



26 May 2022

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APP-20211669 – Response to request for further information

The information that follows addresses the matters raised in the information request dated 24 November 2021 to the extent that the applicant is able.

As an overall comment, the Association wishes to point out that the statements in the application relating to significant risk in some instances are based on the reports referred to in Section 2 of the application. The effects assessment is based on those reports. It is clear from them that any course of action or inaction in regard to the management of lagoon water levels could potentially have significant consequences for lagoon health given its fragile state.

The overall assessment in Section 5.8 of the application has therefore taken a cautious and realistic approach where it states “... *opening the lagoon may have effects that are more than minor, which is in recognition of the ecological significance of the lagoon and its associated wetland, and the fact that its overall health is at risk from other factors, namely, nutrients and sediment discharging into it. Due to that poor health, it means any effect that might otherwise have been only minor, may be more than minor.*”

In my opinion, after working through the science reports about the lagoon that are referenced in the application, that assessment could equally apply to an opening level of 2.5m, as there is no information that categorically supports either position. The Technical Advisory Group has used its expertise to make a recommendation, but after reviewing the reports, the Association has come to a different view about the opening level, based on its experience living alongside the lagoon and for the reasons set out in Section 5.1 of the application.

With that in mind, I now respond to the matters you have raised.

1. *Assessment of the positive effects of the proposal on land drainage and agricultural productivity/income for the members of the Lake Waituna Control Association, under the proposed 2.0/2.2 metre opening regime compared with the 2.5 metre opening regime recommended in the supporting document included as Appendix 6 of the application. This assessment should include:*
 - a. *Identification of the areas (both the properties and the area in hectares) of farmland owned by the members of the Lake Waituna Control Association that would be more affected by impeded drainage under an opening regime at 2.5 metres compared to the 2.0/2.2 metre openings proposed in the application. This should include the current land use of those areas.*
 - b. *Assessment of the period that those areas would be affected (average and maximum number of days per year) if the higher opening trigger was applied compared with the 2.0/2.2 metre triggers.*

- c. *Assessment of the adverse effects and associated loss of productivity or earnings due to the impeded drainage under an opening regime at 2.5 metres compared to the 2.0/2.2 metre opening regime.*
- d. *Whether inundation or impeded drainage under an opening regime at 2.5 metres compared to the 2.0/2.2 metre opening regime creates safety hazards, particularly for vehicle access to and from affected residences.*

RESPONSE

In regard to the extent of additional inundation when the lagoon level rises to 2.5m from 2.0/2.2m, the only information available is in the NIWA report prepared for the Department of Conservation in February 2016 titled "Waituna Lagoon level impacts on land drainage and inundation – Investigation stages 1 and 2" (Reference D in Section 2 of the application). The maps are in the appendices of that report and show inundation areas under different scenarios for the Waituna, Moffat and Currans Creeks, and separate maps for areas that are potentially drainage affected under the same scenarios.

The maps are produced by a model that is considered to be a reasonable representation of the areas inundated, but there is less certainty in regard to the potential effects on subsurface drainage.

The NIWA information is used to show the drainage-affected land in relation to land owned by bodies other than farmers. This information is in the document listed as Reference A in Section 2 of the application, specifically, in Section 7, Figures 10-12.

The applicant is unable to provide the financial information requested relating to the areas owned by Association members, the total area of drainage-affected land and the loss in productivity for the different opening levels, i.e. 2.0/2.2m v. 2.5m. The uncertainty in the accuracy of the amount of drainage-affected land using the model means that any economic analysis would be equally uncertain.

The main issue for the farmers is not so much the difference in the land area affected between the different lagoon levels, but rather the length of time all of the land will be affected by inundation and impeded drainage. Land affected at a lagoon level of 2.0m will be affected for longer while waiting for the level to rise to 2.5m, which will affect the farmers ability to actively farm that land. Some of it may still be able to be grazed, but production will be reduced, or it may not be able to be cultivated, if that is necessary. It could also require pasture to be resown after being wet for too long.

Because of the way the hydrological regime has been managed historically, the lagoon rarely rises above 2.3m at the Waghorns Bridge site (based on the period of continuous record from mid 2001 on the Council's Beacon Maps site). There were two exceptional events in 2010 and 2011 that resulted in openings at 2.6m and 2.79m respectively, but for the most part, openings occurred below 2.3m. As such, it is difficult to get any meaningful data on the time it would require for the lagoon level to rise to 2.5m. Depending on inflows, the lagoon may not get to 2.5m, and it may drop naturally in drier conditions, but that process is likely to take longer, all the while affecting drainage (note – the hydrological model developed by Environment Southland is discussed further in Item 7 below).

The record of lagoon openings does show a number of instances where the opening level exceeded 2.5m prior to 2000, as well as a number of openings between 2.2m and 2.5m, but these discrete numbers are not suitable for further analysis. Environment Southland staff have created a hydrological model, but, like any model, it has limitations and there is uncertainty about the model outputs (see Appendix 2 of Reference B in Section 2).

For these reasons, the Association is unable to provide an analysis of the financial benefits of opening the lagoon that would provide any meaningful data that could be relied upon for decision-making.

2. *A pdf copy of "Social Assessment of the Waituna Catchment, Southland – anticipating the impacts of nutrient limits for farming systems" – prepared for DairyNZ, April 2015. I am requesting this*

information because this is a supporting document referenced in the application, but was not supplied, and I have been unable to download a copy. I have accessed the other documents that were referenced.

RESPONSE

A copy of the report has been forwarded – see email dated 25 November 2021.

3. *Assessment of options to close the lake barrier as a mitigation measure once an opening has occurred. This should include an explanation why such a mitigation has not been proposed. It is clear that there can be adverse effects if the lake remains open too long, particularly if it is open at certain times of year that may be harmful to macrophytes within the lake. Therefore works to close the lake barrier again are an obvious mitigation option that should be considered.*

RESPONSE

The possibility of closing the lagoon barrier was considered and is an option that the applicant would be amenable to if a viable means of doing so could be developed and agreed upon. An assessment was carried out of engineering options for managing lagoon water levels in 2015, a summary of which can be seen [here](#). The summary brochure is supported by more detailed reports that are available on The Trust's [website](#).

Using an engineered solution would require agreement with other interested parties so it is not something the Association has considered promoting on its own behalf. However, it would be agreeable to participating in a joint approach to this solution, but feels it would take a consensus for it to go forward.

4. *A cultural impact assessment or tangata whenua effects assessment on the proposal, particularly with regard to:*
- *the proposed consent duration;*
 - *the proposed opening locations;*
 - *the differences in effects between the proposed 2.0/2.2 metre opening regime compared with the 2.5 metre opening regime recommended in the supporting document included as Appendix 6 of the application; and*
 - *measures to avoid or mitigate adverse effects on cultural and spiritual values.*

RESPONSE

A cultural impact assessment has not been sought at this time. Cultural values in regard to the Waituna Lagoon were included in Reference A (referred to in the response to Question 1 above) and Iwi are part of The Whakamana Te Waituna Trust (referred to as “The Trust”). Their values and the significance of the lagoon has been clearly stated in Reference A. A separate cultural impact assessment just for this application is therefore not considered to be necessary at this stage.

Reference A notes that there are benefits to the lagoon values at both high and low levels. No reference to a clear preference to an opening level has been stated by Iwi, though it appears to support the work of The Trust and the Technical Advisory Group. The applicant has assumed that Iwi will be considered an affected party for this application and, at the very least, a written approval will be required. Matters such as the consent duration, the opening locations and the opening levels are all able to be considered, and amendments to the application can be made if necessary, but only within the scope of the application.

The application is for a consent in the terms that the Association would like, but a negotiated outcome with Iwi and any other party, requiring some compromises, is possible.

5. *Clarification whether the Whakamana Te Waituna Trust, Te Wai Parera Trust, Te Rūnanga o Ngāi Tahu, Te Rūnanga o Awarua or Te Ao Marama Inc are part of the Lake Waituna Control Association.*

From sections 5.6 and 5.7 of the application I get the impression that iwi groups are parties to the application. I wish to confirm if that is the case, as it relates to impacts on cultural and spiritual values, and also to which properties should be considered affected in terms of the earlier question about impeded drainage.

RESPONSE

The Whakamana Te Waituna Trust, Te Wai Parera Trust, Te Rūnanga o Ngāi Tahu, Te Rūnanga o Awarua or Te Ao Marama Inc are not part of the Lake Waituna Control Association or a party to this application. However, the Association notes that not all members are farmers in the catchment, although most have an interest in land in the catchment.

6. *Clarification of the circumstances that openings at each of the four proposed opening locations would occur. I note there is discussion around potential reasons to open at Hansens Bay, but the circumstances that the various openings would be utilized, and why one particular opening location may be chosen in a given circumstance rather than another site, are not explained.*

RESPONSE

For the applicant, the primary reason for opening the lagoon is to reduce the water level. Historically, Walkers Bay has been the preferred opening site because it is accessible and the effects of using this site are reasonably well known. The conditions required to sustain an opening at this site are also reasonably well known, but by no means certain.

However, the Association is well aware of the issues associated with managing the health of the lagoon, and that there are other matters to be considered in order to mitigate/minimise the potential adverse effects of opening the lagoon, including the location of the opening. The circumstances that would influence where the lagoon should be opened would be determined by scientific advice, which is likely to come from the work being carried out by The Trust and the Technical Advisory Group.

In the absence of any advice or request to do otherwise, the Association will continue to use Walker Bay as the main opening site, although a change to Hansens Bay is being considered for the reasons described in Section 4 of the application, i.e. an opening at Hansens Bay will not lower the lagoon level as much as other locations.

The two additional sites included at the eastern end of the lagoon are not ones that the Association would use unless requested to do so. One reason may be for the purposes of scientific investigation to assess whether there is any benefit in doing so. The Association is aware that alternative opening locations have been considered and these two have been mentioned. By including them in the consent, it means that they can be trialled without having to go through an extra consent process. There is nothing to suggest that the effects of using these alternate sites would be very different to using Walkers Bay.

7. *Assessment of the periods that Lake Waituna is likely to stay at levels above 2.2 metres, or above 2.5 metres, given seepage rates through the barrier at those lake levels, and whether those periods are likely to be long enough to adversely affect Ruppia and other macrophytes. In the past, how far above the trigger level has the lake risen while the Lake Waituna Control Association waited for suitable conditions to open the barrier? I ask because section 5.1 of the application refers to risk associated with the lake level rising above 2.5 metres if that was the opening trigger level. While you are applying for openings at 2.0/2.2 metres, the assessment in that section is providing reasoning why opening at 2.5 metres, as recommended in the Robertson et al document included in the application, is not preferred by the applicant. So it would be helpful to quantify that risk and determine whether a short period at a slightly higher level than 2.5 metres would be detrimental.*

RESPONSE

The Association is not aware of any information on seepage rates through the lagoon barrier that would enable this item to be answered. Lagoon levels have historically spent only short periods of time above 2.0m because of the managed opening regime. A study of seepage losses at higher lagoon levels, i.e. above 2.0m, has therefore not been carried out, nor does it appear to have been a priority.

The Association is aware that the lagoon levels can continue to rise above 3.0m (the highest opening level recorded is 3.25m on 5/7/1994), but it is generally as a result of a high rainfall event causing higher than normal inflows. Sea conditions can also be a factor. Peak inflows from storm events will drop and, once low enough, lagoon levels are likely to decrease over a period of time, but the applicant is unable to provide any information on the time required for levels to drop naturally.

The application provides reasons why the Association does not prefer the opening level recommended by Robertson et al. They are qualitative as the information available is not sufficient to quantify the risks in any meaningful way, and doing that would likely be beyond the resources of the Association.

The recommendation in the Robertson report relies on the experts assessment of ecological effects under the current opening regime and a hydrological model, the limitations of which are set out in Appendix 2 of Reference B. Models are useful tools for assessing trends and responses to different scenarios, but can be less reliable for determining actual values. The recommendation is based on expert opinion, which is qualified by the assumptions made. The concern for the Association is that moving to an opening level of 2.5m is too inflexible given the uncertainties that still exist and leaves little scope for an adaptive management approach.

8. *Clarification whether further mitigations are proposed for the openings at 2.0/2.2 metres with regard to Ruppia, particularly regarding openings in the germination and early growing season, or openings more than once per year or on successive years. Commentary in the Robertson et al report indicates that the current regime is not meeting Ruppia cover targets so it would be helpful to understand if further changes to the opening regime could be applied.*

RESPONSE

Further mitigation measures have not been proposed, but nor are they excluded. The difficulty is that there is no strong evidence to confirm that *Ruppia* cover will improve if the openings are at a higher level as at that depth, there is potential to adversely effect macrophyte growth due to reduced light penetration. However, it is acknowledged that the higher opening level is the consensus of the experts involved, so the Association is unsure what would be an acceptable mitigation measure.

In submitting this application, the Association did so on the understanding that it would go through a process that would involve a number of affected parties, the outcome of which could result in agreed amendments to the application. The issues are not black and white, so there is scope for debate and compromise. The outcome of the process would eventually be decided by whoever makes the decision.

During the preparation of the application, the possibility of other mitigation measures was considered, but it is the Association's preference that they come out of negotiation as it did not have the information to know what would be a meaningful, viable and acceptable measure.

9. *What is the contingency in the event that either an opening causes a significant adverse ecological effect, or that information comes to light that further openings at the proposed 2.0/2.2 metre levels would give rise to a significant adverse effects? You have applied for a 20 year term but acknowledge that there are uncertainties Section 6.11 of the application notes that the resource consent conditions can be reviewed if necessary. However such a review cannot frustrate the exercise of the resource consent. So, potentially the Council's options would be limited if a significant ecological risk arose from the activity but there were several years left in the consent*

period. Are there contingency measures, or conditions that could be volunteered, to provide for such a risk?

RESPONSE

Yes, the application acknowledges there are uncertainties, as does all of the experts in their reports about the lagoon.

The application notes that, based on a review of the various reports prepared about the Waituna Lagoon, there is uncertainty in any managed hydrological regime for this system, including allowing it to behave naturally. No specific contingency measures are proposed but a suitable review condition could be included that would enable the opening level(s) to be raised. A review is subject to a consent process and will provide the opportunity for any information about an adverse effects to be considered. It would not frustrate the consent as the lagoon could still be opened, albeit at a higher level. A comparable example would be raising the minimum flow in a river for abstractions.

Again on the basis of the information available, it is unlikely to be one single factor, such as the lagoon opening level, that will cause a significant adverse effect. The Association would not deliberately frustrate other organisations work to improve the lagoon health if presented with information that an opening at 2.0/2.2m were having a significant impact.

Finally, it is noted that the Association applied for a 20 year term because it is looking for the certainty and security that has not been available with a 5 year term. However, it is one of the matters that will be determined by the decision-maker and a matter that may be addressed during discussions with affected parties.

10. Assessment of the effects of the proposal with regard to sea level rise and climate change over the 20 year consent period requested. I wish to understand if openings in the barrier between the lake and the sea would be more susceptible to damage as sea level rises or storms arising from climate change, or if openings that maintain the lake at lower levels will have a greater adverse ecological as climate changes arise.

RESPONSE

The only information that is available on the effects of climate change on the lagoon and its management is provided in a report prepared for the Department of Conservation as part of the Science For Conservation series (report 335), which can be seen [here](#). The detailed findings of the report are not re-stated here, but the following extract from the reports conclusions is provided:

"Increases in rainfall, freshwater inflows, flood events and inundation of surrounding land are likely to contribute to lower lagoon-bed light levels and higher levels of nutrient and sediment entering Waituna Lagoon than are currently experienced. Consequently, increased algae growth and inhibit Ruppia growth are predicted. These are known components that contribute to regime shift from a desirable macrophyte-dominated state to an undesirable algal-dominated state and are closely linked to declines in water quality. This shift would fundamentally change the ecology of the lagoon and create unsuitable habitat for many of the species that currently exist there.

With the projected increases in inflows (except in summer), the lagoon water level would increase more rapidly than under present conditions. The implication is that the lagoon would either have to be manually opened more frequently (if the present threshold depths for opening are maintained) or the thresholds for opening would need to be raised (if the opening frequency is maintained). If the latter, then more of the land surrounding the lagoon would be subject to inundation before the lagoon would be opened.

Regular opening of the lagoon to lower the water level and flush nutrients out is likely to become more difficult with sea level rise and the loss of hydraulic pressure to aid opening. Sea level rise and more frequent openings of the lagoon barrier would have significant impacts on the

biodiversity of the lagoon area, particularly in relation to decreasing intertidal habitat detrimentally affecting wading birds and increased salinity reducing the abundance of the macrophytes that currently support the food web of the lagoon.

These projected changes pose a major risk to a wide variety of plants, birds and fish, many of which are threatened endemic species and a fundamental part of what gives Waituna Lagoon its high ecological status."

These changes are predicted to occur over the coming decades. It appears to be saying that achieving management objectives for both ecological values and farming activities will become increasingly difficult, if not impossible, i.e. change is inevitable based on the current projections for climate change. However, there appears to still be some merit in continuing to manage the lagoon for the short to medium term (20 years would sit within that period) but it would be something that would have to be monitored and likely to require some adaptive management.

11. *A summary of existing and proposed monitoring. In particular, what monitoring is already carried out, or additional monitoring will be carried out, by the applicant? I acknowledge that part of the proposal includes openings for ecological reasons, and that reliance on monitoring carried out by other agencies to support that monitoring is reasonable and appropriate. While I would like that monitoring to be stated, I am also seeking commentary on monitoring for the effects of openings at 2.0/2.2 metres.*

RESPONSE

The only monitoring currently carried out at present is as set out in the consent conditions. There is a lot of reliance on the information provided by the Technical Advisory Group, which is required to trigger some of the conditions relating to lagoon openings for special circumstance. Water level monitoring by Environment Southland is also relied upon.

The proposed conditions, as amended by some of the recommendations in the Reference A report (see the response to Item 13 below), would work in the same way. The Association acknowledges it is reliant on the monitoring work carried out on behalf of The Trust, as it only records basic information associated with the opening of the lagoon, i.e. opening date, opening level, location of opening, method of opening and date of lagoon closure.

The main information that relates to the consent openings is:

- water level;
- water quality parameters;
- sedimentation; and
- macrophyte cover.

12. *Confirmation that the 'Appendix B - proposed amendments to consent conditions' is part of the Robertson et al report "Review of conditions for opening Waituna Lagoon - Supporting information" and they are not the conditions being sought by the applicant. It could be a little confusing to a reader, so I want to confirm that those suggested conditions are not the proposed conditions for this application.*

RESPONSE

The conditions suggested by Robertson et al are accepted except to the extent set out in the application (mainly in Section 5.1). Attached is a draft set of conditions that have been amended to incorporate the changes proposed in that report that are supported by the Association. The draft conditions are based on the conditions on the current consent and provide a basis for further discussion.

13. *The results of consultation with Te Rūnanga o Ngāi Tahu, which is a customary marine title applicant for the area of the activity. You are required under s62 of the Marine and Coastal Area*

(Takutai Moana) Act 2011 to notify Te Rūnanga o Ngāi Tahu and seek their views. This should have occurred already so it would be helpful to see what feedback was received.

RESPONSE

The response from Te Rūnanga o Ngāi Tahu after receiving notice of the application was as follows:

"In respect of your section 62 notification under the Marine and Coastal Area Act, Te Rūnanga o Ngāi Tahu would support Papatipu Rūnaka in their reply on this application.

As your application effects coastal landscapes and resources, consultation with mana whenua is required under the Resource Management Act.

In this instance, the local Rūnaka Entity would be Te Ao Marama, they can be contacted via the email CC'ed in.

At this stage, there has been no formal consultation with Te Ao Marama Inc. Ewen Pirie has met with representatives on at least one occasion, but there is nothing specific to report.

CONCLUSION

I hope that the information provided is helpful but I acknowledge that it is incomplete. If you have any additional queries or require clarification on any response, please contact me.

Yours faithfully

BONISCH CONSULTANTS LIMITED

A handwritten signature in black ink, appearing to read "John Engel".

John Engel
Senior Environmental Planner