mm/month, to provide short term variation without dramatically changing the operating regime;
- e. an additional restriction on the frequency or duration of low lake level events; and/or
- f. an additional restriction on the duration that the varied drawdown rate can be utilised before reverting back to the 200mm/week limit.

**Appendix 1: Rough footprints of Lake Onslow at different levels.**



Please note: The -5.1 meter level is shown in yellow, the -2.7 meter mark in Orange and the full mark in red. The applicant notes that “there are some issues with the -2.7 m (orange) polygon, which extends outside the current shoreline in places. The plan it’s based on notes that the outline is approximate only and subject to survey. The key issues are in the bays in the northern and south-eastern ends of the Lake, where some areas dry up at low lake levels (based on Ross’s comments), but this is not reflected in the outline from that 1977 plan.”<sup>27</sup>

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<sup>27</sup> T, Muller. Personal communication. 31 July 2019.

**Appendix 2: Cumulative distance of lakebed exposed at lake levels for select sites around the Lake.**

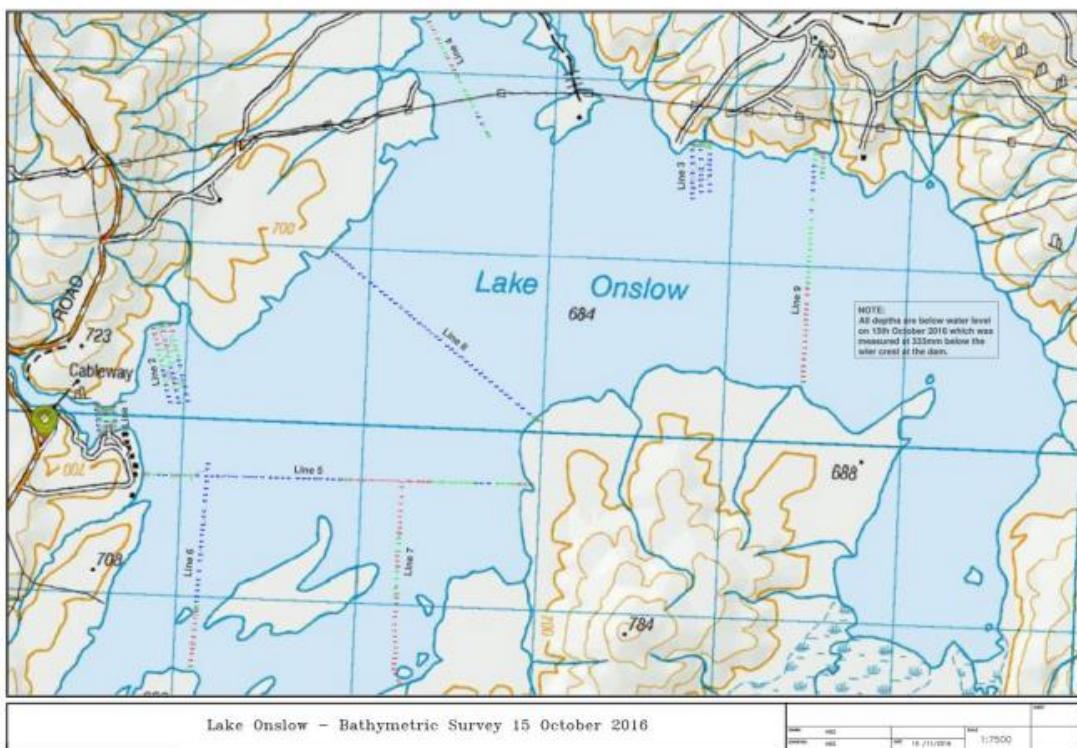


Figure 1, lines 1, 2, and 3 are invertebrate survey sites, others lines are water depths only, see appendix 1 for large scale map.

Table 3, cumulative distance (m) of lakebed exposed for each 0.5m drop in lake level.  
L1S =Line 1 south end of transect, L8NW=line 8 northwest end of transect.

Site	0.5 drop	1m	1.5m	2m	2.5m	3m	3.5m
L1N	1	2	4	4	7	8	8.5
L1S	4	6	10	17	20	22	25
L2N	.5	5	7	10	20	40	55
L3N	2	3	4	8	10	12	15
L4N	20	50	65	70	90	140	215
L5E	20	40	50	50	75	80	130
L5W	10	15	20	20	27	30	50
L6S	25	50	325	330	340	345	350
L7S	20	125	240	500	510	530	560
L8SE	10	15	25	30	40	50	50
L8NW	1	1.5	5	10	15	20	25
L9N	1	2	5	10	15	25	30
L9S	20	115	250	350	500	540	550

### Appendix 3 – Spawning survey report 7 May 2021

**Date:** 07/05/2021

**River:** Boundary Creek

**Section:** Lake confluence - E1333682 - N4947646

**Start Point:** E1334417 - N4948400

**End point:** E1333682 - N4947646

**Distance:** 1.2km

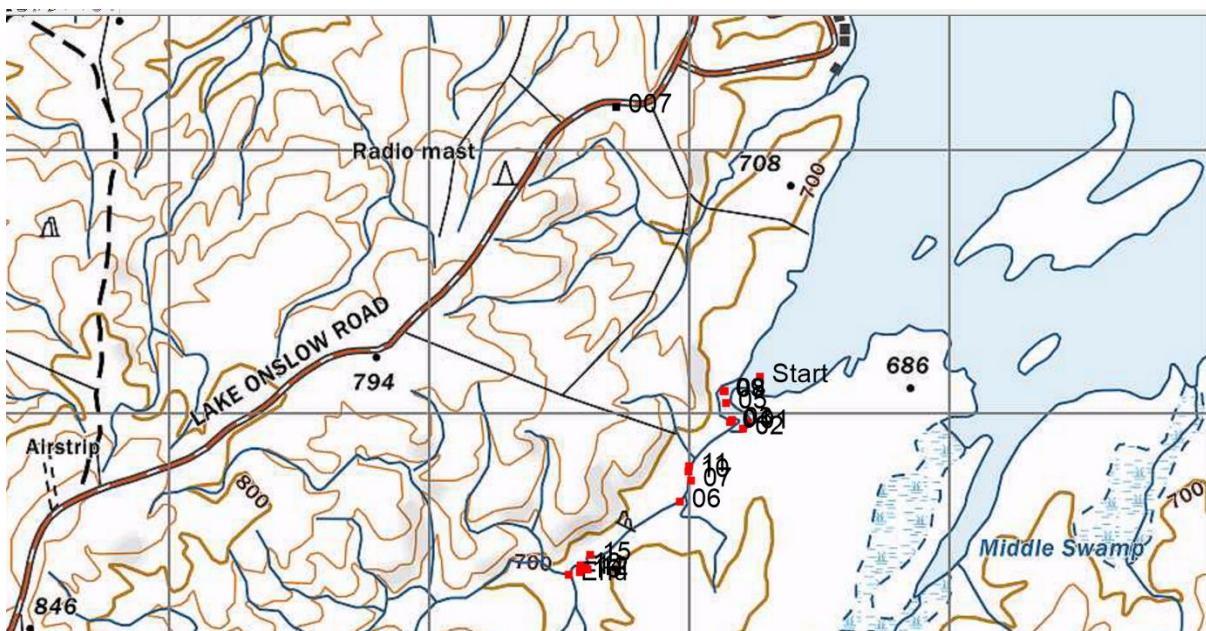
**Observed:** Foot/Helicopter

**Species:** B. Trout

**Observer:** S Dixon & B Quirey

Description	Redds	Fish	Comment
Water clear, gravels good.	16	23	Three dead fish seen.
<b>Totals</b>	16	23	Redds/km: 13.3

**Map:** (mark all or major spawning areas)



**Comments:** Access to the outlet of Boundary creek was made by boat. Landing the boat was difficult due to the lake being 2.5m down from normal. The boat bottomed out in mud 2m from shore (photo. 1). **Note:** Access to and from the boat was a challenge and could be considered dangerous when boating alone on the lake during low lake levels.

There were a good number of trout redds and fish observed in Boundary Creek. Low water flows and in most places ideal stream substrate made spotting redds easy (photo. 2) from the bank but there were long sections of bedrock in this reach also. Trout sizes varied from approx. 2lbs – 5lbs.



Photo. 1



Photo. 2 (two redds can be seen in this photo)

*Statutory managers of freshwater sports fish, game birds and their habitat*

**Otago Fish & Game Council**

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[www.fishandgame.org.nz](http://www.fishandgame.org.nz)



## Submission Form 16 to the Otago Regional Council on consent applications

This is a Submission on (a) limited notified/publicly notified resource consent application/s pursuant to the Resource Management Act 1991.

### Submitter Details:

(please print clearly)

Full Name/s: Otago Fish and Game Council

Postal Address: PO Box 76, Dunedin

Post Code: 9016

Phone number: Business: 03 477 9076

Private: \_\_\_\_\_

Mobile: \_\_\_\_\_

Email address: nparagreen@fishandgame.org.nz

I/ we wish to **SUPPORT / OPPOSE** / submit a **NEUTRAL** submission on (circle one) the application of:

Applicant's Name: Pioneer Energy Limited

And/or Organisation: \_\_\_\_\_

Application Number: RM18.004 – Variation to 2001.475 and 2001.476

The specific parts of the application/s that my submission relates to are: (*Give details*)

The whole submission

My/Our submission is (*include: whether you support or oppose the application or specific parts of it, whether you are neutral regarding the application or specific parts of it and the reasons for your views*).

Oppose in full. Please see the attached submission for further details.

I/We seek the following decision from the consent authority (*give precise details, including the general nature of any conditions sought*)

Please see attached submission

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I/we:

- Wish to be heard in support of our/my submission  
 ~~Not wish to be heard in support of our/my submission~~

If others make a similar submission, I/we will consider presenting a joint case with them at a hearing.

- Yes  
 No

I, **am/am not** (choose one) a trade competitor\* of the applicant (for the purposes of Section 308B of the Resource Management Act 1991).

*\*If trade competitor chosen, please complete the next statement, otherwise leave blank.*

I, **am/am not** (choose one) directly affected by an effect as a result of the proposed activity in the application that:

- a) adversely affects the environment; and
- b) does not relate to trade competition or the effects of trade competition.

I, **do/do not** (choose one) wish to be involved in any pre-hearing meeting that may be held for this application.

I **do/do not** request\* that the local authority delegates its functions, powers, and duties to hear and decide the application to 1 or more hearings commissioners who are not members of the local authority.

I **have/have not** served a copy of my submission on the applicant.



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**Signature/s of submitter/s**  
(or person authorised to sign on behalf of submitter/s)

2 December 2021

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(Date)

**Notes to the submitter**

If you are making a submission to the Environmental Protection Authority, you should use [form 16B](#).

The closing date for serving submissions on the consent authority is the 20th working day after the date on which public or limited notification is given. If the application is subject to limited notification, the consent authority may adopt an earlier closing date for submissions once the consent authority receives responses from all affected persons.

You must serve a copy of your submission on the applicant as soon as is reasonably practicable after you have served your submission on the consent authority.

**Privacy:** Please note that submissions are public. Your name and submission will be included in papers that are available to the media and the public, including publication on the Council website. Your submission will only be used for the purpose of the notified resource consent process

If you are a trade competitor, your right to make a submission may be limited by the trade competition provisions in [Part 11A](#) of the Resource Management Act 1991.

If you make a request under [section 100A](#) of the Resource Management Act 1991, you must do so in writing no later than 5 working days after the close of submissions and you may be liable to meet or contribute to the costs of the hearings commissioner or commissioners.

You may not make a request under section 100A of the Resource Management Act 1991 in relation to an application for a coastal permit to carry out an activity that a regional coastal plan describes as a restricted coastal activity.

Please note that your submission (or part of your submission) may be struck out if the authority is satisfied that at least 1 of the following applies to the submission (or part of the submission):

- it is frivolous or vexatious;
- it discloses no reasonable or relevant case;
- it would be an abuse of the hearing process to allow the submission (or the part) to be taken further;
- it contains offensive language;
- it is supported only by material that purports to be independent expert evidence, but has been prepared by a person who is not independent or who does not have sufficient specialised knowledge or skill to give expert advice on the matter.

The address for service for the Consent Authority is:

**Otago Regional Council, Private Bag 1954, Dunedin, 9054**  
or by email to [submissions@orc.govt.nz](mailto:submissions@orc.govt.nz)