SUPPLEMENTARY SUBMISSION **OPPOSING** THE CONSENT APPLICATION TO TAKE WATER FROM ROYALBURN NORTH BRANCH AND NEW CHUMS CREEK

By COUTTS, MCQUILKIN et al

Submission lodged by M Weldon
Date: June 16, 2021

PART I: INTRODUCTION

I have previously made a detailed submission. It is not my intention to repeat the content of that submission here, but it is incorporated by reference.

All through this process, the Applicant has sought to obtain the maximum water they will be allowed to take, rather than work out what is reasonable to take, or what is in the best interests of all stakeholders and the environment as described by the RMA. The maximum amount is 95% of total flow, plus more via a 'get of jail free' card which would allow more than this for stock drinking water purposes as a permitted activity even if the low flow cut-off has been reached.

This submission shows the flaws in their process, and why this would result in highly detrimental environmental outcomes.

This hearing is held under a deemed consent application relating to void mining rights. As such, the presumption of water under those consents should also be void, and a bottom up analysis conducted. The starting point should not be the water flow with the Applicants current water use, but the water flow and condition *but for* the Applicants water takes and use. To be clear, the Applicant assumes that their uses of the land - golf and farming (both of which are legal) means that they have a right to as much, or even sufficient water, to conduct those activities. This is incorrect. Over time regulation around scarce resources always changes land use, and any investments made in advance of a consent process is simply a risk taken with uncertain outcomes. They could have chosen to wait.

RECOMMENDATIONS:

1. **The application should be rejected on extant process errors and the Application process and Notification process must start again, including Public Notification.** The process errors are outlined in detail below in detail, and outline additional parties, and issues that would be raised
2. **The application should be declined on the substance and a bottom up analysis conducted to determine an appropriate take.** As a consequence of what is shown in this Submission, it is clear that relying on data provided by the Applicant is not a sufficient basis to make an accurate judgement over a scarce resource. Errors of omission and commission are shown, with regard to each of: (i) land use (omitting the golf course from original application);

(ii) omitting and then denying the turf farm; (iii) omitting fish reports; (iv) undertaking illegal diversions of upstream water; (v) undertaking unconsented works to divert waterways; and (vii) using single points of data when it favors them, and attacking others for the same method when that is expedient. In short, the Applicant has not provided sufficient accuracy of information such that the Commission can, with confidence, rely on the information provided by them, in determining a decision to their favor. .

3. **Work needs to be done on the actual water needs of the golf course and water consent based on actual work.** This work is easy to do, and there is no excuse environmentally for not requiring the work to be done. The information provided is not adequate in a gross number of areas. As such the starting point should not be their numbers, but a bottom up analysis. These are outlined in detail below.

4. **There are other sources of water than 'first use'"** In an attached short document "How Much Water Does Golf Use and Where Does It Come From?] it shows that recycled water for golf in arid areas is extremely common in the US In other words, there is no necessity that all the water for a golf course must be 'first use.

5. **The water take based on livestock use needs to be summarily rejected and water granted on reasonable stocking rates, and reasonable irrigation needs, including the use of supplementary feed (standard in farming).** Information is provided on this below.

6. **Flow should be maintained at all times visually for at least 100m past the lowest take.** Measurement at levels such as 10L are entirely fraught in gravel streams and prone to manipulation. Access to these points needs to be provided by easement to Crown Terrace affected residents so that the visual test can be monitored easily. Alternatively, 24x7x365 CCT needs to be provided, with all tape stored on the cloud and accessible to affected residents.

7. **Conditions must be imposed on the management of the golf course in line with standard international practice.** This includes Wetting agents, Hand watering, and keeping turfgrass drier. A list of chemicals in the dangerous substances shed also needs to be provided, and downstream water consistently tested for levels of metals, contaminants and other impacts negative for human, flora or fauna.

8. **Plan Change 7 & and the National Water standards must be used as the basis for decision making.** Just because takes have been allowed previously, under pre-RMA legislation that had no regard to environmental outcomes, does not mean the effects of such takes are now acceptable, particularly in light of the NPSFM 2020. It is a valid and important possible outcome that the environmental outcome is one that is significantly improved from the ingoing position. Evidence is outlined below that, in any event, the grandfathering due to the date lodged should not survive.

9. **The starting position needs to be 25k L per day between September and April.** Evidence of illegal behaviour having and impact on the overall level of water, ecology, etc should result in a loss of any presumption with respect to water rights - if you abuse rights you lose them. If this causes a change in land use - then that is the purpose of the RMA, and the expectation of the climate commitments of the government through to 2030 as regards agriculture. In addition

to these, restrict water between the months of September to April to 25,000 L per day, with up to, say, 6x that over the winter period to allow water harvesting.

10. **If not 25k Litres, then based on actual bottom up data.** This submitter is not an expert in this, but looking at precedent in golf courses, the ability to recycle water, and using standard irrigation rates, the annual take would be well under 150,000 m litres cubed per year, rather than 1.2m litres cubed.

11. **No 'get out of jail free' card.** The Applicant says that the *"applicant will still be able to take water for stock drinking water purposes as a permitted activity even if the low flow cut-off has been reached"*. Why? They have significant water storage - that is when that should be used, and this allows the limits to be completely disregarded.

12. **Impose Mandatory irrigation and disclosure restrictions.** The Commissioner should require the applicant implement water reduction strategies, and have those strategies monitored, including requiring water to be recycled.

PART II: SUMMARY OF KEY POINTS

A. **Time Limits Standards of the RMA under which the Commissioner should adjudge the Application have breached the 130 days in Section 91, and the Application should be dismissed on procedural grounds.** It is clear that the intention of lodging in 2019 was to attempt to grandfather certain rights, and not be subject to incoming National Water standards. However the process appears to have breached RMA processing guidelines, and The Application should be dismissed as outside the RMA; and The new application must be under present law only; and If the application is not processed by the expiration of the deemed consents, then no consents would be legally in place.

B. **The Legal Process of Notification has been flawed and the Commissioner must decline the Application because it ought to have been publicly notified, but was not.** The process and substance upon which ORC relied in not making the Application publicly notified was deeply flawed, omits material information, relies upon unreliable Applicant's assertions, and does not consider the full extent of the water system and those who rely upon it. The Commissioner must undertake an independent review of whether the effects are more than minor, and whether, therefore, the Application should be publicly notified.

C. **No data or information is provided to support critical assertions made by the Applicant upon which the ORC relies. The Applicant's counsel states that 'she/he who alleges must prove' yet....the** Applicant asserts no impact on downstream users, but does not prove it. The Applicant asserts that the reach is naturally drying but does not prove it. The Applicant asserts but the turf growing business has no additional impact, but does not prove it. The Applicant asserts that there is no impact on water quality, but does not prove it. All of the above undermine the basis upon which the ORC has made its recommendations, and its recommendations must be put aside.

D. **There are multiple material issues with the underlying measurement data and it cannot be relied on in granting consents.** This includes illegal water diversions that distort measurement data in Coutts favor, flawed measurement data (one day only), and flawed NIWA methodology (cleaning weeds away to increase flow rates does not replicate actual flows to downstream users, who get water after weeds, not without). Taken together, the flow data is completely unreliable and the Commissioner must be unable to rely on it to grant consents.

E. **The historical Information provided is insufficient and misleading.** There is only 4 years of water flow information. The golf course was started prior to this, so why is there not data pre-the golf course? In other words, the data includes the current land use. The starting point should not be the water flow with the Applicants current water use, but the water flow and condition *but for* the Applicants water takes and use. In addition, it is well documented that land use change requires more water than a settled land use. Relying on peak usage, during a time of peak land use change, has not basis in the facts of the application - and this is not mentioned in the Application, despite it being obvious. Observationally, 2018 was 'peak development' - and that is the baseline year used for the water request.

F. **The Water Quantity numbers are not coherent - the Applicant sought maximum amount, not the right amount - and the numbers sought simply do not add up, and cannot be used as the basis for decision.** The irrigation numbers used as the basis for the entire 1.2m cubic meters of water per year, are based on 3x the amount of water needed for intensive dairy irrigation. The basis for the application is thus flawed in the extreme, and based on numbers that have no credibility in reality. The ORC relies on the total volume numbers, without testing them.

G. **The ORC is not following its own policies - as the numbers provided by the Applicant (above) for irrigation needs imply intensive grazing.** An expert dairy farmer said to me that "you could do hydroponics with that much water per hectare". If this much water is truly needed (doubted, see point E), then the stocking rates and consumption is abusive on the land and should be regulated by the ORC as intensive grazing, which it currently is not. Given evidence by the Applicant (Verbal) says that 50% of water is open to stock, this is a significant environmental issue.

H. **The Applicant's submission is Inconsistent with National Policy Statement - there is no evidence that Water Quality is not degraded, and it is not taken into consideration by the ORC, and it must be.** The fact that an activity is permitted has no bearing on whether or not the activity should be permitted in a particular location, with a particular intensity, and without regard to the negative externalities it is pushing onto private individuals and the public.

I. **Golf Courses have specific detrimental effects on water quality, as well as water quantity, and required a higher level of conditions imposed on usage, in addition to general National Water Standards.** Lennox says *"I do not know of any reason to assume that fertiliser and herbicide/pesticide on the applicant's land is any more hazardous to ground water than the use of the same substances in relation to pasture or crop management."* There are two answers: he Volume of application is greater; and golf courses are specifically constructed so that there is no water pooling and rapid drainage through to the aquifer. *Golf*

courses impact is Water quality as well as water quantity" (Watercare Report on Nitrogen, Omaha Beach, 2015). ENVIRONMENTAL IMPACTS BY GOLF COURSES AND STRATEGIES TO MINIMIZE THEM: STATE OF THE ART Guzmán and Manuela state *"environmental impacts have been identified during the construction and operational processes of the fields. Results show concentrations of pesticides, heavy metals, nutrients in water and soil which often exceed current health and environmental regulations. Additionally, the high consumption of water generates changes in surrounding ecosystems and it may also cause the inclusion of foreign species. Consequently, those issues have been a concern of government agencies and organizations in different countries.*

J. **The right level of water that a golf course should be granted is substantially less than asked, and inadequate information has been provided with respect to this specific activity.** In the Environmental Court Te Arai Coastal Lands Limited v Auckland Council [2014] NZEnvC 98 (29 April 2014) This golf course - of similar size - has been granted less than 7% of the Coutts ask. This shows how out of step the Coutts application is with well managed needs for water. It is noted that the Court in Tara Iti was more than willing to provide limits on water at levels lower than were determined by the applicant to be needed. They said "*This is insufficient to meet the daily demand in the months of October, November, January and February, which have daily demands of 1036, 826, 1190 and 1130 m3 /day respectively. These deficits will be met by pumping the groundwater to a storage reservoir from which water will be pumped through a reticulation system as required to meet the demand."*

K. **No countervailing positive economic impact.** This is a private golf course, for private benefit, so on the cost benefit side of the equation, there is no counter-weight economic argument. Any land use - including planting and preserving native forests for carbon credits, would employ a similar number of people, or more, than is currently employed. In most environmental court decisions they look at a balancing of interests. In this case there is no balancing economic interest, meaning the burden on the environmental standards should be stricter under the RMA than equivalent public golf courses.

L. **The consistent omission of information, and evidence of illegal water diversions suggest a cowboy at work. The Applicants information should not be relied upon in decision making' - much higher standards should be imposed as conditions than is 'normal'.** The first application did not mention the golf course. Turf Growing was denied.. Initially the Applicant said in an email to ORC that there was no take needed domestic use. That then changes later - when seeking more reasons to justify more water take. There is hard evidence of illegal diversions of unnamed waterways, and earthworks on other properties to install diversionary infrastructure and irrigation systems The issues here are obvious: The Applicant had, or should have had, information, and did not disclose it. Together, this is cowboy work, and the 'normal' reliance (in making a decision) and reliance upon 'normal' monitoring standards. It also means recommendations such as For example, *The "applicant will still be able to take water for stock drinking water purposes as a permitted activity even if the low flow cut-off has been reached"* should be rejected, as this allows the limits to be completely disregarded.

M. The ORC's S42 proposed conditions would be ineffective and should be rejected. In an email Lennox says [the] *"PDP report identifies what we already know - which is that this is a complex catchment and further investigation is required before we can confidently predict the effects of the abstraction activities. A study of the catchment is required."* Lennox goes on to say that there are two options (given the above) - Leave the application on hold for 3 years; or grant a short term (6 years) consent. Despite being aware of this, ORC are recommending 15 years. For additional reasons detailed below, this makes no sense.

PART III: DETAILED ANALYSIS

A. Time Limits Standards of the RMA under which the Commissioner should adjudge the Application have breached the 130 days in Section 91, and the Application should be dismissed on procedural grounds

1. Under 91A(3) Applicant may have processing of an application suspended, however, However, a request must not be made if—c) a total of 130 or more working days have been excluded from time limits under section 88B in relation to the application (which, under section 88E(8), includes time during which the application has been suspended)
2. Dates upon which the Application have been suspended include, at least, which have been determined from e-mails to the ORC and affirmative responses granted that the application be suspended from processing. The below are all taken from emails from Lennox to the ORC.
    a. Thursday 16 May, 2019 for 26 days;
    b. Thurs 1 August 2019 for 120 days;
    c. Friday 6 December, 2020 for 34 days;
    d. Wednesday 8 January, 2020 for 29 days
    e. February 7, 2020 for "indefinitely" (unable to ascertain from correspondence it appears to be at least June/July, but data, which would be 120+ days)
    f. Wed 2 September for an unknown number of days, estimated 90
    g. January 2021, for an unknown number of days, estimated to be to late March, estimated 60 days
3. This appears to be a total of greater than 400 days that the processing of the Application has been suspended, at the request of the Applicant.
4. Section 88B and related sections may not be relied upon as they relate to suspensions that are due to requests made first by the authority.
5. The Application has been suspended on numerous occasions. It is a truism that filing may not be made to avoid the impact of a law that is coming in. It is now over 2 years since the original application, and it is clear that the lodgement was to avoid Plan change 7 being applied - which would imply starting anew and looking at a new baseline.
6. Accordingly:
    a. The Application should be dismissed as outside the RMA as much greater than 130 days has been asked for, and granted; and
    b. The new application must be under present law only; and
    c. If the application is not processed by the expiration of the deemed consents, then no consents would be legally in place.

B. The Notification Process has been flawed and the Commissioner must decline the Application because it ought to have been Publicly Notified, but was not

1. The ORC is holding an internally inconsistent position. One the one hand it has argued, strenuously, that the matters should not be Notified publicly. On the other hand it has put forward a number of conditions that indicate that matter is, indeed, not minor, nor are the effects minor.
2. Evidence is provided (see attachment) that the information provided to the ORC upon which it made its determination was incomplete, and, whether by omission or commission, this is how the Applicants have worked throughout. An application that does not mention a golf course, but focused on "small scale: livestock, all the while constructing, amongst other irrigation, the attached infrastructure, is duplicit. [See photo attached of additional infrastructure under development]. Such infrastructure cannot be justified by 2,000 sheep.
3. In addition, there is evidence of upstream water diversion that must, ipso facto, add to Coutts water, and thus distort the water readings taken and used as a baseline. [See photo of pipe diverting water from Royalburn to unknown end point as it is taken underground]
4. The process has kept a number of informed Submitters out, when it is clear that there is substantial additional relevant information not in held by the limited set of Submitters
5. Reviewing OIA communications, the communications show a clear pattern of conduct between ORC and the applicant to tailor the application and or the information to restrict the number of parties that need to be notified in respect to what is an application for a significant water take affecting a large area and a wide group of people. The ORC has completely relied upon the e-mails and assertions made by the Applicant as to the impact on many potential Submitters, working cooperatively to reduce the number of Submitters from over 12 to 4, before LOFTS become involved.
6. For example an email from Hilary on Friday, 29 May 2020 to Alexandra King said "*Just a suggestion - it might be a good idea not to make statements on what the effect on the mauri of the water might be ..... It might be safer to be a bit more ambiguous in this section?*" To which Alexandra replied "*Hi Hilary, I will tidy the report up and send it back to you. Thanks for the tip regarding effect on the mauri.*"
7. ORC has shown consistent bias toward the Applicant and has allocated resources to keeping submitters out, rather than fairly evaluating impacts.
    - Visiting the LOFTS site twice, and commissioning a report, for example to determine that LOFTS members could not submit, but only visiting Coutts, et al once shows the allocation of resources devoted to ensuring a course of least resistance outcome was achieved
    - The bias then creates a conflict in the advice to the Commission. For example, the 24 March, 2020 email where "Alex" gives Lennox advice as to what data to provide (i.e 4 years instead of 5), effectively blocks Alex from challenging that (limited and out of code) data set as insufficient.
    - In an email of 2 June, 2020 Alex says to Lennox *"Thanks for the tip regarding the effect on mauri", in response to Lennox saying to Alex that "it might be a good idea not to make statements on what the effect on the mauri of the water might be..... It might be safer to be a bit more ambiguous in this respect."*

8. The ORC only visited the site once, yet visited the LOFTS site twice, and commissioned a number of reports which resulted in LOFTS being declared illegal - and Lennox's urging - and thus unable to submit. It is worth noting that the evidentiary basis on which LOFTs was declared illegal (one reading not enough to ensure compliance) is the same evidentiary basis (one NIWA reading) upon which ORC relies in making its Section 42 recommendations.
9. David Stretch. Not given approval because the creeks at issue in the consent were not deemed to directly impact his property. No hydrology was undertaken.However, it appears that there is significant unauthorized diversion of upstream water which goes into New Chums and/or Royalburn and/or direct to water reservoirs built by Coutts, that would affect his property, and the work to ascertain this was not done.
10. Mark Ching. A l etter from Mark Ching's lawyer (Farry) to the ORC is attached. Some of the most relevant parts are below. In addition, the hydrology report referred to below is also attached as it is relevant to the matter at hand. Please note bold and underlines are mine, not those of Farry.
    - *Leaving aside the question of our clients status as an affected party for the moment we note the following:*

    (a) It appears the applicant has not been transparent and provided the ORC with all information relative to it's current application to obtain consent to take significant volumes of water on the Crown Terrace.

    (b) Particularly the applicants water scheme is diverting and taking water from sources that are not the subject of the application but nevertheless feeding into that water scheme and has not disclosed that to the council and/or referenced that in it's application.

    (c) It is apparent that ORC's own investigation is woefully inadequate. A competent physical inspection of the area would have revealed to the ORC that there are other water courses including Fairhall Creek which are being diverted by the applicant and which are not disclosed nor referred to in the application nor are they referenced by ORC in it's assessment of impacts or affected parties

    (d) It is also apparent that the meter points measuring flow of water that are being used by the applicant in it's data are not measuring the true amount of water being captured from various diversions/captures that the applicant has created or installed thereby not giving an accurate reflection of the full amount of water that is being utilised by the applicant.

    (e) This must also call into question the ORC's own assessment and recommendations in respect to the application as it does not accurately reflect the extent of the water being taken by the applicant and fed into the water scheme. On the other hand if the ORC claims it is aware of the situation as the regulatory body why has the ORC not taken steps to address significant unauthorised water takes by the applicant

    (f) The additional water sources that are being diverted would and do affect other parties many of which have not been notified and therefore not given the opportunity to submit in respect to the current application. Those that have been notified have not been given accurate information.

(g) The information in the Terra Aqua report clearly shows that the impact of these unauthorised diversions are significant and have a material impact on those water sources.

(h) How can the council justify endorsing the applicant's consent request without having fully addressed the actual water take that will occur across the Crown Terrace and the impact on downstream users. The extent of the proposed water take and the level of unauthorised and unconsented water take that is not referenced in the application not giving a full perspective calls in to question whether the application should have been publicly notified let alone parties such as our client

*It is clear that there is no consent for the amount of water that BTGST is taking from the Fairhall Creek and this is not only a diversion but there are significant earth works to divert the water across the applicant's land into races that **are part of its current application.** This cannot be seen as anything other than a major diversion and with infrastructure to facilitate it without any permit or authorisation from ORC and without it being disclosed as part of the application currently in front of ORC.*

11. Taken together, with the duplicit nature of the application from the gitgo, with the substantial level of omitted material information from the Application, and thus the lack of trust and confidence that can be placed in the Applicants assertions, upon which ORC relied in not making the Application publicly notified, the Commissioner must undertake an independent review of whether the effects are more than minor, and whether, therefore, the Application should be publicly notified.

C. No data or information is provided to support critical assertions made by the Applicant upon which the ORC relies. The Applicant's counsel states that 'she/he who alleges must prove' yet....

1. The Applicant asserts no impact on downstream users, but does not prove it. The Applicant asserts its take has essentially no effect on downstream users. Yet, no data has been provided to show that this is the case. Experience over a multi-year period by a number of users would dispute this proposition.
2. The Applicant asserts that the reach is naturally drying but does not prove it. Where is the evidence for this? Accepting this argument means that any ecology that *but for* the Applicant's activities would be healthy and thriving, is discounted. This is a simple statement, but implies an enormous amount with respect to its implications.
3. The Applicant asserts that the turf growing business has no additional impact, but does not prove it. As above, "*As Kit points out, there's no difference between growing turf or any other crop that is then onsold...and so we just brushed over it.*" There is a general view that growing a lawn, versus growing a lawn for sale and delivery would require more water and chemicals. It is also unclear what experience "Kit" has with commercial horticulture beyond turf to make such assertions? Yet, despite the Coutts lawyers statement that she/he who alleges must prove", apparently that does not apply to their own, non-evidence based assertions.
4. The Applicant asserts that there is no impact on water quality. Golf courses are well known for their impact on water quality.

5. All of the above undermine the basis upon which the ORC has made its recommendations, and its recommendations must thus be put aside.

D. <u>There are multiple material issues with the underlying measurement data and it cannot be relied on in granting consents</u>

1. Illegal Diversions not disclosed will impact flow data. There is substantial evidence that water has been diverted upstream of a number of the takes and that those illegal diversions have not been disclosed. It is unclear thus what is being measured and if those diversions are undone (as is likely), then it is almost certain that the flow rates in New Chums and Royal Burn will be materially less than when measured by NIWA and in other flow data. See the attached Hydrology report.
2. Illegal diversions make downstream data unreliable. The water flow date relied upon for measurements by NIWA, ORC and Coutts thus cannot be relied upon. For example, I inspected a 25 ml pipe diverting water from a stream on Mark Ching's property that goes underground (see attached photos). It cannot be ascertained where this water goes, but it almost certainly adds to the total water measured downstream, making the flow levels a lot higher than will be in the future when all water diversion issues have been rectified. It appears as if there may be up to 4 such water diversion issues from creeks with no names, and that are not referred to in any Application or ORC review, but all of which impact the water available to all residents, and the overall ecology. It also appears that some physical diversions are put in, and out of place. Putting them in place while measurement is being conducted would increase measured flow rates.
3. Impacts on overall ecology are substantial and not addressed. These should all be identified in an overall Crown Terrace hydrology report, with open access, and provision of full details of all water infrastructure, both above and below ground.
4. Water quantity has declined materially for downstream LOFTs users since the golf course began.
5. No information has been provided to dispute the evidence of a number of LOFTS users that water quantity has declined since the golf course was developed.
6. As there is no other causal source of the decline than the change in land use and implementation of large scale water catchment and irrigation infrastructure, <u>the burden should be on the Applicant to prove its assertion that there is no impact of the developments and water takes on legal water takes for residential purposes downstream</u>
7. Insufficient flow data. In an email of July 21, 202 to Joanna Gilroy, arguing that LOFTs was illegal, Lennox says *"The daily use recorded by Bryon is just a snapshot in time. The daily volume might've been permitted over those two days, but this does not demonstrate that they never go over the daily limit."*. The ORC accepted this argument and declared LOFTs illegal on this basis.
8. Conversely, currently, the ORC is accepting of one day (Feb 22 - after rainfall) as the basis of flow measurements. The Applicant uses one argument to look to deny water users rights to be Notified, but ignores their own, sound, logic, in putting forward recommendations for total take.
9. Please note again, with respect to process, the ORC are accepting of two different and diametrically opposed arguments - both times in favor of Coutts.

10. Flow data is not representative of actual water flows. NIWA Re: Royal Burn – *Gauging results for work completed 22 February 2021 NIWA Alexandra were engaged to complete flow gauging measurements within the Royal Burn catchment to enable determination of flow losses or gains in this reach, as requested by the client. This measurement work was completed on 22 February 2021. A total of 9 locations chosen by the client were visited by the NIWA Alexandra Field Team. Discharge measurements using a Sontek 'FlowTracker' ADV instrument were completed at each location. The small flow volume in hydraulically difficult, weedy channel locations were raked and modified to obtain the best flow condition possible, prior to each measurement*
11. It is clear that this process of measuring flow is flawed. Downstream users do not have people raking and modifying the flow - weeds happen (and happen more with nutrient leaching such as occurs around golf courses - see Lake Hayes story). Accordingly, this data, by definition, does not represent actual flows

E. The historical Information provided is insufficient and misleading

1. The Flow data is from one day only after significant February rains, in a wet year.
2. Lennox says *"This observation is supported by gauging work that we undertook in 2018 where we observed that the creek had dried up completely along this stretch".* On what basis is it justifiable for the ORC to base recommendations using a period when they ran the creek dry as the basis for their ask?
3. There is only 4 years of water flow information. The golf course was started prior to this, so why is there not data pre-the golf course? In other words, the data includes the current land use.
4. The starting point should not be the water flow with the Applicants current water use, but the water flow and condition *but for* the Applicants water takes and use.
5. Information relied upon by ORC in formulating its assessment is both incomplete and inaccurate. The "maximum' use that Lennox outlines was taken during a year when, observationally, there was very substantial land use change. It is well documented that land use change requires more water than a settled land use. Relying on peak usage, during a time of peak land use change, has not basis in the facts of the application - and this is not mentioned in the Application, despite it being obvious.
6. In the ORC reports, the Water Use Review memorandum is in relation to the surface water usage for application RM19.151 to replace various resource consents and deemed permits to take surface water from the Cardrona River catchment for irrigation, stock, and domestic drinking purposes. It says *"In summary: There is some evidence of a step change taking since February or March 2018 has been more consistent than in previous years."* Again, this is consistent with land use

F. The Water Quantity numbers are not coherent - the Applicant sought the maximum amount, not the right amount - and the numbers sought simply do not add up, and cannot be used as the basis for decision

1. In an email titled "Flow Data from ORC" from Lennox to Coutts, etc she says that *"We also cheekily asked for 5L/S continuous baseflow in the New Chums Race and upper Royal Burn pipeline (I thought it was a long shot asking for this but worth a try)."*
2. The numbers generally in the Application, and Lennox submissions, are reflective of this approach
3. In the final Application it states that *"The rates of take sought remain unchanged from that detailed in our previous letter. We would, however, propose to reduce the annual volume sought from 1,822,608 m3/yr to 1,214,683 m3/yr."* This is 3,327,898 L per day (i.e [[1,214,683 x 1000] / 365]
4. The Application also states that "*If this land had remained in pasture then the average annual irrigation demand would be 274,960 m3/yr.*" This is 735,315 L per day.
5. Coutts has 2,000 Sheep and 50 Beef (see email from Hilary Lennox) and copied below:
6. Lennox says the golf course is 36 ha. She then says "If this land had remained in pasture then the average annual irrigation demand would be 274,960 m3/yr." This would be 31,388 L / per day for this area.
7. By way of comparison, I am a shareholder in a 8,000 hct irrigated dairy farm in Canterbury, and the maximum we use for intensively irrigated dairying land is 4,500 m cubed per hectare per year. This translates to 12,328 L per day per hct. '
8. So, the irrigation numbers used as the basis for the entire 1.2m cubic meters of water per year, are based on 3x the amount needed for intensive dairy irrigation.
9. The basis for the application is thus flawed in the extreme, and based on numbers that have no credibility in reality.
10. As the numbers used as the basis for the bottom-up analysis are simply wrong, the calculations need to be redone.
11. In addition, there are 157 hectares, more or less. This translates to circa 13 head of livestock per hectare - which is extremely low stocking rates.
12. On these numbers, 25,000L per day is more than adequate for the livestock purposes.
13. Using Lennox numbers, if golf is less than livestock, then.....

G. The ORC is not following its own policies - as the numbers provided by the Applicant imply intensive grazing

1. If the irrigation system data provided is indeed correct, and that water is needed from the streams and rivers for the livestock, in an area of over 100hct, then the ORC should, under its own framework, require a consent for intensive grazing. By its own definition, 'manage it well" cannot be using 3x the water required for intensive dairy farming, on a fragile ecosystem like the Crown Terrace [See ORC Factsheet on intensive grazing attached]
2. *Intensive grazing: Means grazing of stock on forage crops (including brassica, beet and root vegetable crops), excluding pasture and crops. Critical source area: Means a landscape feature such as a gully, swale or depression that accumulates runoff from adjacent slopes, and delivers it to surface water bodies such as rivers and lakes, artificial waterways and field tiles. A waterbody (or waterway): A water body is fresh water or geothermal water in a river, lake, stream, pond, wetland, or aquifer that is not located within the coastal marine area*
3. From the ORC Factsheet on intensive grazing. If the water data is correct, then the grazing is both intensive, and badly managed, purely on the data.

4. Combining the golf course with what is, de facto intensive grazing (over 100hct), then water quality is absolutely a concern. Accordingly, a study should be conducted over a full cycle that assesses this impact.
5. In the recent Climate Change Commission report to the government, it is outlined that it is expected that livestock numbers will decline nationally by 10% to 15% where land use is marginal. If livestock do take this amount of water, with the attendant chemicals, and the golf course the same, then this is exactly the type of activity that is not correctly priced, and land use that should revert ruminative agriculture that increases our national carbon inventory to a lower carbon use. This amount of water to produce methane is a very inefficient climate outcome.
6. With intensive grazing on a fragile ecology, either land use change, or severe restrictions on water are required.

H. The Applicant's submission is inconsistent with National Policy Statement - there is no evidence that Water Quality is not degraded, and it is not taken into consideration by the ORC, and it must be.

1. One key part of the National Policy Statement is that "[To] Avoid any further loss or degradation of wetlands and streams, the Government is taking action to restore and protect the health of New Zealand's waterways."
2. Despite assertions by the Applicant's lawyers to the contrary, Lennox says "*If we keep pushing ahead with RM19.151 then it will need to be considered under the current plan plus the proposed." [e-m 23 Jan, 2020]*
3. ORC is thus required to give full effect to the National Policy Statement for Freshwater Management by setting objectives, policies and rules in our regional plans. The National Environmental Standards are effectively nationwide rules which apply across the country regardless of regional plans.
4. The ORC says in a release in 2020 that "*We welcome the Action for Healthy Waterways regulations, which are designed to restore and protect the health of New Zealand waterways.* ...and "*The intent of the new framework is to stop degradation of our waterways now and achieve improvement where water quality is degraded.*" and "*Unhealthy ecosystems threaten our native biodiversity and pose a risk to human health. Exploiting our freshwater resources has cumulative effects that can severely degrade freshwater. Community wellbeing is diminished.*"
5. *The objective of this National Policy Statement is to ensure that natural and physical resources are managed in a way that prioritises: (a) first, the health and well-being of water bodies and freshwater ecosystems (b) second, the health needs of people (such as drinking water) (c) third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.*
6. The Application does not provide any evidence that the (a) *health and well-being of water bodies and freshwater ecosystems and (b) the health needs of people (such as drinking water)* have been taken into account.
7. There is significant evidence of the impact of golf courses on groundwater, surface water, and downstream ecology.

8. The Applicant is suggesting the Commissioner should disregard the probable effects arising from the intensive use of contaminants on the golf course in circumstances where there is a risk of infiltration to groundwater.
9. The use of the water is primarily for the golf course, which uses pesticides, herbicides, sprays and other toxic chemicals as a matter of course. It is entirely within scope to consider both the quantity, and the quality impacts of the water use.
10. Furthermore, the ORC recommendation does not include monitoring of water quality of groundwater and drinking water downstream. It simply looks at disclosure of the chemicals used. This is not 2+2 i.e there is no direct transposition of certain quantities of chemicals and safe limits - it is a fact of the environment as it is, in situ. This is, in effect, the eggshell skull doctrine. You take the environment as you find it - you cannot abstract the analysis to a theoretical "permitted activity' and leave it to that. The impact needs to be measured.
11. A fair assumption is that if over a million cubic metres of water was left in the catchments each year, there would be more water available for in-stream ecology, downstream users and groundwater replenishment of wetland areas.
12. To deny this, as counsel for the Applicant appears to do, would be to rip up the entire basis for regulating the dairy industry in New Zealand.

I. Golf Courses have specific detrimental effects on water quality, as well as water quantity, and required a higher level of conditions imposed on usage, in addition to general National Water Standards.

1. Lennox says *"I do not know of any reason to assume that fertiliser and herbicide/pesticide on the applicant's land is any more hazardous to ground water than the use of the same substances in relation to pasture or crop management."* There are two answers:
    a. The Volume of application is greater. It has been established that the application rates of pesticides on golf greens and tees are usually higher than the rates in farmland applications S. Z. Cohen, S. Nickerson, R. Maxey, and J. A. Senita, "A groundwater monitoring study for pesticides and nitrates associated with golf courses on Cape Cod," Ground Water Monitoring & Remediation, vol. 10, pp. 160-160, 1990. 29. E. Kohler, V. Poole, Z. Reicher, and R. Turco. This is dealt with J, below; and
    b. Golf courses are constructed so that there is no water pooling and rapid drainage through to the aquifer. Greens, for example, are rebuilt for quick and deep drainage. For example: "There was a dramatic effect on the stability of the soil structure when the natural soil cover was removed. The high potential for runoff and contaminant transport to surface waters, upon the occurrence of rain events, is significantly higher under such conditions. *Steve Starrett, Ph.D., is an associate professor of water resources engineering in the department of civil engineering at Kansas State University*
2. *"Golf courses impact is Water quality as well as water quantity"* (Watercare Report on Nitrogen, Omaha Beach, 2015)
3. There is a lot of work on the impact of Golf Courses. I outlined this in a conversation with Lennox in 2020. For her to have not done research on the matter indicates another example of conscious omission.
4. For example:

a. "Models derived for sandy soils in Western Australia suggest that between 11-68 kg/ha/year of the applied N could be leached from the Course, based on the N application rate. We suggest the most likely N leaching rate would be approximately 50 kg N/ha/yr on average." (Omaha Beach - Attached)
b. There are several interacting factors that will determine the amount of nitrogen (and other chemicals) that could potentially leach through the turf root zone and into the ground water. Key factors include: - The amount (and type) of nitrogen applied; - When nitrogen is applied in relation to plant growth (and nutrient uptake); - The climate and in particular rainfall events in relation to fertiliser application, the overall soil water balance and temperature; - Water retention and conductivity properties of the soil profile; 8 - The biological activity of the soil profile and the relative rates of immobilization and mineralisation; - Other, such as whether or not clippings are removed during mowing and irrigation system efficiency
c. Golf turf managers typically apply between 100 and 300 kg N /ha/yr to fairways. The amount of N that remains un-used by the plant and not mineralised would be the amount that is ultimately leached through the profile, which would equate to up to 160 kg of N per ha per year.

5. Rieke and Ellis (1974) reported that as much as 60% of applied N could be leached in a well-watered sandy profile. Barton and Colmer (2004) found that up to 30% of N applied to a sandy profile at a rate of 160 kg N/ha/yr was leached.
6. A detailed Korean study reached the conclusion "It is considered that water quality management is necessary for the golf course
7. In "Environmental Impacts by Golf Courses and Strategies to Minimize them: State of the Art (2014) by Carlos Andrés Peña Guzmán and Duvan Javier Mesa Fernández Manuela Beltrán University, Colombia, they state that
    a. "*Golf has grown worldwide in terms of number of golfers and infrastructure; however, environmental impacts have been identified during the construction and operational processes of the fields. The assessment of these impacts has generated a global concern as results show concentrations of pesticides, heavy metals, nutrients in water and soil which often exceed current health and environmental regulations. Additionally, the high consumption of water generates changes in surrounding ecosystems and it may also cause the inclusion of foreign species. Consequently, those issues have been a concern of government agencies and organizations in different countries which have led most countries to initiate the development of methodologies and standard methods to carry out the environmental sustainability of the sport*
    b. *The relationship between golf and nature has historically taken greater force as the fields where the sport is practiced integrate with landscape, wildlife and vegetation of a specific area. This is due to the construction of the fields in areas generally close to rivers, lakes, oceans, land adjacent to virgin forests and the slopes of high mountains [10-12]. However, during the construction and operation of these golf courses there are practices that can be extremely harmful to the environment such as: water consumption overage, soil and water pollution by the use of pesticides and fertilizers, increased urbanization close to fields [2, 13, 14], the clearing of natural vegetation, deforestation, destruction of natural landscape.*

c. *As to regulations by U.S. agencies there has been a monitoring on the use of pesticides on golf courses located in coastal areas [19]; the Environment Agency and the Ministry of Health and Welfare of Japan established the maximum levels of contami*

d. *Golf courses have been proven to be highly impactful to the environment if they do not have measures to control and mitigate the effects on the environment during construction and operation stages; especially in regards to water resources (consumption and pollution) and soil (pollution and modification). One of the most striking factors is the application of pesticides and fertilizers, which have been detected in a vast majority of tests conducted on water, soil and biological species; finding in many occasions traces of pesticides that environmental authorities have declared not permitted to be used and sometimes at concentrations above regulations in each country. Moreover, it is clear that the concern of various entities and associations have created and proposed, during the last 20 years, a variety of activities and rules that could reduce environmental impacts leading golf to rationalize the use of natural resources; however, in many countries there is still no evaluation and control of such activities. In the case of emerging countries, where the* growth of this act

8. According to a United Nations Environment Programme report on the impact of golf tourism: *"Golf course maintenance can also deplete fresh water resources... Golf courses require an enormous amount of water every day and, as with other causes of excessive extraction of water, this can result in water scarcity.....Golf resorts are more and more often situated in or near protected areas or areas where resources are limited, exacerbating their impacts."*

J. The right level of water that a golf course should be granted is substantially less than asked, and inadequate information has been provided with respect to this specific activity

1. In the Environmental Court Te Arai Coastal Lands Limited v Auckland Council [2014] NZEnvC 98 (29 April 2014) *"Many of the issues before this Court have been predicated on an argument of the applicant accepted by the Council that, because playing golf is a permitted outdoor recreation, then the formation of a golf course is also a permitted activity. This permeates every aspect of the matters before this Court, because no application for the formation of a golf course has in fact been made."* Water was the substantive issue in the case.
2. In the Tara Iti Environmental Court case the Court said that *"The irrigation demand was derived by considering the rainfall and evapotranspiration data for a dry year (2000). ... The experts agreed the values assumed were appropriate and not excessive. This analysis indicated a maximum demand of 1,190m3 /day for 20 days in January which equates to an average daily demand over the month of 793m3 /day. The total demand for the year was shown to be 94,500m3 .*
3. No similar information has been provided. This golf course - of similar size - has been granted at what appears to be less than 7% of the Coutts ask. This shows how out of step the Coutts application is with well managed needs for water in fragile ecologies.
4. It is noted that the Court was more than willing to provide limits on water at levels lower than were determined by the applicant to be needed. They said *"This is insufficient to meet the daily demand in the months of October, November, January and February, which have daily*

demands of 1036, 826, 1190 and 1130 m3 /day respectively. These deficits will be met by pumping the groundwater to a storage reservoir from which water will be pumped through a reticulation system as required to meet the demand."

5. The amount granted in Tara Iti was thus less than 'needed' on the basis that investment is made in storage. That appears not to be an issue the Applicant would struggle with [see attached photo], and the storage can be filled over May to August, and then used.
6. In other words, the Environment Court said that, if it matters enough, we are establishing an environmental baseline, and if you want a golf course, you figure it out.
7. The Tara Iti outcome is very similar to the US approach (where Golf Courses generate the same opprobrium that dairy does amongst New Zealand environmentalists). In one of the water source references used in my submission, it outlines that 12% of golf courses in the USA use recycled water [See "How Much Water Does Golf Use and Where Does It Come From?]. In addition, there are multiple works on recycled water for golf in arid areas, such as Morocco, in the literature. In other words, there is no necessity that all the water for a golf course must be 'first use.' It is very feasible to capture and re-use water for golf irrigation purposes.
8. In the US it is now a constant that golf courses have mandatory irrigation restrictions at a higher level than other irrigation - this number has increased.
9. Farming is permitted. A golf course may be permitted. The fact that an activity is permitted has no bearing on whether or not the activity should be permitted in a particular location, with a particular intensity, and without regard to the negative externalities it is pushing onto private individuals and the public. This is the case with the water the Applicants want to take for private use, to the detriment of others, the ecology, and
10. In addition, in the same summary, the top 3 water reduction strategies used in the US are listed below - none of which are contemplated by ORC or the Applicant as conditions
    - Wetting agents (92%);
    - Hand watering (78%); and
    - Keeping turfgrass drier (69%).

K. No countervailing positive economic impact under the NPS part (c)

1. Part (c) of the National Policy Statement is the economic impact part.
2. In most cases that is an economic balance in terms of the cost-benefit. Public golf courses, for example, encourage tourism and other flow on economic activity with an amplified impact on the service sector (restaurants, accommodation, etc).
3. This is a private golf course, for private benefit, so on the cost benefit side of the equation, there is no counter weight argument.
4. Any land use - including planting and preserving native forests for carbon credits, would employ a similar number of people, or more, than is currently employed.
5. In most environmental court decisions they look at a balancing of interests. In this case there is no balancing economic interest, meaning the burden on the environmental standards should be stricter.

L. The ORC Section 42 recommends imposing normal monitoring standards. The consistent omission of information, and evidence of illegal water diversions suggest a cowboy at work.

and the Applicants information should not be relied upon in decision making' much higher standards are required for conditions.

1. The first application did not mention the golf course. The title says it all Resource Consent Application RM19.151: BSTGT Limited and Trustees of the A P McQuilkin Family Trust - To take and use surface water as primary allocation from New Chums Creek and the Royal Burn North Branch for the irrigation, domestic and stock drinking water purposes
2. In early emails by Lennox in 2019 and 2020 it is stated that by the Applicant there are no fish in the waterways. On Monday, 7 September, 2020 Lennox says that "We didn't raise the fact we found trout because they were released into that section of the creek a number of years ago and now they are just a stunted, isolated population that cannot migrate up and down to the Arrow i.e no sports fish values." The issues here are obvious:
    - Had information, and did not disclose it
    - In formal written submissions stated that there were no fish; and
    - Coutts Legal counsel makes the argument that" she/he who alleges must prove".....well an assertion is the same as an allegation, and in this case there are some assertions as to the fish population...where is the evidence?
3. Turf Growing. Firstly, this was not included in the Application. It was not until LOFTS members put it in their numerous submissions that Lennox asked the question, rather than assuming it did not exist. She then, in an email attached [Friday, July] stated that "As Kit points out, there's no difference between growing turf or any other crop that is then onsold...and so we just brushed over it." There is a general view that growing a lawn for sale, versus simply growing a lawn to walk on, would require more water and chemicals. Visually it not like any home lawn or grazing pasture I have seen. It is also unclear what experience "Kit" has with commercial horticulture beyond turf to make such assertions. Yet, despite the Coutts lawyers statement that she/he who alleges must prove", apparently that does not apply to their own, non-evidence based assertions. There is a turf growing operation of 4 hectares - in essentially a desert. It is an activity that makes no sense to place here.
4. As noted above, there is hard evidence of illegal diversions of unnamed waterways, and earthworks on other properties to install diversionary infrastructure and irrigation systems.
5. Initially the Applicant said in an email to ORC that there was no domestic use. That then changes later - when seeking more reasons to justify more water take.
    On Wed, May 8, 2019 at 2:37 PM Hilary Lennox wrote:
    - Hi Alex
    - Here's the rest of the info:
    - - no domestic use at all
    - - 2000 sheep and 50 beef
    - - k-like, four travelling hoses and a network of pop-up sprinklers. No flood irrigation at all.
6. Together, this is cowboy stuff. Pusing for limited Notification. Providing limited information to an ORC limited in resource, and who only visited once.
7. For example, *The "applicant will still be able to take water for stock drinking water purposes as a permitted activity even if the low flow cut-off has been reached".* Why? They have significant water storage - that is when that should be used, and this allows the limits to be completely disregarded.

M. The ORC's S42 proposed conditions would be ineffective and should be rejected.

1. Time period. 15 years is too long. There are a number of reasons for this. These are:
    a. Substantial regulatory change that is known (Plan change 7, National Water)
    b. Substantial regulatory change with regard to land with ruminants that is highly probable, as flagged in the Climate Change Commission report recently tabled by James Shaw, where land use is expected to change, and marginal land is expected to revert to lower greenhouse gas use for the benefit of the national carbon inventory.
    c. There is an insufficiently long data set provided by the applicants - not even to 5 years - so basing long-term decisions on short term data is highly fraught
    d. The ecology has already shown noticeable, and substantial change. 15 years would 'bake in' further changes which would likely be irreversible.
    e. Plan Change 7, Climate Change regulations all mean.
    f. In an email of Wed, 9 September 2020 Lennox says *"PDP report identifies what we already know - which is that this is a complex catchment and further investigation is required before we can confidently predict the effects of the abstraction activities. A study of the catchment is required."*
    g. Lennox goes on to say that there are two options (given the above) - Leave the application on hold for 3 years; or grant a short term (6 years) consent.
    h. Despite being aware of this, ORC are recommending 15 years.
2. Condition 3: It is unclear what a 'sustainable' level is. If sustainable means that other users are able to achieve their legally granted 25,000L per day, it is quite clear that the suggested level is too high.
3. Condition 4. There must be a residual flow. Coutts et all must not be able to run the streams dry. It is unclear how they suggest they can do this and only have minor impacts on downstream users. This is incoherent.
4. Condition 5. 10m per second. As noted above, this needs to be fully worked through on the basis of a permitted use and take, based on real numbers, as this will almost certainly be below the threshold residual flow. Roughly - and the work should be done - looking at what a reasonable golf allocation (including recycling water), and reasonable stock water, would be around 1/12th to 1/10th of the asked take. This would translate, roughly, into a residual flow from September to APril of at least 35 L per sec, which would leave a net low flow of 20L sec for users. Noting, however, that more work is required on minimum flows, once environmental needs are determined factually.
5. Cost as a basis for decision making. It is not for the Commissioner, or ORC, to determine what is reasonable. They look at public cost-benefit analysis, not private. If an activity costs too much - then that is a private decision.
6. *The "applicant will still be able to take water for stock drinking water purposes as a permitted activity even if the low flow cut-off has been reached".* Why? They have significant water storage - that is when that should be used, and this allows the limits to be completely disregarded.

EXHIBITS

4

From: Hilary Lennox
To: Alexandra King
Cc: Maria Bartlett
Subject: Time Extension sought for Consent Application RM19.151
Date: Thursday, 1 August 2019 7:06:49 p.m.

Hi Alex
I had a really productive meeting with Kit and Tony (clients for RM19.151) last night and we've got some good ideas about how to reduce the rate of take on the Lower RBNB point of take significantly. We may also seek to reduce the consent term applied for significantly following my conversation with Maria Bartlett and given your indication of which direction ORC is heading in with these deemed permit replacements. I understand that there may have been a meeting this week where ORC's new approach was presented but obviously I wasn't there... is it possible to get some notes on the key points please?
We are feeling positive about working with Aukaha to find a solution that works for everyone. Knowing that these things take time, and given that Aukaha have key staff off sick, I wonder if we could please apply for a time extension under s37 to give us 4 months to seek written approvals. This would put the application 'on hold' until early December.
DOC have indicated that they have no major concerns with the proposal.
We're working with the private landowners but we're having trouble getting contact details for GLC Land Holding Ltd. Can you please confirm which block of land exactly they own?
Many Thanks
Hilary

From: Alexandra King <Alexandra.King@orc.govt.nz>
Date: Tuesday, 30 July 2019 at 10:50 AM
To: Hilary Lennox <hilarylennox@ahika.co.nz>
Subject: RE: Amendment to Consent Application RM19.151
Good morning Hilary,
Thanks for coming in for a meeting – it was extremely helpful.
I can confirm that if the take is for less than 100 L/s Contact Energy will not be an affected party, and I have spoken to Jo and we are happy for the approach to place the applicant on hold at the applicants request as long as there is a timeframe.
Thanks,
Alex

From: Hilary Lennox <hilarylennox@ahika.co.nz>
Sent: Monday, 29 July 2019 7:42 a.m.
To: Alexandra King <Alexandra.King@orc.govt.nz>
Subject: FW: Amendment to Consent Application RM19.151
Hi Alex
Thanks for the meeting in Dunedin last week, it was incredibly helpful to be able to sit down and talk rather than trying to do everything via email. As discussed, we're happy to reduce the rate of take at the Lower Royal Burn North Branch point of take to below 100L/s if that means that Contact Energy will not be taken as an affected party. As discussed, ORC are unlikely to grant 100 L/s anyway and so it would be senseless to find ourselves in a position where Contact Energy are a submitter on an application for a take less than 100 L/s.
I'll need some time to talk to the applicants and Aukaha about what a suitable new rate looks like. I had a meeting with Maria Bartlett from Aukaha on Thursday and she sent some very strong signals that Aukaha would also like the rate to be lower than 100 L/s. Before we discuss further, please can you confirm:

From: Hilary Lennox
To: Alexandra King
Cc: Kit Gordon; Tony McQuilkin; [redacted]
Subject: Extend time for Limited Notification - RM191.151
Date: Friday, 6 December 2019 10:55:44 a.m.
Attachments: image001.jpg
After - Lower RB PoT August 2019.JPG
Before - Lower Royal Burn PoT summer 201718.jpg

Mōrena Alex
The time extension to obtain WAs for Application RM191.151 ends today. Here is an update of what's been happening:

- New intake infrastructure has been installed at the lower point of take on the Royal Burn North Branch with a gated intake structure installed in place of the open race (see attached 'before' and 'after' photos). We can now amend the application so that the proposed rates of take are as follows:

	Applied for	Proposed amendment
Upper RBNB	15 L/s	15 L/s
Lower RBNB	100 L/s	50 L/s
New Chums	45 L/s	45 L/s

- This should mean that Contact Energy are no longer considered by ORC to be an affected party.
- The outstanding affected parties should, therefore, be DOC, Aukaka, Glencoe Station Ltd and John Baker/Bridget Steed.
- We have been consulting with Aukaka for several months now. I have had emails conversations, phone calls and several meetings in Dunedin with Maria Bartlett. Maria has indicated on numerous occasions that Aukaha did not have any significant concerns with this proposal and that she was close to getting WA. However, Maria advised me that she had difficulty getting all of the Rūnanga to agree on how to approach Deemed Permits in general, and she has since resigned.
- DOC are not satisfied that the information provided is adequate to prove that there are no fish in the creeks despite RSUs report. They asked that we either: a) do a more thorough survey to prove that there are no fish in the creeks; or b) assume that there are fish, and impose fish screens and residual flows to protect these fish. We have chosen to go with Option A and do a more thorough fish survey.
- Matt Hickey and Dean Olsen are lined up to come out on site on 17 December to undertake the fish survey, which will be designed following advice from DOC to ensure that it meets their expectations. We will then need a few days after the survey to discuss the results with DOC and see if we can reach a resolution whereby they're happy to provide WA.
- We will not be providing WA from Glencoe Station Ltd because we struggle to see how they are affected, as outlined in my previous emails.

Based on the above, I would respectfully request that we extend the time allowed to obtain WAs to 10 January. As discussed on the phone just now, this should allow time for our discussions with DOC and for your preparations so that it can be limited notified on 10 January. Please can you confirm that this extension has been granted.
Ngā mihi nui
Hilary

From: Hilary Lennox
To: Alexandra King
Subject: Time extension for RM19.151
Date: Wednesday, 8 January 2020 12:49:38 p.m.
Attachments: image001.jpg

Kia ora Alex

Nice to see you this morning. As discussed, we haven't been able to get out and do the fish survey yet due to adverse weather conditions and then the Xmas leave. I am currently trying to coordinate a suitable date with WRM and Ryder, and would like to ask for another time extension to allow us time to do this. I hope to have it completed by the end of the month but then we also need time to talk to DOC once we have the results. Can we please have a time extension that give us until 7 February? Let me know whether this is agreeable.

Ngā mihi

Hilary

signature_1677072510

From: Hilary Lennox
To: Alexandra King
Subject: Time extension for RM19.151
Date: Wednesday, 8 January 2020 12:49:38 p.m.
Attachments: image001.jpg

Kia ora Alex

Nice to see you this morning. As discussed, we haven't been able to get out and do the fish survey yet due to adverse weather conditions and then the Xmas leave. I am currently trying to coordinate a suitable date with WRM and Ryder, and would like to ask for another time extension to allow us time to do this. I hope to have it completed by the end of the month but then we also need time to talk to DOC once we have the results. Can we please have a time extension that give us until 7 February? Let me know whether this is agreeable.

Ngā mihi

Hilary

signature_1677072510

From: Hilary Lennox
To: Alexandra King
Subject: Re: Review of Sean"s flow data
Date: Friday, 4 September 2020 3:52:23 p.m.
Attachments: image001.jpg

Thanks Alex, let me know if there's anything I can do to help.

Have a great weekend,

Hilary

From: Alexandra King <Alexandra.King@orc.govt.nz>
Date: Friday, 4 September 2020 at 3:21 PM
To: Hilary Lennox <hilarylennox@ahika.co.nz>
Subject: Re: Review of Sean's flow data

Hi Hilary,

I would aim to have it to Jo for review by Tuesday and with you for review Wednesday. Yes the application would remain on hold.

Thanks,
Alex

Alexandra King
SENIOR CONSENTS OFFICER

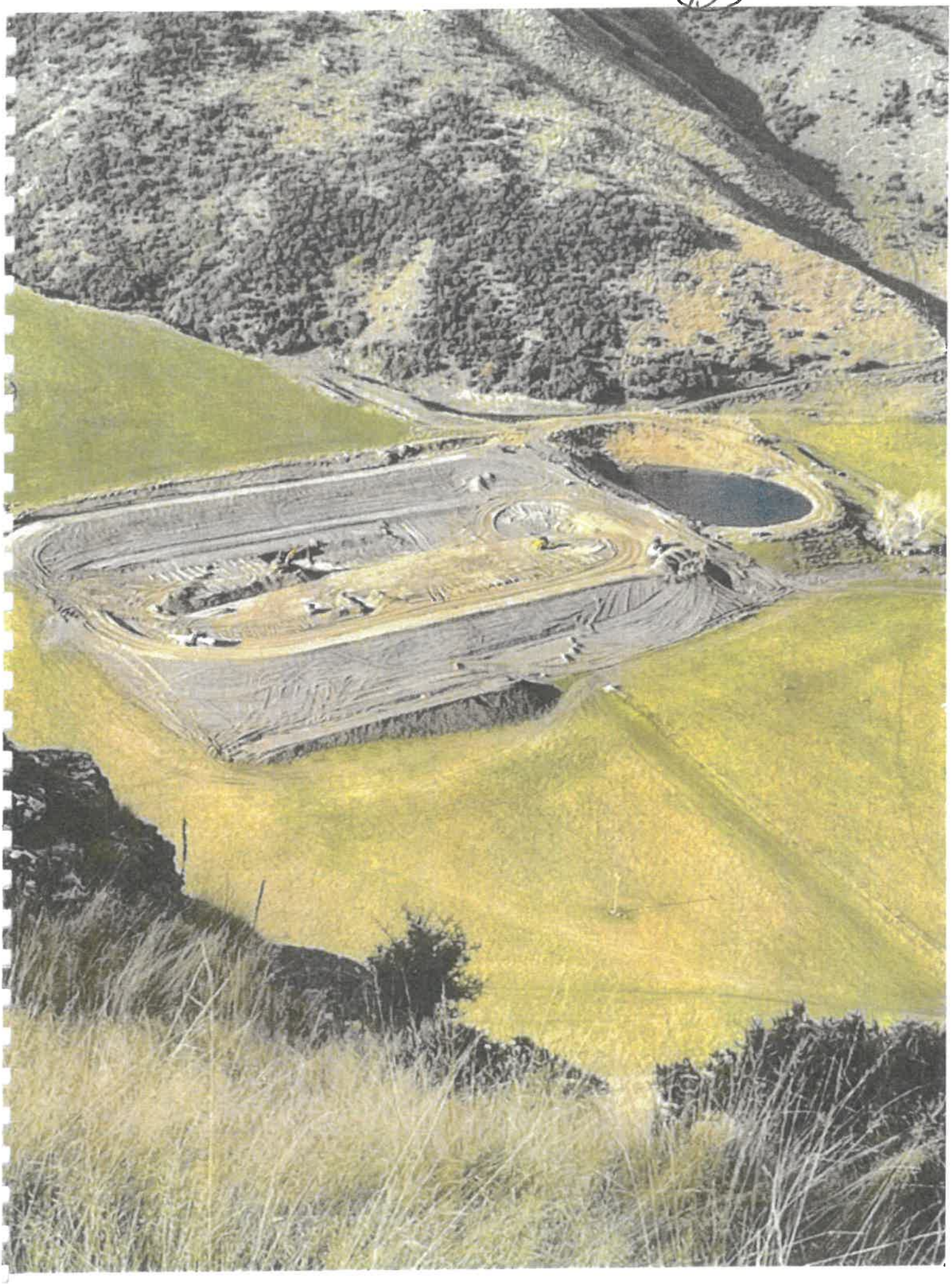
P 0800 474 082
alexandra.king@orc.govt.nz
www.orc.govt.nz

From: Hilary Lennox <hilarylennox@ahika.co.nz>
Sent: Friday, 4 September 2020 1:28 PM
To: Alexandra King <Alexandra.King@orc.govt.nz>
Subject: Re: Review of Sean's flow data

Hi Alex

Thanks for your email, that sounds like a fair approach. When do you think you'll have the

(B)



B

From: Hilary Lennox
To: Joanna Gilroy
Subject: Re: RM19.151 update (BSTGT and McQuilkin family trust)
Date: Thursday, 30 July 2020 7:47:01 p.m.
Attachments: image001.png

Hi Jo

I think it would be great if we could catch up, I'm free all day tomorrow before 4pm, maybe just call me at a time that suits you?

Thanks

Hilary
[redacted]

Get Outlook for iOS

From: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>
Sent: Thursday, July 30, 2020 4:46:08 PM
To: Hilary Lennox <hilarylennox@ahika.co.nz>
Subject: RE: RM19.151 update (BSTGT and McQuilkin family trust)

Hi Hilary,

Sorry there was no update on this yesterday. We have had our team out to the site again today this time to measure the rate of take for the scheme in order to confirm if they comply with the permitted criteria and are a lawful take. Overall we have looked at the point of take, the pipe/infrastructure, the metres and also measured the rate of take at the intake. I am just waiting for Byron to complete his report before I send it through to you. He is currently driving back to Dunedin, so I should have this report tomorrow. Based on this information we think they are a lawful water user.

From the correspondence we have had to date from the parties, I do think that a meeting would be useful as their main concerns appears to be that the river will be run dry and they will not be able to take water. From my limited knowledge of the application I do not think this is what is intended by the applicant. They also have some concerns about the lawn business, but as you have pointed out this is not happening on site.

In terms of where to from here, perhaps we should catch up first thing tomorrow morning?

Thanks,

Jo

From: Hilary Lennox <hilarylennox@ahika.co.nz>
Sent: Tuesday, 28 July 2020 5:56 p.m.
To: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>
Subject: Re: RM19.151 update (BSTGT and McQuilkin family trust)

Kia ora Jo

Thank you so much for keeping me up to date, I do really appreciate it.

Coincidentally I was speaking to one of the applicants this afternoon who went to see if he could find the intake structure. All he could find was a piece of pipe laid in the creek which runs down to some old-looking tanks, from which the water seems to be pumped. I wonder if the LOFTS scheme think they're being compliant because they can control the volume and rate at which they pump from these tanks, but without realising that it's actually the rate/volume from the creek itself which matters.

The applicant wondered if we should be convening a meeting to get everyone together to hear their concerns but I advised that we needed to wait until the close of submissions and to wait until ORC had made a determination on whether this take is lawful or not first. I haven't responded to any of the submissions emailed to me from the LOFTS scheme users, I've just forwarded them on to Alex.

We'll talk again soon with an update from your end. I'm sorry that you guys are having to deal with this, I really had no idea that this take was even there.

Thanks

Hilary

From: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>
Date: Tuesday, 28 July 2020 at 5:19 PM
To: Hilary Lennox <hilarylennox@ahika.co.nz>
Subject: RM19.151 update (BSTGT and McQuilkin family trust)

Hi Hilary,

Just an update as to where we are at with RM19.151. Someone from Compliance went out to site (the water scheme) today. I am waiting on a memo about this visit. I will let you know when we have this memo.

As talked about on the phone there is the risk that the notification decision could be reviewed by way of judicial review.

I will be in touch tomorrow with a further update.

Thanks,

Joanna

Joanna Gilroy

B

From: Alexandra King
To: Hilary Lennox
Subject: Re: Submission opposing Coutts/McQuilkin et al application to take water
Date: Thursday, 23 July 2020 2:45:48 p.m.

Hi Hilary,

Thanks for sending this to me.

I can't quite see where this submitter sits either. I will email him and ask if he is included in any of the parties listed. If not then we will disregard the submission.

I will get back to you.

Thanks,
Alex

From: Hilary Lennox <hilarylennox@ahika.co.nz>
Sent: Wednesday, 22 July 2020 5:35 PM
To: Alexandra King <Alexandra.King@orc.govt.nz>
Cc: Kit Gordon [redacted]; Tony McQuilkin <[redacted]>; Phil Page <[redacted]>
Subject: FW: Submission opposing Coutts/McQuilkin et al application to take water

Hi Alex

I have received the submission attached in relation to Application RM19.151. I am a bit confused because I don't see how these parties are involved in this process... or maybe they aren't? They aren't a shareholder on 97402 with Baker et al, nor are they Glencoe Station Ltd. Apparently they are long-time residents on the Crown Terrace and clearly they're very 'interested' in this process, but as far as I am aware they have not been invited to make a submission. This makes me think that Baker/Darby or one of the other parties has been trying to gather submissions from neighbours as though this was a publicly notified application, which it is not.

Please can you confirm that this submission will be disregarded because it has not been made by an affected party.

Many Thanks

Hilary

From: Jef Desbecker <[redacted]>
Date: Wednesday, 22 July 2020 at 2:48 PM
To: Hilary Lennox <hilarylennox@ahika.co.nz>, "submissions@orc.govt.nz" <submissions@orc.govt.nz>
Cc: [redacted]>
Subject: Submission opposing Coutts/McQuilkin et al application to take water

Please see the attached documents.
Thank you, Jef

Jef Desbecker
[redacted]

From: Alexandra King
To: Hilary Lennox
Subject: FW: Crown range water application
Date: Friday, 24 July 2020 2:17:00 p.m.

FYI

-----Original Message-----
From: Alexandra King
Sent: Friday, 24 July 2020 2:18 p.m.
To: 'Aaron Rowe' [redacted]
Subject: RE: Crown range water application

Hi Jef,

I am the processing officer for RM19.151 which is the Coutts, McQuilkin application to take and use water from the Royal Burn and New Chums Creek. The application has been limited notified to affected parties and not publicly notified. Resource consent applications become 'notified' when the council notifies the public or affected parties about the application and invites submissions. There are two types of notified resource consents:

- Publicly notified resource consents – where any person can lodge a submission on a resource consent application.
- Limited notified resource consents – where any person identified by the council as being adversely affected (affected parties) can lodge a submission. Where affected parties have already provided their written approval, they are not served notice of the application and cannot lodge a submission.

Therefore, if you are not within the list of those which were notified I may be unable to receive your submission.

Kind regards,
Alexandra

-----Original Message-----
From: Aaron Rowe [redacted]
Sent: Friday, 24 July 2020 2:04 p.m.
To: Alexandra King <Alexandra.King@orc.govt.nz>
Subject: Crown range water application

Hi Alexander
I am the owner of [redacted] I have been made aware of an application for water rights made by the Mcquilkin Family trust.
I believe this application will seriously affect my property and its access to water.
I wish to lodge an objection and express my concern.
How do I go about this please.
Best regards
Aaron Rowe

From: Alexandra King
To: Hilary Lennox
Subject: RE: Crown range water application
Date: Friday, 24 July 2020 2:58:00 p.m.

No problem.

I assume there may be a few more of these coming through so I will keep you updated.

Have a great weekend.
Alex

From: Hilary Lennox <hilarylennox@ahika.co.nz>
Sent: Friday, 24 July 2020 2:38 p.m.
To: Alexandra King <Alexandra.King@orc.govt.nz>
Subject: Re: Crown range water application

Thanks for keeping me in the loop Alex, much appreciated. Let me know how you get on...

From: Alexandra King <Alexandra.King@orc.govt.nz>
Sent: Friday, 24 July 2020 2:17 PM
To: Hilary Lennox <hilarylennox@ahika.co.nz>
Subject: FW: Crown range water application

FYI

-----Original Message-----
From: Alexandra King
Sent: Friday, 24 July 2020 2:18 p.m.
To: 'Aaron Rowe' <[redacted]>
Subject: RE: Crown range water application

Hi Jef,

I am the processing officer for RM19.151 which is the Coutts, McQuilkin application to take and use water from the Royal Burn and New Chums Creek. The application has been limited notified to affected parties and not publicly notified. Resource consent applications become 'notified' when the council notifies the public or affected parties about the application and invites submissions. There are two types of notified resource consents:

* Publicly notified resource consents - where any person can lodge a submission on a resource consent application.
* Limited notified resource consents - where any person identified by the council as being adversely affected (affected parties) can lodge a submission. Where affected parties have already provided their written approval, they are not served notice of the application and cannot lodge a submission.

Therefore, if you are not within the list of those which were notified I may be unable to receive your submission.

From: Hilary Lennox
To: Alexandra King
Subject: Re: Submission for RM 19.151
Date: Wednesday, 29 July 2020 10:43:09 p.m.
Attachments: Submission .jpeg
Submission 1.jpeg
Submission 2.jpeg

Hi Alex

Here's another one. Again, they were not limited notified and I have no idea how they would be affected. They don't seem to be part of the LOFTS scheme. This is the second time I've seen reference to a commercial lawn growing operation, which I personally have never heard of and never seen up there. I can ask the applicant about this if you want me to.

Again, I won't respond to this unless instructed by ORC.

Thanks

Hilary

Get Outlook for iOS

From: Vera Stewart <[redacted]>
Sent: Wednesday, July 29, 2020 5:28:36 PM
To: submissions@orc.govt.nz <submissions@orc.govt.nz>; Hilary Lennox <hilarylennox@ahika.co.nz>
Subject: Submission for RM 19.151

Hi Please see attached our submission for RM 19.151 please can you both confirm you have received this thank Vera and Troy Stewart

Stretch.

B

Additional information to support the objection to an application to take surface water from Royalburn stream and New Chums Gully on the crown terrace.

David Stretch [redacted]

Notification of Submission.

I would like to state that I was only notified of this consent application by a neighbour, 1 day prior to the submission closing date.

The water takes where the application relates to, are directly upstream on the only natural stream I have on my property, therefore this application shall have a significant effect to me.

For myself and many of my neighbours to be considered unaffected parties, when these streams flow though their properties and provide their only source of water shows a lack of review of the application on the part of ORC.

I request that more time be given to me to properly prepare a submission to object to the application being proposed.

Background

My property on the Crown Terrace has only one naturally flowing creek. It has consistently run with strong flows estimated at 10 to 15 l/s even in periods of drought. The image below shows the location of the creek on my property

Since the development of the golf course on the Coutts property, this creek has regularly gone from strong flow to virtually no flow over night for periods of time, and during the summer, the periods of no flow are often so prolonged that the wetland there starts to dry up.

Considerable effort has been spent developing a wetland for bird life, and generally making the area tidy and natural.

The water is also the only natural source of water for stock. There is approximately 20 Ha of pastural land there in this block and therefore water supply to stock is essential.

I do have plans to develop more wet land in this area, although I am not ready to start the consenting process yet. The photo below shows the wetland area.

Even now the flow has been cut to my property. The photo below shows the creek flow path early August (today) when the ground is damp, and flows are normally strong. Even in mid-summer and drought conditions, when the water has not been diverted, the flow will be fast, approximately 1 m/s over a cross section of around 125 by 125mm. That equates to approximately 15 l/s. As can be seen from the photo below the, flows are negligible now.

I have previously asked ORC about the taking of water from this creek by other up stream, and I was advised that there were no water rights to take water, therefore any diversion of the water was illegal. I did not formally lay a complaint.

It is evident that the Coutts golf course is continuing to expand, and undoubtably the water required to keep the course green will also increase.

Basis of Objection

Maintaining residual flows in all water ways is a fundamental requirement of New Zealand environmental law. Behaviour of the Applicant or their representatives on the property to date show scant regard for the requirement to maintain residual flows. By granting a water take right that actual exceeds the flows in the creeks will legitimise this behaviour.

From the perspective of my property, I will be effectively shut out of any water supply, so a few private individuals can play golf.

Actions requested.

Any water rights granted must retain a residual flow minimum in all water ways that exited the property from before the development of the golf course. Conditions should be placed as follows as a minimum. With respect to my property.

1. A continuous flow rate meter should be installed at the exit point of the property as marked below (subject to site inspection, as I don't access to view). The flow meter should report data directly to ORC, and ORC should make the data publicly accessible. Flow data should be collected without any offtakes, and this data should be used to set the baseline.

2. Residual flow minimums should be set, and these should be within the normal guidelines of the NZ environmental standards. I would expect the minimum flow would be no less than 75% of normal dry season flow rates. (I do not have time to identify a standard because I was not notified as I should have been of this application)
3. The behaviour of totally blocking the flows need to be stopped immediately irrespective of the application. If they continue to block flows, ORC need to do their duty and enforce the law though warning and ultimately prosecution if necessary.

From: Hilary Lennox
To: Alexandra King
Subject: FW: Submission for Coutts & McQuilkin water right Application
Date: Monday, 3 August 2020 7:32:19 a.m.
Attachments: Coutts & Mcquilkin Water Right Application.pdf
Form 16.pdf

From: David Stretch <[redacted]
Date: Sunday, 2 August 2020 at 8:52 PM
To: Hilary Lennox <hilarylennox@ahika.co.nz>, "submissions@orc.govt.nz" <submissions@orc.govt.nz>
Subject: FW: Submission for Coutts & McQuilkin water right Application

Correct form 16 attached. Please ignore the previous e mail.

Regards

David Stretch| | **Global Element Ltd** |
Ph: NZ 0272111197 from Int M [redacted]
e [redacted]

From: David Stretch
Sent: Sunday, 2 August 2020 6:57 PM
To: hilarylennox@ahika.co.nz; submissions@orc.govt.nz
Subject: Submission for Coutts & McQuilkin water right Application

Please find the attached documents relating to the Coutts & McQuilkin water right application.

Regards

David Stretch| | **Global Element Ltd** |
Ph: NZ 0272111197 from Int M [redacted]
e [redacted]

B

From: Hilary Lennox
To: Alexandra King
Subject: Re: Notification decision RM19.151
Date: Tuesday, 2 June 2020 3:01:37 p.m.

Ok that sounds fab, thanks!

From: Alexandra King <Alexandra.King@orc.govt.nz>
Date: Tuesday, 2 June 2020 at 3:01 PM
To: Hilary Lennox <hilarylennox@ahika.co.nz>
Subject: RE: Notification decision RM19.151

Hi Hilary,

I will tidy the report up and send it back to you.

Thanks for the tip regarding effect on the mauri.

The application is still awaiting WAs and not limited notifying until you request this.

Thanks,
Alex

From: Hilary Lennox [mailto:hilarylennox@ahika.co.nz]
Sent: Friday, 29 May 2020 2:12 p.m.
To: Alexandra King <Alexandra.King@orc.govt.nz>
Subject: Re: Notification decision RM19.151

Hi Alex

Thanks for sending that through. I note that you've still got DOC as an affected party but I sent their WA through to you on 23 April. Can you please amend the notification report to reflect this? Also your bullet point list of affected parties under 'Step 3' still contains DOC and several other parties who we agreed are not affected (GLC Land Holding Limited, SDM Trustee Company etc, McIlree/Dexter, Eadehs, Andersons).

I had another question – Royal Burn and New Chums Creek are themselves Statutory Acknowledgment areas. They are tributaries of a tributary (Arrow) of a tributary (Kawarau) of a Stat Ack river (Clutha), but they are not listed Stat Ack areas themselves. This is not to say that they will definitely not have an effect on a Stat Ack (the Clutha), but they are not actually Stat Acks themselves. Can we have that tidied up in the s95 report as well?

Just a suggestion - it might be a good idea not to make statements on what the effect on the mauri of the water might be without having conducted a CIA, which nobody at ORC is qualified to do. It might be safer to be a bit more ambiguous in this section?

I'm still working with Aukaha and hoping to have this finalised soon either way. Just to confirm, this application is still on hold awaiting WAs and you're not limited notifying it just yet?

Fran McMeekin

(B)

From: Paul Farry <pfarry@farry.co.nz>
Sent: Friday, 4 June 2021 1:45 PM
To: Mark Ching
Cc: Fran McMeekin; David Whyte
Subject: FW: Resource Consent Application – RM19.151 – BTSGT Limited – Ching Family Trust (Fairhall)
Attachments: 2021005 - Fairhall Preliminary Hydrological Assessment Crown Terrace[5].pdf

Importance: High

FYI

From: Paul Farry <pfarry@farry.co.nz>
Date: Friday, 4 June 2021 at 1:43 PM
To: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>
Cc: Peter Kelliher <Peter.Kelliher@orc.govt.nz>, "philip.maw@wynnwilliams.co.nz" <philip.maw@wynnwilliams.co.nz>, "michelle.mehlhopt@wynnwilliams.co.nz" <michelle.mehlhopt@wynnwilliams.co.nz>
Subject: Re: Resource Consent Application – RM19.151 – BTSGT Limited – Ching Family Trust (Fairhall)

Hi Joanna

Thank you for your email below of 19 April 2021 and the attached letter.
Our client has now considered the response from ORC via its lawyer and we are instructed to respond as follows:

1. Our client continues to dispute the ORC assessment that our client is not an affected party and entitled to submit in respect to the application by BTSGT Limited.

2. We have **attached** a report prepared by Terra Aqua consultants limited. The report is prepared in respect to the Fairhall Creek which runs through our client's land.

3. The information in the report is a rather damning critique of the situation that exists in respect to Fairhall Creek and the inappropriate diversion of significant flows of water by the applicant BTSGT.

4. Ignoring for the moment the unauthorised and illegal diversion of water by the applicant the report clearly shows that water is being diverted from Fairhall Creek and fed into the water scheme that is the subject of the current application before ORC.

5. It is difficult to see how ORC cannot consider our client as an affected party when there is an unauthorised diversion of water into the applicants scheme from a creek running through our client's property and from which our client has a right to take a permitted level of surface water from that creek which the Terra Aqua report confirms is significantly impacted by the unauthorised diversion of water by the applicant.

6. Leaving aside the question of our clients status as an affected party for the moment we note the following:

   (a) It appears the applicant has not been transparent and provided the ORC with all information relative to it's current application to obtain consent to take significant volumes of water on the Crown Terrace.

   (b) Particularly the applicants water scheme is diverting and taking water from sources that are not the subject of the application but nevertheless feeding into that water scheme and has not disclosed that to the council and/or referenced that in it's application.

(c) It is apparent that ORC's own investigation is woefully inadequate. A competent physical inspection of the area would have revealed to the ORC that there are other water courses including Fairhall Creek which are being diverted by the applicant and which are not disclosed nor referred to in the application nor are they referenced by ORC in it's assessment of impacts or affected parties.

(d) It is also apparent that the meter points measuring flow of water that are being used by the applicant in it's data are not measuring the true amount of water being captured from various diversions/captures that the applicant has created or installed thereby not giving an accurate reflection of the full amount of water that is being utilised by the applicant.

(e) This must also call into question the ORC's own assessment and recommendations in respect to the application as it does not accurately reflect the extent of the water being taken by the applicant and fed into the water scheme. On the other hand if the ORC claims it is aware of the situation as the regulatory body why has the ORC not taken steps to address significant unauthorised water takes by the applicant.

(f) The additional water sources that are being diverted would and do affect other parties many of which have not been notified and therefore not given the opportunity to submit in respect to the current application. Those that have been notified have not been given accurate information.

(g) The information in the Terra Aqua report clearly shows that the impact of these unauthorised diversions are significant and have a material impact on those water sources.

(h) How can the council justify endorsing the applicant's consent request without having fully addressed the actual water take that will occur across the Crown Terrace and the impact on downstream users. The extent of the proposed water take and the level of unauthorised and unconsented water take that is not referenced in the application not giving a full perspective calls in to question whether the application should have been publicly notified let alone parties such as our client

(i) Our client has viewed communications that have been supplied by ORC in respect to it's dealings with the applicant. Although redacted our client believes these communications show a clear pattern of conduct between ORC and the applicant to tailor the application and or the information to restrict the number of parties that need to be notified in respect to what is an application for a significant water take affecting a large area and a wide group of people.

7. It is clear that there is no consent for the amount of water that BTGST is taking from the Fairhall Creek and this is not only a diversion but there are significant earth works to divert the water across the applicant's land into races that are part of it's current application. This cannot be seen as anything other than a major diversion and with infrastructure to facilitate it without any permit or authorisation from ORC and without it being disclosed as part of the application currently in front of ORC.

8. In the circumstances our client continues to assert that it is an affected party and should be notified with the opportunity of submitting. Our client accordingly reserves all it's rights in respect to the ORC's failure to notify including the ability to challenge any decision or grant in respect to the current application. Our client reserves the right to present this and other relevant communications to the court in any subsequent proceedings.

9. In addition our client will be interested to see how the ORC treats the information that is being provided in the attached report and whether the ORC brings this to the attention of the Independent Commissioner . Certainly our client is of the view that the ORC must

(a) now require the applicant to fully disclose the full extent of water take and diversions in the Crown Terrace area and any water that is being fed into the scheme that is the subject of the application and whether there are already valid consents for those takes (which is not the case in several cases) and

(b) Then reassess the application both in terms of affected parties/notification and the ORC's own investigation on the merits of the application.

(c) Take immediate enforcement action in respect to the applicants current unauthorised diversions and water takes.

10. Finally our client has asked to share the links below with you which contain a number of photos which reveal the extent of what is going on in the area with water.

https://share.icloud.com/photos/0-rJQY5yfJ4VMOU0Jd5DyGpCQ

https://share.icloud.com/photos/0DABfkU3dfHs_uYLulizL_1Hg

We look forward to receiving the ORC's comments on this information.

Paul Farry | Director
pfarry@farry.co.nz | www.farry.co.nz
Level 11, 152 Quay Street, PO Box 91212, Auckland 1142
DDI +64 9 353 6671 | **T** +64 9 379 0055 | **F** +64 9 373 2767

From: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>
Date: Monday, 19 April 2021 at 3:56 PM
To: Paul Farry <pfarry@farry.co.nz>
Cc: Peter Kelliher <Peter.Kelliher@orc.govt.nz>
Subject: RE: RE: Resource Consent Application – RM19.151 – BTSGT Limited – Ching Family Trust [21092]

Dear Paul,

Please find attached a letter from our lawyers who are acting for Council on this matter.

Kind regards,

Joanna

Otago Regional Council

Joanna Gilroy
MANAGER CONSENTS

P 0800 474 082 | M 027 201 0888

joanna.gilroy@orc.govt.nz
www.orc.govt.nz

From: Peter Kelliher <Peter.Kelliher@orc.govt.nz>
Sent: Friday, 16 April 2021 4:30 p.m.
To: pfarry@farry.co.nz
Cc: Philip Maw <philip.maw@wynnwilliams.co.nz>; Alexandra King <Alexandra.King@orc.govt.nz>
Subject: RE: Resource Consent Application – RM19.151 – BTSGT Limited – Ching Family Trust [21092]

Dear Paul

Further to our telephone conversation of this morning.

The Council has engaged external lawyers for this matter.

They will be responding directly to you no later than COB Monday 19 April 2021.

Regards

Peter

Otago Regional Council

Peter Kelliher
LEGAL COUNSEL

P 0800 474 082 | M 027 238 7461
peter.kelliher@orc.govt.nz
www.orc.govt.nz

B

Paul Farry
FW: CHING FAMILY TRUST AND RESOURCE CONSENT APPLICATION RM19.151, BTSGT LIMITED
14/06/2021 at 12:47:23 PM
Mark Ching
Fran McMeekin

FYI

From: Paul Farry <pfarry@farry.co.nz>
Date: Friday, 11 June 2021 at 6:13 PM
To: "philip.maw@wynnwilliams.co.nz" <philip.maw@wynnwilliams.co.nz>
Cc: Peter Kelliher <Peter.Kelliher@orc.govt.nz>, James Gribble <James.Gribble@orc.govt.nz>, "michelle.mehlhopt@wynnwilliams.co.nz" <michelle.mehlhopt@wynnwilliams.co.nz>
Subject: Re: CHING FAMILY TRUST AND RESOURCE CONSENT APPLICATION RM19.151, BTSGT LIMITED

Hi Philip,

Thank you for your letter of 11 June 2021.

In the circumstances you will appreciate that our client will continue to assert its rights and reserve its position.

While your client continues to maintain that our client is not an affected party with respect what your correspondence does not address is given ORC is now in possession of information that shows amongst other things;

a. That the applicant has not been transparent

b. That there are illegal diversions that are being directed into the water scheme that is the subject of the application

c. Even if the ORC is unclear on the legality of the diversions (including Fairhall Creek) the application clearly does not reference these other water takes.

d. That the application and the information contained in it is therefore not accurate and does not fully reflect the extent of water that is being diverted and used by the applicant

whether ORC intends to bring this information to the attention of the Independent Hearing Commissioners and also whether ORC itself intends to address this in its own position on the application in light of this information.

We emphasise that regardless of whether ORC considers our client is an affected party or not it is now in possession of information that is definitely relevant to the current application - to suggest otherwise appears disingenuous to say the least . ORC simply cannot ignore this information in respect to the current application on the basis of a determination on our clients status (which remains contested by our client)

Finally we note the comments in clause 5 of your letter regarding investigation by ORC compliance department. Can you at this stage confirm whether ORC will consult with our client in respect to that investigation.

We look forward to hearing from you.

Regards,

FARRY.CO LAW

Paul Farry | Director
pfarry@farry.co.nz | www.farry.co.nz
Level 11, 152 Quay Street, PO Box 91212, Auckland 1142
DDI +64 9 353 6671 | **T** +64 9 379 0055 | **F** +64 9 373 2767

From: James Gribble <James.Gribble@orc.govt.nz>
Date: Friday, 11 June 2021 at 4:23 PM
To: Paul Farry <pfarry@farry.co.nz>
Cc: Peter Kelliher <Peter.Kelliher@orc.govt.nz>

Subject: CHING FAMILY TRUST AND RESOURCE CONSENT APPLICATION RM19.151, BTSGT LIMITED

Dear Mr Farry,

We refer to your email correspondence dated 4 June 2021.

Please find attached our response.

Kā mihi,

James

Otago Regional Council

James Gribble
ADMINISTRATION OFFICER - LEGAL

P 0800 474 082 | M 027 578 4207
james.gribble@orc.govt.nz
www.orc.govt.nz

11 June 2021

Attention: Paul Farry

Farry and Co
PO Box 5419
Dunedin 9054

By email to: pfarry@farry.co.nz

CHING FAMILY TRUST AND RESOURCE CONSENT APPLICATION RM19.151, BTSGT LIMITED

1. We act for the Otago Regional Council (**Council**).
2. We understand that your client has concerns regarding a diversion of water in the Fairhall Creek and as a result considers that it should be considered as an affected party to the resource consent application RM19.151 (**Application**) of BTSGT Limited (**Applicant**).
3. The Council has reviewed the information you have provided. Any takes or diversions from Fairhall Creek are outside the scope of the application that is currently before the Council. The Council does not have the power, as part of determining this application, to authorise or place any conditions on any diversion of Fairhall Creek.
4. For this reason, the Council remains firm in its view that your client is not an affected party in respect of this resource consent application, as diversions from Fairhall Creek are beyond the scope of this application.
5. However, the Council has passed on your email and the associated report to its compliance department to investigate the claims. Any potential breach will be investigated in accordance with the Council's usual policies and practice.
6. We trust that this response assists. Please contact us if you wish to discuss.

Yours faithfully
Wynn Williams

Philip Maw
National Managing Partner
P +64 3 379 [illegible]
E philip.maw@wynnwilliams.co.nz

Michelle Mehlhopt
Special Counsel
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PO Box 5410, Dunedin 9054
T (03) 477 8870
F (03) 474 0320
E law@farry.com

B

Email to: Philip Maw
CC: Michell Mehlhopt - Joanna Gilroy – Peter Kelliher
Re: Ching Family Trust (Fairhall) – Resource Consent Application – RM19.151 – BTSGT – Lot 7 DP458870 Glencowe Road

1. We refer to your letter of 19 April 2021 in respect to the above matter.

2. Our client continues to dispute the ORC assessment that our client is not an affected party and entitled to submit in respect to the application by BTSGT Limited.

3. We have **attached** a report prepared by Terra Aqua consultants limited. The report is prepared in respect to the Fairhall Creek which adjoins our client's land.

4. The report is self explanatory and damning on the situation that exists in respect to Fairhall Creek and the inappropriate diversion of significant flows of water by the applicant BTSGT.

5. Ignoring for the moment the unauthorised and illegal diversion of water by the applicant the report clearly shows that water is being diverted from Fairhall Creek and fed into the water scheme that is the subject of the current application before ORC.

6. It is difficult to see how ORC cannot consider our client as an affected party when the applicant is not disclosing to ORC the unauthorised diversion of water into the applicants scheme from a creek adjoining our client's property and from which our client has a right to take a permitted level of surface water from that creek. That alone should justify our client being notified and submitting.

7. Leaving aside that particular point at this stage we note the following:

(a) The applicant has not been transparent and provided the ORC with all information relative to it's current application to obtain consent to take significant volumes of water on the Crown Terrace.
(b) Particularly the applicants water scheme is diverting and taking waters that are not the subject of the application but nevertheless feeding into that water scheme and has not disclosed that to the council and/or referenced that in it's application.
(c) It is apparent that ORC's own investigation given that it has endorsed this application are woefully inadequate. A competent physical inspection of the area would have revealed to the ORC that there are other streams including Fairhall Creek adjoining our client's property which are being diverted by the applicant and which are not disclosed or referred to in the application nor are referenced by ORC in it's assessment of impacts or affected parties.
(d) It is also apparent that the meter points measuring flow of water that are being used by the applicant in it's data are not measuring the true amount of water being captured from various diversions/captures that the applicant has created or installed thereby not giving an accurate reflection of the full amount of water that is being utilised by the applicant.
(e) This must also call into question the ORC's own assessment and recommendation in respect to the application as it does not truly reflect the extent of the water being taken by the applicant and fed into the water scheme. On the other hand if the ORC is aware of the situation as the regulatory body why has the ORC not taken steps to address significant unauthorised water takes by the applicant.

(f) The additional streams and creeks that are being diverted would and do affect other parties many of which have not been notified and therefore not given the opportunity to submit in respect to the current application.
(g) The information in the Terra Aqua report clearly shows that the impact of these unauthorised diversions are significant and have a material impact on those water sources.
(h) How can the council justify endorsing the applicant's consent request without having fully addressed the impact on water take across the Crown Terrace and downstream users. The extent of the proposed water take and the level of

unauthorised and unconsented water take that is not referenced in the application not giving a full perspective calls in to question whether in fact the application should have been publicly notified let alone parties such as our client who are directly adjacent to affected water sources.

(i) Our client has viewed communications that have been supplied by ORC in respect to it's communications with the applicant. Although redacted our client believes these communications show a clear pattern of contact between ORC and the applicant to design the application and or the information to restrict and reduce the number of parties that need to be notified in respect to what is a significant request for water take.

8. It is clear that there is no consent for the amount of water that BTGST are taking from the Fairhall Creek and this is not only a diversion but there are significant earth works to divert the water across the applicant's land into races that are part to it's current applications. This cannot be seen as anything other than a major diversion and with infrastructure to facilitate it without any permit or authorisation from ORC and without it being disclosed as part of the application currently in front of ORC.

9. In the circumstances our client continues to assert that it is an affected party and should be notified with the opportunity of submitting. Our client accordingly reserves all it's rights in respect to the ORC's failure to notify including the ability to challenge any decision or grant in respect to the current application.
10. In addition our client will be interested to see how the ORC treats the information that is being provided in the attached report and whether the ORC brings this to the attention of the Independent Commissioner. Certainly our client is of the view that the ORC must

(a) now require the applicant to fully disclose the full extent of water take and diversions in the Crown Terrace area and any water that is being fed into the scheme that is the subject of the application unless there are already valid consents for those takes (which is not the case in several cases) and
(b) Then reassess the application both in terms of affected parties/notification and the ORC's own investigation on the merits of the application.

We look forward to receiving the ORC's comments on this information as a matter of urgency.

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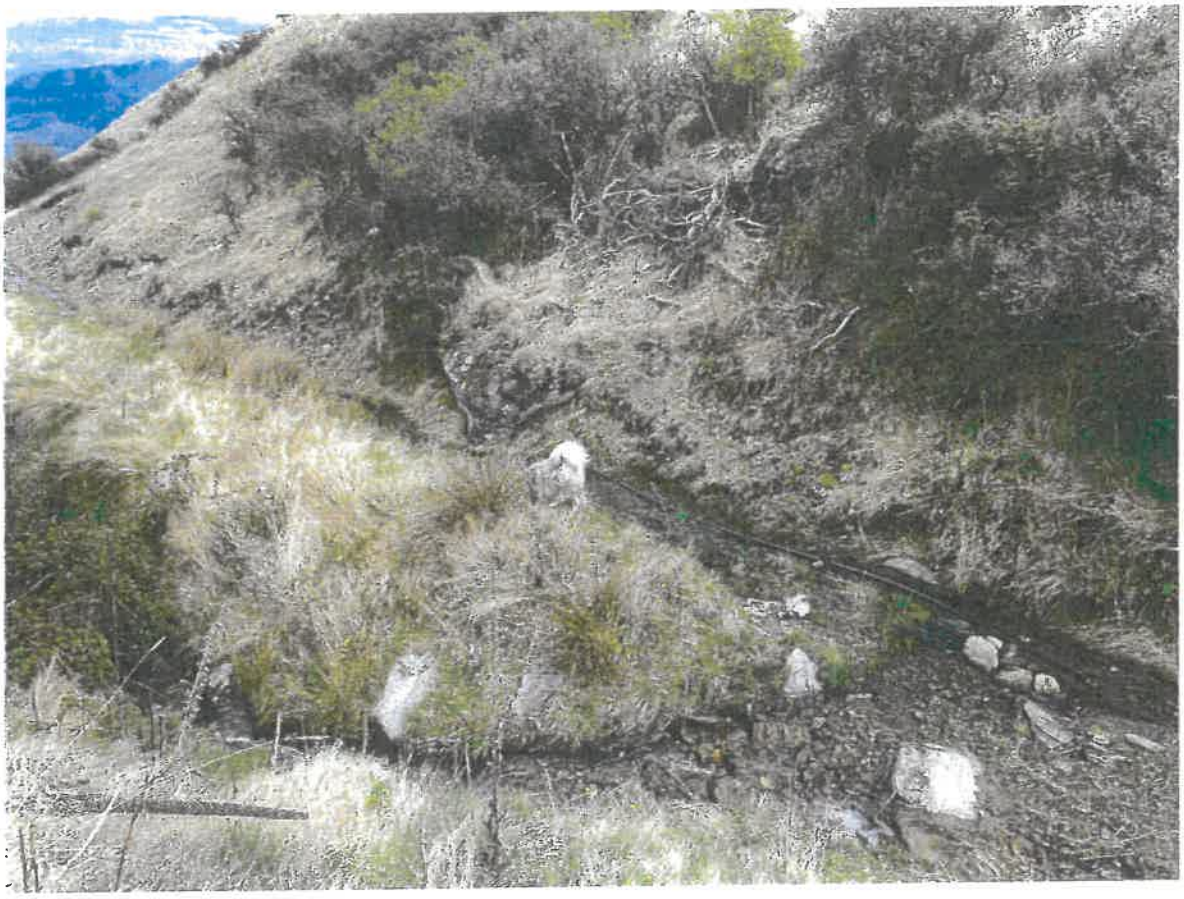
PRELIMINARY HYDROLOGICAL ASSESSMENT OF THE FAIRHALL CREEK, ARROW JUNCTION, OTAGO



Prepared for:

Fairhall

Glencoe Road, Arrow Junction

May 2021
2021005

Prepared by:
David Whyte of
TERRA AQUA CONSULTANTS LIMITED

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EXECUTIVE SUMMARY

The short report has been prepared to highlight a problem encountered by Fairhall. The problem is one to do with neighbouring properties damming a small creek (named Fairhall Creek for clarity) and taking all the flow away from other downstream users of the surface water and groundwater within proximity to the creek.

The construction of a diversion, or any structure within a stream bed is an activity that requires consent from the Otago Regional Council. Any structure without a consent is an illegal structure that should be removed.

The volume of water being taken by the diversion (when left in place) is estimated at least 8 L/s. It results in no water running down the natural stream bed and from which other downstream users rely upon for their minimum 25,000 L per day for domestic consumption. There are also of right entitled to supply their livestock with water.

There is a dearth of information on low flows in the streams and creeks around and on the Crown Terrace. On thing that is not in dispute is that the old "deemed" consents included volumes of water and permitted use that were not actually feasible. Historic usage records do not exist any even more recent "historical" usage records re not related to stream flows. Some historical usage (from a relatively short period) shows that if you look the maximum daily take volume it is possible to get large volumes of water. This however does not allow for the fact that the maximum take volume may only have been taken for a single day. Looking at longer (even a maximum month) that the flows are less than the deemed consents allowed. High (maximum flows) most likely occur in winter/spring months and not the main irrigation season.

1 Introduction

My full name is David Edwin Whyte. I hold a Master of Science (Hons) degree in geology (from Auckland University) and a Graduate Diploma in Hydrology (from the University of New South Wales). This course covered both groundwater and surface water hydrology. Since graduation, I have had 38 years of practical experience in the fields of hydrology and geology.

I have been involved in a wide range of resource investigations throughout New Zealand. I have been involved in a number of geological and hydrological investigations for open cast mines (New Zealand and Tasmania), hydroelectric developments (Indonesia), reservoir stabilisation measures (Clyde Power Project, Brewery Creek), water supply (Lichfield Dairy Factory, original consents application, most other Fonterra sites, EBoP town water supplies (12 locations), Oakura Town Water supply (two sites), Kawhia Water supply upgrade, Pirongia water supply, Warkworth town water supply, tunnel dewatering (SH20 extension Waterview to Mt Roskill, Victoria Park Tunnel), subdivision developments (Vilani, Fiji; Mapara Road, Taupo; Kinloch Golf Course; Taupo) and many other water supply projects in Northland, Auckland, Coromandel, Waikato, Taranaki, Bay of Plenty, Hawke Bay, Wellington and Otago.

1.1 Background Context

The Otago Regional Council (ORC) is in the process of converting all historical mining water take consents (or deemed consents) into RMA consents with this programmed to occur by October 2021. As such it is necessary for the Council to have detailed hydrological data for the surface and groundwater systems within each individual catchment and stream system to ensure that summer minimum flows are sustainable, and that no individual user is left without necessary water for their use.

It is apparent that the data for many of the catchments in which deemed consents are expiring do not have any hydrological data, let alone sufficient data, to permit the mean annual low flows (MALF) to be accurately determined. The achieve its stated aim, the Council will rely on a few catchments with data and then they will simply extrapolate data from one catchment to another. This is not the best way to approach this since each catchment will have individual characteristics that requires individual consideration.

Deemed consents are unlike current consents in that they typically only stipulate a daily or monthly maximum take rate. They often do not have specified maximum daily take rate or volumes nor do they have set times of the year in which the maximum takes can be taken. In this regard it seems that holders of these deemed takes can expect to take the maximum stipulated volume for each calendar day of the year. In addition, there would seem to be few historical records of actual take rates and volumes for most of these mining consents.

Given the climatic conditions in the Queenstown Lake District (low annual rainfall total, much as snow) this is a very strange method to manage a variable resource such as surface water.

The other issue with the deemed consents is that they were issued at a time when no real hydrological study or data was being collected or used to determine sustainable take rates. The consents were typically issued for mining use in areas of sparse population and little or no agrarian activity. Nowadays many of the areas are farmed or cropped intensively and some are being subdivided into lifestyle blocks.

1.2 Regulatory Framework

Primary allocation is defined by Policy 6.4.2(a) of the Regional Plan Water (RPW).

To define the primary allocation for each catchment, from which surface water takes and connected groundwater takes may be granted, as the greater of:

(a) That specified in Schedule 2A, but where no limit is specified in Schedule 2A, 50% of the 7-day mean annual low flow; or

(b) The sum of consented maximum instantaneous, or consented 7-day, takes of:

(i) Surface water as at:

(1) 19 February 2005 in the Welcome Creek catchment; or

(2) 7 July 2000 in the Waianakarua catchment; or

(3) 28 February 1998 in any other catchment; and

(ii) Connected groundwater as at 10 April 2010,

Less any quantity in a consent where:

(1) In a catchment in Schedule 2A, the consent has a minimum flow that was set higher than that required by Schedule 2A.

(2) All of the water taken is immediately returned to the source water body.

(3) All of the water being taken has been delivered to the source body for the purpose of that subsequent take.

(4) The consent has been surrendered or has expired (except for the quantity granted to the existing consent holder in a new consent).

(5) The consent has been cancelled (except where the quantity has been transferred to a new consent under Section 136(5)).

(6) The consent has lapsed.

As Fairhall Creek is not listed in Schedule 2A this means that with a MALF of 4.1 L/s, only 2.05 L/s should be taken according to the RPW. This would then leave a minimum residual flow of 2.05 L/s to flow down the stream to maintain the health of the stream and allow other downstream users access to their water requirements.

1.3 Crown Terrace

The Crown Terrace lies within the Dunstan Rohe which is part of the Clutha/Mata-au Freshwater Management Unit (FMU). The Crown Terrace covers a total area of approximately 2,913 hectares (ha) and ranges in elevation between 600 to 1,727 metres. The annual total precipitation ranges between 700 to 800 mm per annum over most of this area, however heavier falls are experienced in the higher portions. This area is effectively drained by three main streams with two of these three joined by a system of historical mining races and more modern buried pipelines. There are also numerous unnamed streams acting as tributaries to the main streams, particularly in the New Chums Catchment.

The streams forming the sub-catchments are (from north to south) known as New Chums (or sometimes Bracken Creek), Royal Burn and the Swift Burn.

The dimensions of the three individual sub-catchments are given in Table 1.

The sub-catchments are indicated on Figure 1. The interconnected races and pipelines are shown on Figure 2.

Overall, the total catchment area is approximately 2,913 ha with a width of approximately 15,050 metres and maximum length of only 5,505 metres. This is a quite different dimensional situation to the neighbouring Cardrona Catchment and means that the responses to rainfall will be quite different.

TABLE 1. – CATCHMENT AREAS

Catchment Name	Area (ha)	Length (m)	Width (m)
New Chums	871	3,520	5,505
Royal Burn	711	5,428	1,592
Swift	1,331	5,505	7,953
TOTAL	**2,913**	**NA**	**NA**

Notes: - NA denotes not applicable

By knowing the surface area and the annual rainfall it is possible to calculate the potential maximum volume of water able to be collected by that catchment. Ideally, there would be a number of rain gauges spread across the catchment to provide a better understanding of the rainfall patterns and also provide historical records to permit an assessment of minimum rainfall years in terms of frequency of occurrence and also total rainfall.

So, ignoring any losses to infiltration (to groundwater) or evapo-transpiration, New Chums catchment can collect an annual total of between 609,700 and 696,800 cubic metres or an annualised continuous mean flow rate of between 19 and 22 L/s. An annualised continuous mean flow rate just means that the total collected is averaged and assumed to flow 24-hours a day for 365 days of the year as a continuous flow.

This calculation does not include the inter-catchment flow that this historical mining race collects from the neighbouring catchment (Royal Burn North Branch) at two locations.

This flow is spread across all the streams within the defined New Chums catchment and is not localised within the New Chums Stream. There are several other streams that emanate high in the hills and flow down into the Crown Range area.

Of note to this report is the unnamed stream just north of the Royal Burn North Branch. For identification purposes I will refer to this stream as Fairhall Creek to differentiate from other unnamed streams in the New Chums Catchment.

Fairhall Creek is a stream that originates in property which is part of the BSTGT Limited consortium, before flowing down through two other properties then flowing under Glencoe Road. Ultimately it drains down across the plateau before dropping over the edge and joining the Arrow River.

Sometime during 2016 and at the boundary between BSTGT Limited and the Ching Family Trust property a diversion was emplaced, along with a 25mm diameter alkathene pipeline. The diversion pushes the flow into a man-made canal which did not exist until 2016. I have not investigated to see if the earthworks required consent with either the Otago Regional Council (ORC) or the Queenstown District Lakes Council (QLDC). The diversion at times takes all the

flow and leaves Fairhall Creek as a dry stream bed above the Fairhall property and down to at least Glencoe Road. The flow taken down this man-made canal is property owned by BSTGT Limited and at some point, on that property the flow enters a buried pipeline. This is evident since the surface flow disappears and is not seen again. The water is piped until it connects into the so-called New Chums Race (which at this point consists of a buried pipeline rather than the original historical mining race). This water flows south and is then joined with water taken by BSTGT Limited from their upper and lower takes located on the Royal Burn North Branch.

The historical race that originates within New Chums and channels water from there via pipeline and race currently re-directs more than 95% of the water away from New Chums Creek and into the pipeline which is then connected to the race. The race does not simply catch water from one extraction point of New Chums Creek, it also collects almost 100% of up to four permanent unnamed tributaries which previously had flowed across the race. I visited the site and walked the length of this race from the take point to the ponds. Now these tributaries are simply being collected by the race, acting like a roof gutter, and incorporated into the flow within the race. There is no longer any material flow in these natural creek beds, and the water flow is directed to two storage ponds and then the central water storage system for the golf course. From an environmental perspective, this is irresponsible and totally unacceptable. BSTGT is currently applying for consent to take water from three well defined points and none of these tributaries or Fairhall Creek are identified in the Application as points of take. It is unclear what effect this collection and volume of take will have on the local environment, other users and the groundwater system which is recharged from seepage losses from surface water.

At the point of diversion on Fairhall Creek there is no control structure or means to measure and record the flow taken. This is shown in Figure 3. (photograph of the diversion and start of canal).

Estimates of the flow are of at least 8 L/sec and upwards (or 28.8 m^3/hour or 691.2 m^3/day or 252,288 m^3/year). In fact, since there is no means to control the flow volume being diverted, these figures would have to be viewed as minimum volumes.

The volume being taken is clearly greater than that allowed in the ORC's Water plan, which allows for 25,000 litres to be taken without consent for domestic use.

Given that the water is used by two other property owners down stream of this diversion this is a major problem especially as it seems to be that the water is being taken without consent or compliance with the ORC's rules and is not being used for stock watering.

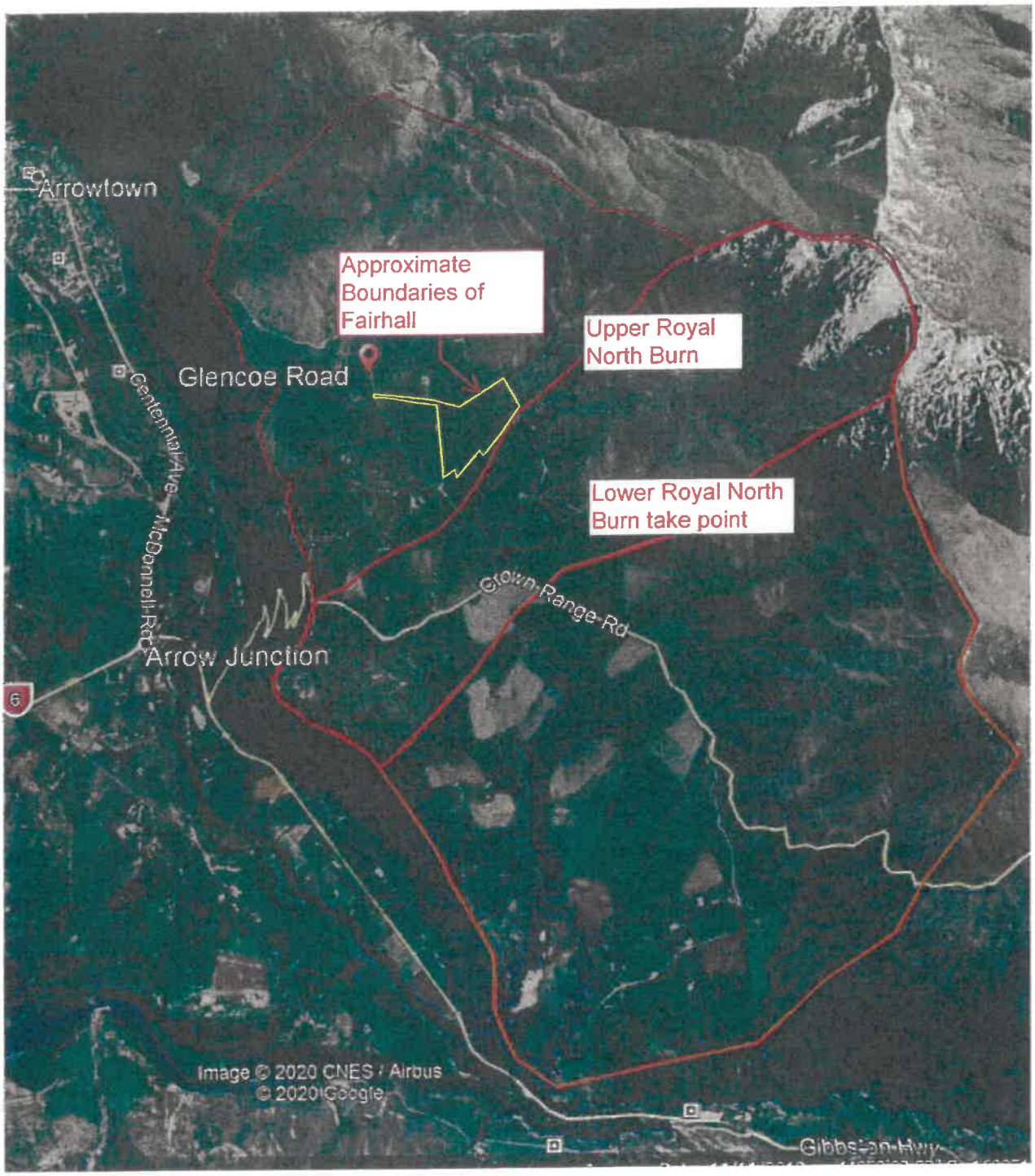


FIGURE 1: Sub-catchments of the Crown Terrace. From the top is New Chums (Bracken Creek), in the middle is Royal Burn and at the bottom Swift Burn.

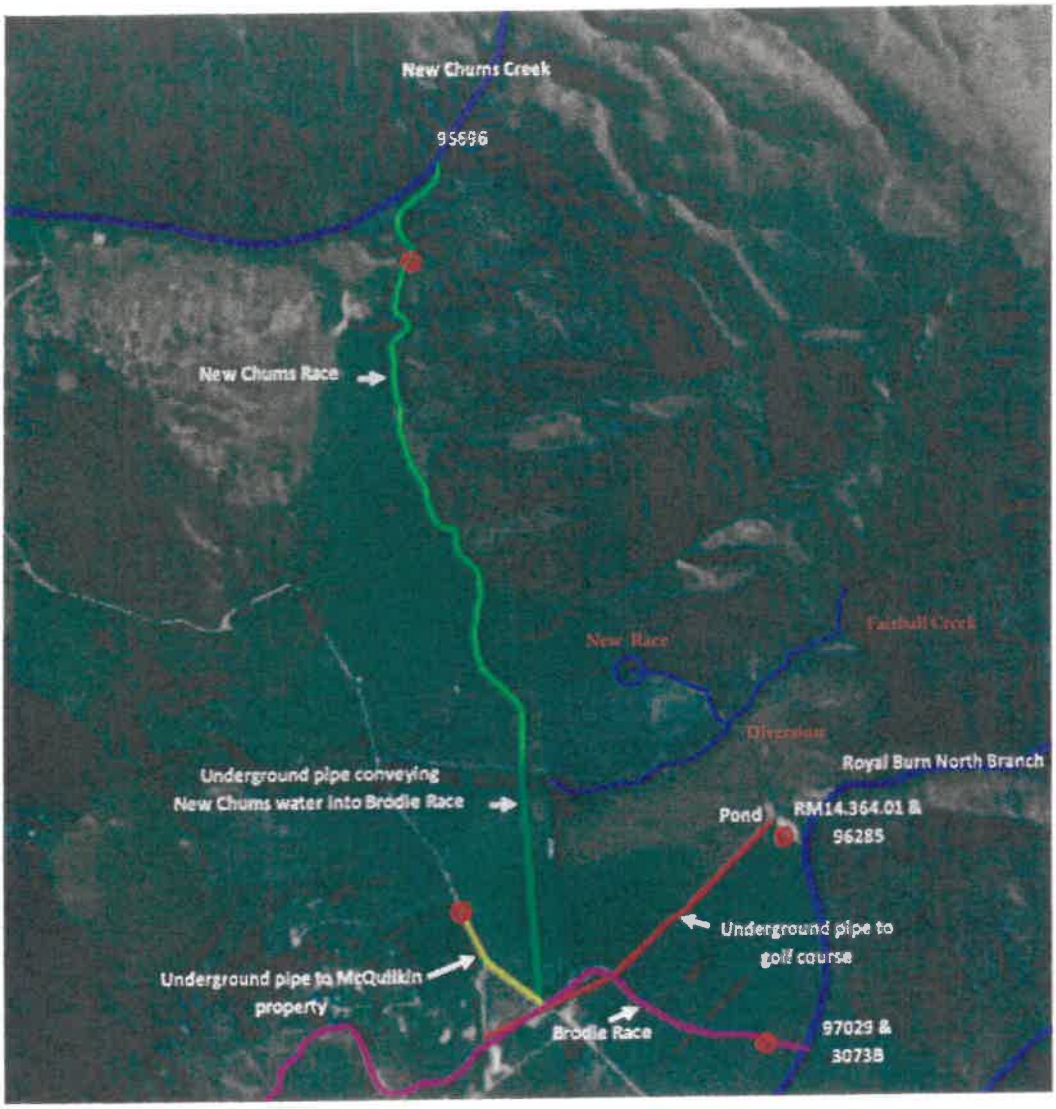


Figure 2. Canals and pipelines.
This figure also shows the approximate location of the diversion and new race taking water away from the Fairhall Crrek just above the boundary with the neighbouring property.

FIGURE 3: - Diversion and New Canal

Looking at the dismantled stream diversion (bottom right corner) and new man-made race taking water from Fairhall Creek and transferring it into the underground pipework of the New Chums Race (flow is right to left).

The race is indicated by the 25-mm diameter alkathene pipe and the natural channel runs diagonally away from the new race. It is clear this is man made from the straightness, low slope and the fact that natural streams do not bifurcate like this by themselves. This stream is not a braided river. With the diversion in place, at times there is no flow going down the natural stream channel and there are two properties that rely on this water for domestic use and future planned horticultural use.

Note there is no structure to control the volume being taken and no measurement device either.

1.4 Losses to Groundwater

It appears from a search of the ORC databases that there are few consented groundwater bores in the Crown Terrace. From speaking with various landowners there are several "wells", but these are just large diameter holes for collecting water for pumping to tanks for storage rather than a drilled groundwater well.

There are numerous areas of seepage across the entire Crown Terrace. This suggests that groundwater flow is a significant component of the overall hydrology of the area. Due to the paucity of flow data, both in locations and time, it is unclear if these streams have significant and permanent losing or gaining stretches.

There is no flow data avaliable for Fairhall Creek. However, on February 21st, 2021 in support of an application by BSTGT Limited to take and use surface water for irrigation, primarily for a golf course, NIWA have done one series of gauging's at locations on the neighbouring Royal Burn.

A major problem with this information is that there is no reference in the NIWA report (attached as pdf) to say if BSTGT Limited were in fact operating their system at the time the flow measuring was done. This is of concern for two reasons. First, it is not clear if the apparent loss between stations 600 and 700, (Lower Take point to Brodies Race is between these points), so the "loss" may simply be a take of that volume via Brodies Race although NIWA have not indicated this in their report.

Second the large "gain" between stations 300 and 200. This requires more detailed investigation. Given that the geology, topography, rainfall and general environment are similar, it can be assumed that a similar flow regime may exists at Fairhall Creek. This "gain" is interesting since in the RBNB there is a flow of 9 L/s and in the RBSB there is 8.8 L/s. The next gauging station is in the combined reach of the Royal Burn and the flow is 12.4 L/s.

The losing reach of the RBNB goes from stations 700 to at least 300. The RB seems to be losing only 13.2 L/s, but then gains 31.9 L/s. The question is where does this extra water com from?

This information presented in Table 2, shows that indeed there are losing and gaining sections of that stream. Given that the geology, topography and rainfall for the Royal Burn and Fairhall Creek it can be expected that if flows were measured there would have a similar distribution (both in space and relative to size) as seen for Royal Burn North Branch in Fairburn Creek.

TABLE 2. – NIWA GAUGING ROYAL BURN

Site Number	Site Name	Flow (L/sec)	Comment
100	Royal burn at SH6	25.5	Large loss from 200 to 100 of 18.8 L/s
200	Royal Burn at Crown Road Bridge	44.3	This appears to be a large gain; however, this needs to be investigated further to assess if this is a constant gain or if it fluctuates throughout the year. It is also unknown what effect

Site Number	Site Name	Flow (L/sec)	Comment
			reduction in surface flows may have on this "gain". This gain is not solely sourced from the RBNB since the losses amount to only 13.2 L/s.
300	Royal Burn at Swamp	12.4	Loss as the combined flow from RBNB and RBSB is 17.8 L/s. Loss of approximately 5.4 L/s.
400	RBNB below Glencoe Road	9	At this point there appears to have been a loss of 7.8 L/s to groundwater.
500	RBSB Above Glencoe Road	8.8	Similar flow in both branches at this point
600	RBNB below Brodie Race	16.8	This is below the take point for Bodie Race so although it appears as a loss to groundwater it is more likely a take to Brodie Race of 9.4 L/s. BSTGT Limited want to take 50 L/sec before this point.
700	RBNB Above Brodie Race	25.4	Small gain in flow between 800 to 700
800	RBNB below Top take	20	
900	RBNB above Top Take	19.2	BSTGT Limited want to take 15 L/s from this flow

Note: RBNB refers to Royal Burn North Branch
RBSB refers to Royal Burn South Branch

There are extensive areas of seepage across the entire Crown Range below Glencoe Road (mostly although there is some evidence of seepage above Glencoe Road). However, the relationship between flow in the streams and losses to groundwater and the area of seepage is not yet fully understood. If large volumes of surface water are collected into pipes and used for irrigation, then this will have a negative effect long term on the seepage areas (which may dry up) and result in long term declining flow at many locations within the system.

1.5 Surface Water Takes

A search of the ORC data bases shows that currently there are no surface water consents associated with Fairhall Creek. There are also no "deemed consents" associated with Fairhall Creek. There is no evidence of historical mining races in the vicinity of the new race, or that Fairhall Creek was ever connected by race to the New Chum's race in the past.

This means that any current takes of water must be governed by the ORC's Water guidelines for domestic and stock use. Any other volume should not be being taken.

Table 3 contains the only "deemed" water takes for New Chum catchment. The take is identified as a single point (map reference) where the intake structure is located.

TABLE 3. – SURFACE WATER TAKE LOCATIONS

Consent ID	Maximum Daily Take (Ls^{-1})	Catchment	Map Reference (NZMS260)
99477	83.3		
95696	83.33	New Chum	F41:846-768

Table 4 lists the maximum recorded flow taken at the take point.

TABLE 4. – SURFACE WATER TAKE RECORDED MAXIMUM

Consents ID	Consented Maximum Daily Take (Ls^{-1})	Flow Measurement ID	Recorded Maximum Flow (Ls^{-1})
99477	83.3	WM1003	91.13
99477		WM1004	155.56
95696	83.33	WM0733 (WEX0184)	76.28

Note: # denotes possibly erroneous reading.
Designations starting with WEX are those sought by BSTGT Ltd and A P McQuilkin Family Trust.

The deemed consented maximum take amounts to a total of 83.3 L/sec. This suggests that the deemed consented take volumes are very unlikely to have ever been taken year-round in the past given that they were originally granted for mining operations which would have been unlikely to have been operational during the winter months due to the weather conditions.

1.6 Indicated Flows in Stream

The Ministry for the Environment has a web site which proports to contain accurate data on stream flows for all streams in New Zealand (https://data.mfe.govt.nz/layer/53309-river-flows/).

The site indicates that the Fairhall Creek for the stream segment above Glencoe Road has a MALF of 0.004092 cumecs (or cubic metres per second or 1,000 L/sec) and a mean flow of 0.01354842 cumecs or 13.5 L/sec or 48.6 m^3/hour.

2 Hydrological Investigations

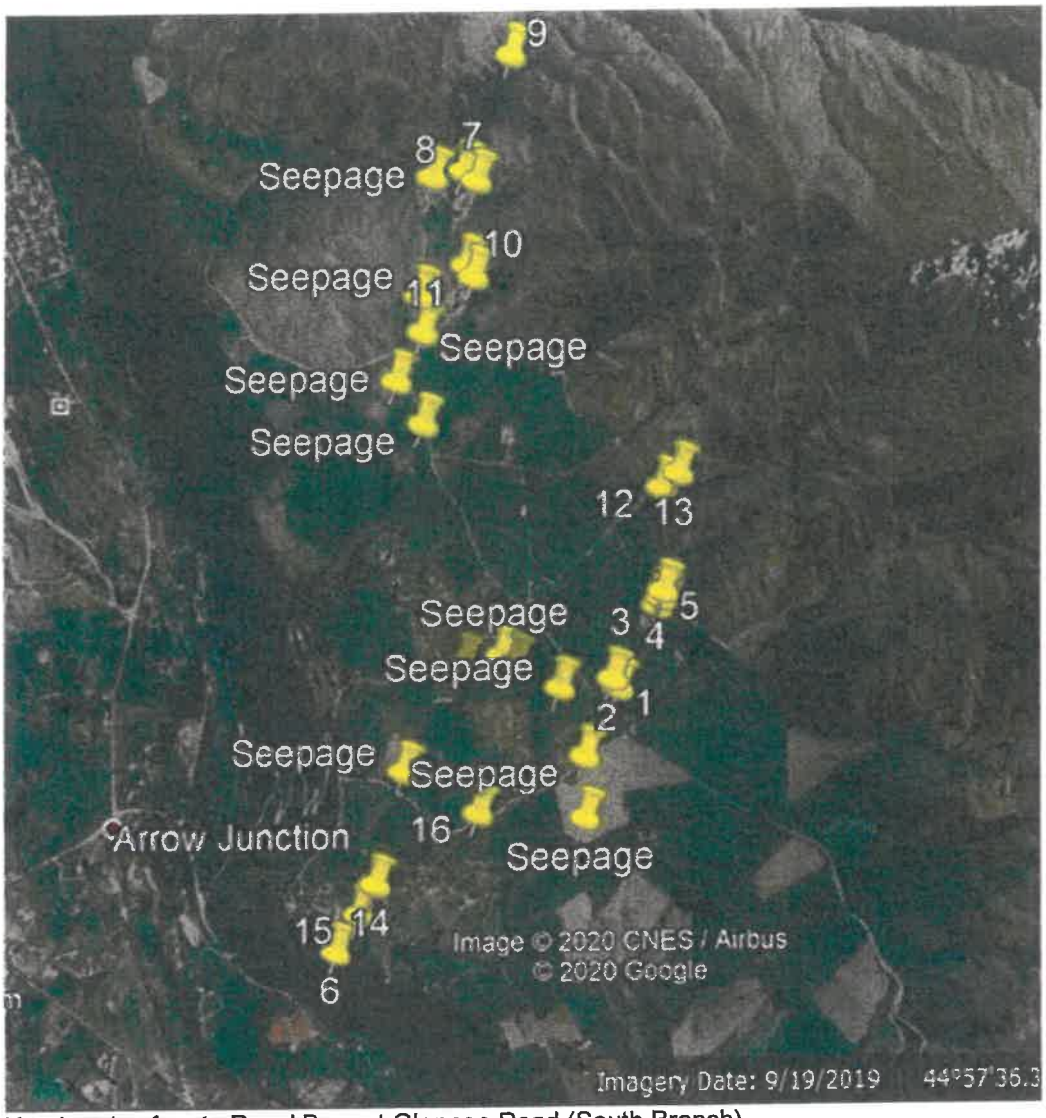
2.1 Groundwater Flow Direction

Overall groundwater flow direction can only be accurately determined from observation bores that have been surveyed for both location and elevation. By and large the groundwater flow is typically in a similar direction as surface water flows. Hence it can be inferred that the general groundwater flow is essentially in an easterly to westerly direction (from the highest points to the lowest point in the catchment).

However, examination of the seepage areas across the Crown Terrace suggest that in localised areas this pattern is not followed. There is a large area of seepage evident between Glencoe Road and the escarpment, and northwest of the Crown Range Road where groundwater flow is directed more in a north-east to south-west direction. This large seepage area eventually flows towards and forms a small tributary to the Royal Burn. This area is indicated on Figure 4.

Similarly, in an area west of the intersection with Crown Range Road and Glencoe Road there is an area of seepage that is sustained from infiltration from both the Royal Burn and the Swift Burn catchments. This area of seepage is evident on both sides of the Crown Range Road and the flow direction is more east to west. This area is indicated on Figure 4.

FIGURE 4: - Areas of Seepage on Crown Terrace



Number 1 refers to Royal Burn at Glencoe Road (South Branch).
Number 2 refers to Royal Burn at Glencoe Road (North Branch).
Number 3 refers to the begining of the open Brodies race.
Number 4 is the locations of the weir Monitoring flow down Brodies Race
Number 5 is the Lower take below the culvert on the Royal Burn (North Branch)
Number 6 refers to 6 refers to the off take for four houses after the waterfall on the Royal Burn.
Number 7 refers to off take at New Chums.
Number 8 refers to point where a Parshall Flume is located Monitoring flow in the race.
Number 9 refers to off take point at Start of the pipeline in Brackens Creek.
Number 10 refers to the discharge point into two new Storage ponds.
Number 11 refers to a tributary that is not collected by the mining race.
Number 12 refers to the Storage pond where flow from Royal Burn upper off take can be stored.
Number 13 refers to the off-take point (upper) on the Royal Burn.
Number 14 refers to the point where trout where spotted in the Royal Burn.
Number 15 refers to off take point.
Number 16 refers to another off take point.

3 Data Gaps

3.1 Stream Flows

The greatest data gap is simply accurate low flow data for this and many other streams in the area. There does not seem to be any publicly available data sets on stream gauging or flow measurement on the ORC web site. This is concerning since it is imperative to have this information to allow meaningful management of surface and groundwater takes in the area.

Historically, the mining rights have had exceptionally large take values assigned to them with little or no recording requirements. The total of water "deemed" to be able to be taken for these old rights seems out of proportion to what is physically available within the surface water system.

For example, the BSTGT Limited and A P McQuilken Family Trust application originally held "deemed consent" for a total of 319.5 L/sec or 1,150.2 m^3/hour or 27,604.8 m^3/day or 10,075,752 m^3/year. This despite that volume not being avaliable from the catchments.

It is a relatively simple exercise to collect and record several flow gauging's. By collating the flow data from the streams with the flows being taken it is then easily calculated what percentage of the stream flow is being taken.

3.2 Rainfall Figures

The average annual rainfall figure often given for the Crown Terrace is between 700 and 800 mm. This is probably true for the lower section of the terrace itself but is unlikely to be correct for the steeper and higher areas forming the Crown Range. The higher areas will have more precipitation in the form of both rainfall and snowfall and this may have a significant effect on the total possible catchment yield and the timing of high flows in the streams.

Ideally it would be good to have a rain gauge at several points within each catchment or sub catchment. These can also be automated and to save on establishment costs I would suggest installing these at the same locations that the weirs are being installed.

3.3 Interconnection between Surface and Groundwater

There is no data existing (apart of a single NIWA gauging) that shows there is definite losing and gaining reaches for all streams and creeks on the Crown Terrace. The missing information is the lag time between when water is lost from the surface water and then re-gained from the groundwater. This lag could be days, weeks, months or years. Without having some knowledge of this lag time, it would be incorrect to say that this is a minor effect on down stream users (of both surface and groundwater bores). There is no data to show if the "losses" are consistent irrespective of the flow within the creek or stream. However, we do know that losses are related to the head in the stream (relative to the groundwater level) and the wetted perimeter of the stream or creek.

3.4 Flow Measurements

It is important that any surface water or groundwater takes are measured in as an accurate manner as possible and truly reflect the volume and rate of take from a water resource. This is usually stipulated as a condition of any take. It is easy to measure flows in a pipeline, and I believe that any takes (via a pipeline) from a stream that then go into a "race" should be measured at the following points: -

i. Point of take (either measured or with an orifice weir inserted in the pipe to restrict the maximum take rate to the consented maximum take).
ii. Some point along the race (using a Parshall Flume).
iii. At the point of discharge into any storage dam.

These points of measurement are important to record first the water being taken, but also to record if any significant "losses", or unexplained "gains" are being made. If the users is not monitoring his take at various points as it moves through his system then he may be completely unaware of loss from his system and where it may be occurring. To be an efficient water user requires lots of measurement points, especially in a system that stretches over several kilometres of race and pipework.

4 Conclusions

Given the lack of hydrological data currently available for Fairhall Creek coupled with the apparent high demand for surface water for irrigation it is important that some real time data be collected as soon as possible: -

1. The first thing to do is to either install weirs above and below all off takes as identified. This information in association with the flow data currently being collected by the ORC for any consented takes, will provide good information upon which to determine if the diversion and take is legal, sustainable and compliant with the appropriate rules and regulations in force under the current Regional Plan Water.
2. At present BSTGT Limited appear to believe that they have some divine right to collect all and sundry surface water for their own use.
3. The mean annual flow in Fairhall Creek is estimated at 13.5 L/s.
4. The mean annual low flow in Fairhall Creek is estimated at 4.1 L/s.
5. Under the operative RPW, since Fairhall Creek is not in Schedule 2A, the maximum take allowed in total is up to 50% of the MALF value.
6. No single entity or person has the right to claim all the water in a stream for their own use.
7. The diversion is uncontrolled (has no flow control structure) and is unmeasured.
8. The take is not for domestic or stock use.
9. The take rate is greater than the permitted 25,000 Litres per day.
10. BSTGT Limited have an application in place to take 24.5 L/s from the New Chums Stream at a specific geographically identified location. They do not have the right to take other water from unnamed streams within the wider catchment and away from the identified take location.
11. The interconnection between surface and groundwater in this area is very poorly understood and needs to be fully understood before large volumes of surface water are simply removed from the system.

TERRA AQUA CONSULTANTS LIMITED

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Joanna Gilroy
MANAGER CONSENTS

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www.orc.govt.nz

From: Hilary Lennox <hilarylennox@ahika.co.nz>
Sent: Friday, 31 July 2020 5:36 p.m.
To: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>
Subject: Re: Update on application

PPS as I understand it, the water is pumped up to header tanks and then reticulated to users from there. The usage that Byron recorded over the two days might've been low because there was plenty in the header tanks for people to use. So the daily usage recorded by Byron is no indication of what is used in summer...

I'm so sorry that this has happened. It's not fun for anyone. We just need to be 100% sure about the PA status before going any further.

Get Outlook for iOS

From: Hilary Lennox <hilarylennox@ahika.co.nz>
Sent: Friday, July 31, 2020 5:18:08 PM
To: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>
Subject: Re: Update on application

PS this is why Council is usually reluctant to issue COCs for water takes... unless the infrastructure is there to prevent PA limits ever being exceeded.

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From: Hilary Lennox <hilarylennox@ahika.co.nz>
Sent: Friday, July 31, 2020 5:15:59 PM
To: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>
Subject: Re: Update on application

Hi Jo

I was about to head out the door but jumped back on my computer to email Kit and Tony and

D

From: Hilary Lennox <hilarylennox@ahika.co.nz>
Sent: Friday, July 31, 2020 5:18:08 PM
To: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>
Subject: Re: Update on application

PS this is why Council is usually reluctant to issue COCs for water takes... unless the infrastructure is there to prevent PA limits ever being exceeded.

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From: Hilary Lennox <hilarylennox@ahika.co.nz>
Sent: Friday, July 31, 2020 5:15:59 PM
To: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>
Subject: Re: Update on application

Hi Jo

I was about to head out the door but jumped back on my computer to email Kit and Tony and start to arrange a plan for consulting with the neighbours. However, as predicted, I have some questions about Byron's report and I would urge you to consider these before telling these people that they affected.

- It sounds like water is taken, goes through the tanks, and then discharged if the tanks are full. There is a portion of water that is stored in the tanks and pumped to the houses.
- The 'rate of take' was measured at 0.76L/s, which equates to 65,664 L/day unless someone is going up there and closing the pipe somehow. How do they ensure that they never exceed the daily limit? When the pump is going, and the water is flowing from the creek as well, I would imagine that it'd be easy to exceed the daily limit.
- The daily use recorded by Byron is just a snapshot in time. The daily volume might've been permitted over those two days, but this doesn't demonstrate that they never go over the daily limit. Unless there is some sort of cut-off mechanism that is triggered after 25,000L has flown through the intake pipe?
- Any water returned to the creek should be included in the 'daily take' because it sounds like there is a significant delay between it leaving the creek and then returning to the creek. This would be classed as a take and discharge rather than a diversion. The PA rule doesn't differentiate between the consumptive and non-consumptive portions, rather it just talks about the total take.
- By measuring the discharge and not the intake, Byron has assumed that there are no leaks in the system.

I understand that this is a tricky situation and we need to make sure that everything has been assessed correctly before inviting these parties to participate.

Thanks,

Hilary

From: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>
Date: Friday, 31 July 2020 at 4:01 PM
To: Hilary Lennox <hilarylennox@ahika.co.nz>
Subject: Update on application

Hi Hilary,

Byron's report isn't finalised yet, but the below excerpt from it confirms the rate of take and the steps we have taken:

- After investigation, PRETORIUS, PAYNE and DESBECKER agreed that turning off the pump in the pump shed would 'close' the system. Corresponding to an inflow (the abstraction from the Royal Burn) equalling that being discharged out of the overflow pipe.
- After confirming that the pump was turned off and that the three tanks were full, PRETORIUS, PAYNE and DESBECKER carried out three volumetric measurements from the overflow pipe. The results were:

  24.32sec/20L

  26.88sec/20L

  27.99sec/20L
- This corresponded to a mean across the three measures of 26.39sec/20L or 0.76l/s. A photograph was captured of the phone from the first measurement that read 24.32 seconds. A video was also captured of another measurement in entirety.
- While on site, PRETORIUS took another meter reading from the above-mentioned water meter, reading: 10234.361m^3. Over the two-day period since the initial inspection, the water meter increased by 4.754m^3, a daily increase of 2.377m^3/day (or 2,377l/day). This confirmed that a quantity of 2,377l/day had been used by the scheme over the previous two days.
- This second inspection confirmed that the PA take exercised from the Royal Burn under LOFTS WATER LIMITED met the rate and volume restrictions under PA Rule 12.1.2.1.
- It was confirmed that at the time when inflow was equalling outflow, 0.76l/s was being discharged. Corresponding to a rate of take of 0.76l/s.

We will now be contacting the below parties and letting them know that they are affected and can submit on the application, I will do this later tonight. Most of them have already submitted by sending in their emails and some submission forms. As what we have in to date is a mix of formal submissions and then emails, we think it is prudent to give people time to submit and this also gives you time to talk to them.

Party	**Why affected**
John Baker and Bridget Steed, Phillip Blakely and Mary Wallace, Barry Hodges, Adam Hill and Rosemary Hodson being Trustees of the R & A Hill Family Trust	Downstream user (97402)
LOFT scheme permitted users: Jef Desebecker Bridget Wolter Lindsay and Gayna Irwin for the Mylore Family Trust Aaron Rowe Mark Weldon and Sarah Elliot (2 shareholdings) Haraway Trust – Dean Sharp (Dean and Bently) Glen and Karen Russell James and Lyn Campbell Dinah Eastwood & Angus Sutherland	Permitted take which supplies 9 households domestic supply from the Royal Burn. The Royal Burn also runs through some of their properties.
Permitted user Patrick Garceau	Permitted take from the stream including stock water from stream. Their domestic take is from

	bore. The Royal burn runs through their property.
Permitted user Peter Clarke	Permitted user of domestic and stock water from the Royal Burn. The Royal burn runs through property.

The submission period would be until 5pm 14 August 2020. In my email to them I will mention that you and your client would like to meet with them and that you would be in touch.

I appreciate your openness during this process.

Thanks,

Jo

Joanna Gilroy
MANAGER CONSENTS

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Intensive grazing

We know that intensive grazing is an essential element of many Otago farming systems, but when it's not managed well it can result in significant nutrient and sediment losses into waterways that may negatively impact on water quality.

As part of this proposed plan change, new policies and rules have been added to the Water Plan to manage this activity.

In general:

- If the area of intensive grazing is outside any critical source areas and within the limits stated in the chart below, and you manage your grazing well, you wouldn't need a resource consent.
- If the area of intensive grazing is large, or you don't manage the activity well, you would need a resource consent.

Use the chart below to work out whether you would be likely to need a resource consent for intensive grazing under the proposed new rules:

Is the area of intensive grazing the lesser of 100 ha, or 10% of the total landholding?

No

Yes

Does the area of intensive grazing avoid any critical source areas?

No

Yes

Are stock break or block fed from the top to the bottom of a slope?

No

Yes

Is a vegetated strip of at least 10m maintained between the area of intensive grazing and any water body?

No

Yes

No consent required, **permitted** under Rule 14.6.1

Consent required under Rule 14.6.2 **discretionary**

Definitions

Intensive grazing: Means grazing of stock on forage crops (including brassica, beet and root vegetable crops), excluding pasture and crops.

Critical source area: Means a landscape feature such as a gully, swale or depression that accumulates runoff from adjacent slopes, and delivers it to surface water bodies such as rivers and lakes, artificial waterways and field tiles.

A waterbody (or waterway): A water body is fresh water or geothermal water in a river, lake, stream, pond, wetland, or aquifer that is not located within the coastal marine area.

More information about our resource consent process is available at www.orc.govt.nz/consents or by calling 0800 474 082 or emailing customerservices@orc.govt.nz

A well-managed intensive grazing activity means:

- Avoiding critical source areas, such as wet spots in paddocks, gullies and swales (see definition of "critical source area")
- Leaving a grassed or planted buffer strip between the area of grazing and any critical source area or water body
- Break feeding from the top to the bottom of a sloped paddock

Refer to your farming industry organisation for more guidance, as they'll be able to assist with solutions specific to your farming operation.

Good preparation is crucial for managing your intensive grazing well. It's best to start thinking about how you will manage your grazing well before selecting paddocks and beginning cultivation.

If you need consent, the earlier you contact ORC to discuss your application, the better.

For your application, we'll need to know:

- Where and how much land is grazed intensively
- Which stock types are grazed
- Which types of crops are grazed
- How the intensive grazing is managed to avoid nutrient loss

This factsheet will be reviewed regularly to check for any changes required as a result of new national requirements.

Please note: new national government rules for existing winter grazing will come into effect in May 2022. In the meantime, you need to follow the Otago Water Plan rules that are outlined in this factsheet.

You may also be able to continue intensive grazing without a consent under existing use rights, provided you continue grazing on the same scale with the same effects you have previously.

If you are not sure whether you need a consent or not, please contact us.

Other new national rules may apply to you now. Go to www.orc.govt.nz/NewWaterRules

Otago Regional Council

70 Stafford St Private Bag 1954 Dunedin 9054
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www.orc.govt.nz
Enquiries: info@orc.govt.nz

Re s 91 RMA

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From: Hilary Lennox
To: Alexandra King
Subject: FW: Some thoughts about what we just discussed
Date: Friday, 7 February 2020 8:07:12 a.m.
Attachments: image001.jpg

Mōrena Alex

My calendar has just reminded me that WAs for RM19.151 are due today. As previously discussed, we would appreciate some more time given the very uncertain times in which we are all operating. Until the interim plan change has been notified, submissions received and a hearing held, we will have no certainty regarding what are options actually are. We have been continuing our discussions with affected parties but as you can imagine, everyone is just waiting to see what ORC's next move is.

Given the circumstances, we would appreciate if you just left the application in hold indefinitely for now, which is consistent with how other consent officers are operating. Let me know if you'd rather have a time limit on it, in which case we believe that a year would be appropriate so that we're not having to spend more of your time, and my time, on asking for more time.

Let me know what you think.

Thanks!

Hilary

From: Alexandra King <Alexandra.King@orc.govt.nz>
Date: Friday, 24 January 2020 at 3:54 PM
To: Hilary Lennox <hilarylennox@ahika.co.nz>
Subject: RE: Some thoughts about what we just discussed

Hi Hilary,

Yes you are correct in your options going forward:

1. Keep pushing with the current application with fish survey and we can assess status quo
2. Have a time extension (with no pressure from us) and wait for both the current and new rules to come into legal effect
3. Have a time extension (with no pressure from us) and wait for the new rules to be fully operative, withdraw and reapply under the controlled pathway
4. Withdraw now and wait until the new rules are fully operative

I agree that the application if withdrawn and remade would need to be applied for by 1 April 2021 for the s124 continuation rights, if not between 3-6 months and rely on Councils discretion.

Kind regards,
Alex

From: Hilary Lennox <hilarylennox@ahika.co.nz>

From: Hilary Lennox
To: Alexandra King
Cc: Maria Bartlett
Subject: Time Extension sought for Consent Application RM19.151
Date: Thursday, 1 August 2019 7:06:49 p.m.

Hi Alex
I had a really productive meeting with Kit and Tony (clients for RM19.151) last night and we've got some good ideas about how to reduce the rate of take on the Lower RBNB point of take significantly. We may also seek to reduce the consent term applied for significantly following my conversation with Maria Bartlett and given your indication of which direction ORC is heading in with these deemed permit replacements. I understand that there may have been a meeting this week where ORC's new approach was presented but obviously I wasn't there... is it possible to get some notes on the key points please?
We are feeling positive about working with Aukaha to find a solution that works for everyone. Knowing that these things take time, and given that Aukaha have key staff off sick, I wonder if we could please apply for a time extension under s37 to give us 4 months to seek written approvals. This would put the application 'on hold' until early December.
DOC have indicated that they have no major concerns with the proposal.
We're working with the private landowners but we're having trouble getting contact details for GLC Land Holding Ltd. Can you please confirm which block of land exactly they own?
Many Thanks
Hilary

120

From: Alexandra King <Alexandra.King@orc.govt.nz>
Date: Tuesday, 30 July 2019 at 10:50 AM
To: Hilary Lennox <hilarylennox@ahika.co.nz>
Subject: RE: Amendment to Consent Application RM19.151
Good morning Hilary,
Thanks for coming in for a meeting – it was extremely helpful.
I can confirm that if the take is for less than 100 L/s Contact Energy will not be an affected party, and I have spoken to Jo and we are happy for the approach to place the applicant on hold at the applicants request as long as there is a timeframe.
Thanks,
Alex

From: Hilary Lennox <hilarylennox@ahika.co.nz>
Sent: Monday, 29 July 2019 7:42 a.m.
To: Alexandra King <Alexandra.King@orc.govt.nz>
Subject: FW: Amendment to Consent Application RM19.151
Hi Alex
Thanks for the meeting in Dunedin last week, it was incredibly helpful to be able to sit down and talk rather than trying to do everything via email. As discussed, we're happy to reduce the rate of take at the Lower Royal Burn North Branch point of take to below 100L/s if that means that Contact Energy will not be taken as an affected party. As discussed, ORC are unlikely to grant 100 L/s anyway and so it would be senseless to find ourselves in a position where Contact Energy are a submitter on an application for a take less than 100 L/s.
I'll need some time to talk to the applicants and Aukaha about what a suitable new rate looks like. I had a meeting with Maria Bartlett from Aukaha on Thursday and she sent some very strong signals that Aukaha would also like the rate to be lower than 100 L/s. Before we discuss further, please can you confirm:

From: Hilary Lennox
To: Alexandra King
Cc: Kit Gordon; Tony McQuilkin; [redacted]
Subject: Extend time for Limited Notification - RM191.151
Date: Friday, 6 December 2019 10:55:44 a.m.
Attachments: image001.jpg
After - Lower RB PoT August 2019.JPG
Before - Lower Royal Burn PoT summer 201718.jpg

Mōrena Alex
The time extension to obtain WAs for Application RM191.151 ends today. Here is an update of what's been happening:

- New intake infrastructure has been installed at the lower point of take on the Royal Burn North Branch with a gated intake structure installed in place of the open race (see attached 'before' and 'after' photos). We can now amend the application so that the proposed rates of take are as follows:

	Applied for	Proposed amendment
Upper RBNB	15 L/s	15 L/s
Lower RBNB	100 L/s	50 L/s
New Chums	45 L/s	45 L/s

- This should mean that Contact Energy are no longer considered by ORC to be an affected party.
- The outstanding affected parties should, therefore, be DOC, Aukaka, Glencoe Station Ltd and John Baker/Bridget Steed.
- We have been consulting with Aukaka for several months now. I have had emails conversations, phone calls and several meetings in Dunedin with Maria Bartlett. Maria has indicated on numerous occasions that Aukaha did not have any significant concerns with this proposal and that she was close to getting WA. However, Maria advised me that she had difficulty getting all of the Rūnanga to agree on how to approach Deemed Permits in general, and she has since resigned.
- DOC are not satisfied that the information provided is adequate to prove that there are no fish in the creeks despite RSUs report. They asked that we either: a) do a more thorough survey to prove that there are no fish in the creeks; or b) assume that there are fish, and impose fish screens and residual flows to protect these fish. We have chosen to go with Option A and do a more thorough fish survey.
- Matt Hickey and Dean Olsen are lined up to come out on site on 17 December to undertake the fish survey, which will be designed following advice from DOC to ensure that it meets their expectations. We will then need a few days after the survey to discuss the results with DOC and see if we can reach a resolution whereby they're happy to provide WA.
- We will not be providing WA from Glencoe Station Ltd because we struggle to see how they are affected, as outlined in my previous emails.

Based on the above, I would respectfully request that we extend the time allowed to obtain WAs to 10 January. As discussed on the phone just now, this should allow time for our discussions with DOC and for your preparations so that it can be limited notified on 10 January. Please can you confirm that this extension has been granted.
Ngā mihi nui
Hilary

34

From: Hilary Lennox
To: Alexandra King
Subject: Time extension for RM19.151
Date: Wednesday, 8 January 2020 12:49:38 p.m.
Attachments: image001.jpg

Kia ora Alex
Nice to see you this morning. As discussed, we haven't been able to get out and do the fish survey yet due to adverse weather conditions and then the Xmas leave. I am currently trying to coordinate a suitable date with WRM and Ryder, and would like to ask for another time extension to allow us time to do this. I hope to have it completed by the end of the month but then we also need time to talk to DOC once we have the results. Can we please have a time extension that give us until 7 February? Let me know whether this is agreeable.

~~Ngā mihi~~
Hilary
signature_1677072510

29

From: Alexandra King
To: "Hilary Lennox"
Subject: FW: Update on BSTGT for Richard
Date: Wednesday, 2 September 2020 1:31:00 p.m.
Attachments: image001.png

Hi Hilary,

Thanks for your call – yes definitely in the same boat about phone calls which is why it is nice to be working from home. My cell is [redacted] if you are wanting to call anytime for the rest of the week as I will be at home.

Jo asked me to send an update on the application so that Richard has a basis for his email to Jef today. See the email I sent below. I outlined that the application is on hold at the applicants request on the basis there may be an amendment but no mention about what that may include. Let me know if you would like me to be more clear and I can send a follow up email.

Thanks,
Alex

From: Alexandra King
Sent: Tuesday, 1 September 2020 3:37 p.m.
To: Joanna Gilroy <Joanna.Gilroy@orc.govt.nz>
Subject: Update on BSTGT for Richard

Hi Jo,
The current status of the BSTGT application (RM19.151) is that it is on hold at the applicants request. We have the understanding that the applicant is proposing to amend their application and undertake consultation with submitters. Once the application comes off hold Council will be formally serving those parties we consider affected who have not yet submitted, they will be given time to submit.
If the application is amended, that and the supporting documentation will be sent out to all those involved. There is no new application to send out at the moment, however we will be in touch as soon as the applicant amends it.
From a Compliance perspective, Byron is of the mindset that we should be showing discretion in this case, particularly seeing that Lofts Water Limited will be making changes to their infrastructure to restrict their daily volume of take to comply with the 25,000L/day limit. Byron has also stated that he would be happy to go out to confirm that the 25,000L/d limit is complied with after the flow restriction is installed.

Let me know if you would like me to add anything further.

Thanks,
Alex

Alexandra King
SENIOR CONSENTS OFFICER

H

From: Hilary Lennox
To: Alexandra King
Subject: Some thoughts about what we just discussed
Date: Thursday, 23 January 2020 5:08:25 p.m.
Attachments: image001.jpg

Hi Alex

Some thoughts following from our conversation.

It's currently looking like ORC are going to notify an interim plan change option that includes a controlled activity for 7-year consents with no affected party approval. The alternative will be a non-complying pathway.

If we keep pushing ahead with RM19.151 then it will need to be considered under the current plan plus the proposed, which means that WAs will be required. In this instance we'd be inclined to push for a longer term, which would be consistent with the current plan as well as the non-complying pathway in the proposed plan.

The alternative is that we hold off until the proposed plan is fully operative, which should provide an option for a 7-year / non affected party approvals pathway. In this instance I think we'd need to submit a new consent application and withdraw the current application because, as you say, the s95 decision has already been made.

However, the new application would still need to be made by 1 April 2021 to ensure that s124 rights are maintained. If we submitted later than this, and withdrew the current application... and the new consent wasn't granted before 1 October 2021... then I think we might lose our s124 rights because the application being considered is not the same one that was in the system as of 1 April 2021 and it's technically not the same activity? I could be wrong... but it's possibly worth figuring that out internally.

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From: Hilary Lennox
To: Alexandra King
Subject: Re: PDP report
Date: Wednesday, 9 September 2020 4:22:31 p.m.
Attachments: image001.jpg

15 yrs.

Thanks Alex!

From: Alexandra King <Alexandra.King@orc.govt.nz>
Date: Wednesday, 9 September 2020 at 4:17 PM
To: Hilary Lennox <hilarylennox@ahika.co.nz>
Subject: RE: PDP report

Hi Hilary,

Thanks for sending that through.

I have had a chat to PDP about updating the report. Will be in touch once I receive that.

Thanks,
Alex

From: Hilary Lennox [mailto:hilarylennox@ahika.co.nz]
Sent: Wednesday, 9 September 2020 9:35 a.m.
To: Alexandra King <Alexandra.King@orc.govt.nz>
Subject: PDP report

Hi Alex

Some comments in red on the attached (ignore the highlighting), namely point out that the proposal and our understanding of the catchment has changed a lot since we first lodged the consent application. It would be good if PDP could base their assessment on what it now being proposed.

Nonetheless, the PDP report identifies what we already know – which is that this is a complex catchment and that further investigation is required before we can confidentially predict the effects of the abstraction activities. A study of the catchment is required. We have already asked Landpro to provide a proposal for doing this work, although nobody has agreed to this proposal yet and so it is not for public circulation.

We have two options:

- Leave the application on hold for at least 3 years while we undertake the study so that we can answer PDP's questions. The applicants will be able to continue to abstract with few limitations in the meantime.
- Grant a short term consent (6 years) based on the inherent uncertainty, and impose consent conditions requiring that a catchment study is undertaken. No affected parties on the basis that the consent granted will be an improvement on the current situation due to new strict rate and volume limits being imposed, and that the consent is only short-term.

ORC also have a lot of work to do over the next 6 years to write a new regulatory framework to help guide decisions on these sorts of applications.

I can discuss with PDP directly if that helps?

Hilary

signature_390426871

How Much Water Does Golf Use and Where Does It Come From?

Gregory T. Lyman, Environmental Programs Director
Golf Course Superintendent Association of America

The Golf Course Environmental Profile conducted by the GCSAA is a project dedicated to collecting data from the United States on the property features, management practices and inputs associated with golf courses. This article features information on irrigation water use patterns, water sources, costs, conservation practices and irrigation system infrastructure. Future water use trends and recommendations also are discussed. This project was funded through support from the Environmental Institute for Golf.

The information presented for the USGA Water Summit is provided through GCSAA's Golf Course Environmental Profile, a series of surveys to collect data on golf courses throughout the United States. The Profile reports provide insight and perspective into the property features, management practices and inputs associated with U.S. golf courses.

Water Use and Conservation Practices on U.S. Golf Courses is the second report produced from the project. It provides an accurate portrayal of water use, costs, sources and conservation practices on golf courses in the United States. It also establishes a baseline that will be compared to data from future surveys to identify change over time. All reports from the project are available at www.gcsaa.org.

The objectives of the water use and conservation survey were to measure:

- Number of irrigated turfgrass acres for the U.S. and in agronomic regions
- Total water use in the U.S. and in agronomic regions
- Water cost averages for the U.S. and in agronomic regions
- Water sources used for irrigation
- Recycled water use in the U.S. and in agronomic regions
- Water quality
- Irrigation system characteristics
- Water management and conservation practices.

Superintendents at all golf facilities in the U.S. (16,797) were invited to participate in the survey. A total of 2,548 golf facilities participated in the survey, accounting for 15 percent of the nation's facilities.

Report Highlights:

There are an estimated 1,504,210 acres of maintained turfgrass (greens, tees, fairways, rough) on golf facilities in the U.S. An estimated 1,198,381 acres or 80 percent of maintained turfgrass are irrigated. Approximately 80 acres of an average 18-hole golf course's 100 acres of maintained turfgrass are irrigated. From 2001-2005, an estimated total of 31,877 acres of irrigated turfgrass were added to existing golf facilities in the U.S. The greatest net gain in irrigated acreage occurred in the North Central and Northeast regions, where 13,513 and 8,442 new acres were irrigated, respectively. The Southwest region had an estimated net decrease of 12 acres.

Table 1. Number of irrigated acres and percentage of total irrigated acres by golf cours component for an average 18-hold golf facility in the USA.

Component	Irrigated acres	% total irrigated acres
Greens	3.7	4.6
Tees	3.4	4.2
Fairways	30.7	38.0
Rough	33.8	41.9
Practice area	5.6	6.9
Clubhouse grounds	3.5	4.3
Total	80.7	99.9

From 2003–2005, the average water use for golf course irrigation in the U.S. was estimated to be 2,312,701 acrefeet per year. That equates to approximately 2.08 billion gallons of water per day for golf course irrigation in the U.S. According to the U.S. Geological Survey's "Estimated Use of Water in the United States in 2000" report, approximately 408 billion gallons of water per day are withdrawn in the U.S. Golf course irrigation accounts for 0.5 percent of this total.

Table 2. Irrigated turfgrass acres, water use, and water use per irrigated turfgrass acre on an average 18–hole golf facility by agronomic region.

	Agronomic region[x]						
	NE	NC	Trans	SE	SW	UW/Mtn	Pac
Irrigated turfgrass (acres)[y]	54f	66e	74d	100b	115a	103b	84c
Water use (acre-feet)[y]	42.4f	76.7e	78.9e	241.8c	459.0a	300.4b	158.0d
Water use (acre-feet) / irrigated turfgrass acre	0.8	1.2	1.1	2.4	4.0	2.9	1.9
Water use (inches) / irrigated turfgrass acre	9.4	13.9	12.8	29.0	47.9	35.0	22.6

[x] Agronomic regions: NE = Northeast; NC = North Central; Trans = Transition; SE = Southeast; SW = Southwest; UW/Mtn = Upper West/Mountain; Pac = Pacific.

[y] Within a row, values followed by the same letter are not significantly different from one another. Letters denote significance at the 90% confidence level.

Water use varies significantly by agronomic region. An average 18–hole golf facility in the Southwest region uses an average of 4 acre–feet of water per irrigated acre per year. An average 18–hole golf facility in the Northeast region uses an average of 0.8 acre–feet of water per irrigated acre per year.

Annual irrigation water cost also varies significantly by agronomic region. Golf course facilities in the Southwest region had the highest water costs – approximately $107,800 per year for an average 18–hole golf course. Golf facilities in the North Central, Northeast and Transition regions had the lowest water costs, paying $4,700, $6,300 and $6,900 per year, respectively.

Multiple sources are utilized for irrigation water and many golf facilities have more than one source available for irrigation. Most 18–hole golf facilities utilize surface waters (ponds, lakes) or on–site irrigation wells. Approximately 14 percent of golf facilities use water from a public municipal source and approximately 12 percent use recycled water as a source for irrigation. Specific water sources for 18–hole courses as indicated by participants are noted below:

- 52 percent use water from ponds or lakes.
- 46 percent use water from on–site wells.
- 17 percent use water from rivers, streams and creeks.
- 14 percent use water from municipal water systems.
- 12 percent use recycled water for irrigation.

As previously noted, 12 percent of 18–hole courses use recycled water for irrigation. The most common reason cited for not using it was a lack of an available source for recycled water as indicated by 53 percent of respondents.

In general, irrigation water quality is acceptable or better in all agronomic regions, although there are golf facilities in all agronomic regions that face significant agronomic challenges due to the quality of their irrigation water.

Approximately 46 percent of 18–hole golf facilities treat their irrigation water or distribute products via the irrigation system. The most common products distributed through the irrigation system are wetting agents and fertilizers.

Nearly all 18–hole golf facilities use multiple irrigation scheduling techniques to aid in making water application decisions. Most facilities utilize direct observations of turfgrass and soil conditions to aid in irrigation scheduling decisions. Approximately 35 percent routinely utilize evapotranspiration data and approximately 3 percent use soil moisture sensors to aid in irrigation scheduling.

Superintendents at 18–hole golf facilities utilize numerous methods to conserve water. The top three conservation methods and the percent of golf facilities utilizing that method are: wetting agents (92%); hand watering (78%); and keeping turfgrass drier (69%).

An estimated 25 percent of18–hole golf facilities are subjected to recurring annual water allocations. Facilities in the Southwest (40%), Upper West/Mountain (39%) and Southeast (36%) are most likely to be subjected to a recurring annual irrigation water allocation. From 2001 to 2005, 16 percent of 18–hole golf facilities in the U.S. were subjected to mandatory irrigation water restrictions more stringent than the normal recurring annual irrigation water allocation for at least one year. Facilities in the Northeast and Upper West/ Mountain agronomic regions were more likely to experience more stringent restrictions. Approximately 28 percent of 18–hole golf facilities in the Northeast agronomic region have written drought management plans, more than any other agronomic region.

Environmental impacts by golf courses and strategies to minimize them: state of the art

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ENVIRONMENTAL IMPACTS BY GOLF COURSES AND STRATEGIES TO MINIMIZE THEM: STATE OF THE ART

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Golf has grown worldwide in terms of number of golfers and infrastructure; however, environmental impacts have been identified during the construction and operational processes of the fields. The assessment of these impacts has generated a global concern as results show concentrations of pesticides, heavy metals, nutrients in water and soil which often exceed current health and environmental regulations. Additionally, the high consumption of water generates changes in surrounding ecosystems and it may also cause the inclusion of foreign species. Consequently, those issues have been a concern of government agencies and organizations in different countries which have led most countries to initiate the development of methodologies and standard methods to carry out the environmental sustainability of the sport. This article will outline the state of the art of environmental impacts generated by golf courses and some practices to reduce, control and manage them, which include guides, manuals and standards.

Keywords: Golf course, Environmental impacts, Pesticides, Natural resources, Environmental sustainability.

Introduction

Golf practice and the number of fields where the sport takes place is increasing rapidly in many parts of the world mainly associated with economic growth of populations and globalization of the sport [1]; It is estimated that there are over 25,000 golf courses worldwide [2, 3]. Its roots are unknown; it is debatable whether they came from China, Netherlands or Scotland [4]. Most historians agree that it first appeared in the Netherlands because in the thirteenth century Dutch literature makes references to "*golf-like*" medieval games with names like "*mitten Colvespel*" (playing club) and "*den balmittacalven to Slåen*" (hit the ball with the club) [5, 6].

Golf, as it is currently known, began in 1744 in St. Andrews [6] and is composed of 4 types of play areas: greens and tees (3.9 % and 2.4 ha) , fairways (20% and 12 ha), practice areas (4.6 % and 2.8 ha) and roughs (34 % and 21 ha) [7].

According to the Latino Golf Report website, the sport dates from the twentieth century in Colombia and it starts by the construction of an initial 9-hole course at the Country Club in Bogota by the year 1917.The professionalism of the sport came from the hands of British and Argentine golfers who arrived in Colombia in 1919 and highlighted the sport in a national and international scope [8]. As the sport grew, fields started to appear for the first practices, which highlight The Club Campestre de Cali, where the Colombian Golf Federation was born. Colombia currently has more than fifty fields where local and

national qualifying tournaments are played such as the Colombian Open Golf Tournament, one of the most important tournaments in Latin America [9].

The relationship between golf and nature has historically taken greater force as the fields where the sport is practiced integrate with landscape, wildlife and vegetation of a specific area. This is due to the construction of the fields in areas generally close to rivers, lakes, oceans, land adjacent to virgin forests and the slopes of high mountains [10-12].

However, during the construction and operation of these golf courses there are practices that can be extremely harmful to the environment such as: water consumption overage, soil and water pollution by the use of pesticides and fertilizers, increased urbanization close to fields [2, 13, 14], the clearing of natural vegetation, deforestation, destruction of natural landscapes and habitats, eutrophication and change in topography and local hydrography [10, 11, 15-18].

The magnitude of these impacts has promoted the creation of local communities and international groups against the construction of golf courses which began appearing in the early 90's. For example: the Asian Tourism Network, the Asian Pacific Environmental Network and the Global Network for the Fight against fields of Golf, which came together to launch the Movement to fight World Golf and investigate and expose environmental impacts generated by its fields [10].

Different types of government entities, universities and organizations have been working on the implementation of policies, measures and actions for the quantification, monitoring and minimization of environmental impacts. Some of them include: the manual of good practices for water sources in golf courses prepared by the Environmental Council of Pennsylvania, the guide of Good Practices for Handling Water Use in Golf Courses by the U.S. Environmental Protection Agency (EPA).

As to regulations by U.S. agencies there has been a monitoring on the use of pesticides on golf courses located in coastal areas [19]; the Environment Agency and the Ministry of Health and Welfare of Japan established the maximum levels of contamination in 1997 as 30 pesticides in golf course drainage systems after several studies since the 80's [12].

This article aims to describe the state of knowledge about the various impacts on environmental resources generated by golf courses (results of case studies) and different management activities conducted on these impacts.

Environmental Impact

An environmental impact can be defined as a significant alteration of the environment in a negative or positive nature which may lead to partial or total loss of a resource or impairment of an environmental variable [20].These impacts can be generated at different stages of a project and their magnitudes can vary similarly. Therefore, in this section the environmental impacts and the results of their measurements and evaluations are described by different authors.

Impacts Caused by Pesticides and Fertilizers

Proper management of nutrients in the root zone and pest control is very important to maintain healthy and strong grass [21-23] in golf courses. This activity is usually performed by the use of pesticides and fertilizers; but excessive nutrient levels and different chemicals in the soil can cause problems in turf quality, vigor and quality of the same [24, 25] generating environmental impacts.

According Kenna (1995), there are six processes that influence the cycle of life of the chemicals sprayed on golf courses: runoff, volatilization, photolysis, adsorption, absorption, dilution/leaching and microbial degradation as seen in Figure 1.

Even though works have been done to show the importance of a good interaction between the environment and pesticides, it has been found that a vast majority of golf course managers ignore the international and local regulations in terms of pesticides and that workers who handle them do not know the rules, the products and compounds; and implementation of adequate protection is often missing [27].

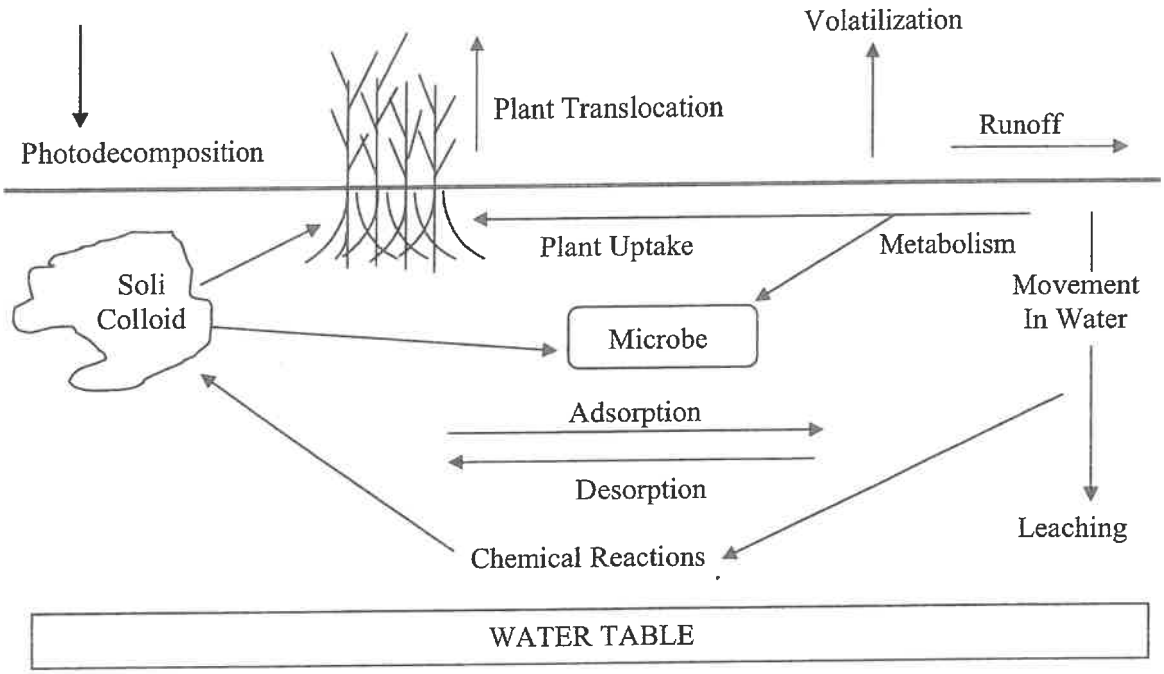

Figure 1 Processes affecting the fate of a pesticide in soils [26].

It has been determined that between 1.1 to 1.2 billion pounds of pesticides are sold annually in the United States, about 70% of these are applied in agriculture (food and textiles) and a fraction of this amount is aimed at golf courses [26]. Nevertheless, it has been established that the application rates of pesticides on golf greens and tees are usually higher than the rates in farmland applications [28].

According to Kohler et al. (2004), golf courses in the Midwest region of the United States receive about 7kg of pesticides, 41kg of nitrogen (N), 4kg of Phosphorus (P) and 22kg of potassium (K) per hectare/year [29, 30]; however, Petrovic (1990) estimated that the levels of application in modern fields are 200kg of nitrogen (N) and 40kg of Phosphate per hectare/year. Table 1 shows estimated amounts of pesticide application in Hawaii's golf courses.

Table 1. Estimated quantities of pesticides applied in Hawaii [31].

Type of pesticides	Quantity estimated by field surveys (lb/year)	Total estimated amount (lb/year)	Total percentage of use (%)
Herbicides	53.876	94.025	78.4
Fungicides	12.624	19.051	15.9
Insecticides	2.719	4.463	3.7

According to this, studies have been conducted by different authors on damages generated by pesticides and fertilizers on water resources, soil, sediments and species that inhabit these areas. Some results are shown below:

Water Resources

Different existing water sources provide a variety of services which vary in terms of their quality. It is clear that golf courses, depending on their design and management, can have a potential negative impact on water systems affecting their chemical, physical and biological properties [32, 33].

This impact is mainly due to the entry of fertilizers and other pollutants to surface bodies via runoff or groundwater infiltration [15, 32, 34-38] given that water is one of the main mechanisms by which pesticides are transported from the application area to the environment, resulting in the ability to move within and throughout the hydrological cycle [39].

It is clear that the effects of pesticides on the hydrological system generate negative impacts on the environment and populations as they can have a direct impact on aquatic life, food chains, potential uses of the water bodies when losing quality and hence its benefit for the purification and many other purposes [39].

Different studies have been focusing on the measurement of concentrations of different types of pollutants that can be generated within golf courses in canals, lagoons, rivers, drainage and groundwater; as result of these, various magnitudes have been found that can and have led this activity to be a big contributor of pollution not strut on water resources as it can be seen in Tables 2 and 3 [17, 29, 40, 41].

According to a monitoring of surface sources close to golf courses, 31 pesticides were found and 9 of them exceeded the maximum allowable concentrations for the protection of aquatic species, and in groundwater 21 pesticides [42, 43] from which 5 exceeded the maximum allowable concentrations [42]. A technical report of the Geological Survey of the United States stated that it identified 27 pesticides in surface water samples collected in a basin of Portland; 16 of the 27 are components in applications done in golf courses, which are not registered in a field near the basin [44, 45].

Ryals, et al. (1998), verified the impact on water bodies (lakes) of three golf courses located in North Carolina in the United States, for which measurements of the concentrations were made for four pesticides and two nutrients (N and P). The study found that a small fraction of samples of Chlorothalonil and chlorpyrifos, breached the levels allowed by the EPA.

Dripps et al. (2012) was able to determine an increase in temperature in streams between 3° and 4° Celsius for five different golf courses. This change in temperature is mainly due to the changes in vegetation located on the banks of water bodies and stormwater discharges.

In regard to groundwater, Lapworth et al. (2006) detected herbicides such as Dicamba, Atrazine and Benazolin. Moreover, one of the best-known cases of groundwater contamination was in Cape Cod, where 10 of the 17 pesticides analyzed were found though only one, Chlordane, was above the permitted levels of health [46] associated with the large number of golf courses in this region of the United States and the shallowness of the water [47].

As a further matter, there are other studies that have used simulations to determine concentrations, pollutant loads and risk associated with its implementation [48], Primi et al. (1994) resorted to models Pesticide Root Zone Model (PRZM) and Ground Water Ubiquity Score (GUZ) to assess the potential for groundwater contamination, finding with the first model a variety of 16 pesticides and with the second 25 [49]. Haith et al. (2007) used the TurfPQ model where pesticide loads were calculated from 0-875 g/ha depending on the city and the turf.

Impacts on Soil

Soils are an integral component of golf courses, they don't only play a natural role for plants and animals, but they also generate the landscape according to the needs of the fields. Most golf courses are built on sandy soils due to its infiltration capacity, there are others that are located on clay soils and clay loam, a few of them are build on rocky soils [50] or sometimes natural conditions are modified for this process [51].

Knowing the type of existent soils, assessments have been generated about their conditions after the construction of golf courses. Shown below are some experiences and results of these estimates of environmental impacts of pesticides on soils.

Mathews et al. (1995) conducted a study to determine mercury levels in soil and sediment in two greens, two lakes and a fairway of the Oakfield Golf Course in Halifax, Canada; results showed that the

highest concentrations were found in the greens with values between 15 to 71 mg/kg, at the same time traces in sediments were found in a nearby water course with values of < 0.050 to 1.9 mg/kg. On the other hand, Miles et al. (1992) found concentrations of 0.2 ug/g of Metribuzin and 1.1 µg/g of chlorpyrifos in sediments.

As to herbicide products containing arsenic, Cai et al. (2002) were able to determine that this element moves easily through the soil, which directly correlates with high concentrations of arsenic in soil and groundwater measured in areas underlying some golf courses in the South region of Florida.

A study by Pimentel *et al.* (1984) on quail fed with earthworms from a golf course, discovered that the sludge where the earthworms inhabited, contained an average of 48 ppm (dry weight) of cadmium (associated with chemicals products for lawn care), soon after these were dehydrated cold to feed quail, finally it was found that the kidneys of the male quail had accumulated 14 ppm and females had 18 ppm [52, 53].

The results of the assessment of sediment contamination and toxicity in the coasts of the Gulf of Mexico associated with a golf course are presented in Table 4.

Ecosystem Impacts

During the construction and formation of a golf course, excavation and soil movement to generate these areas, completely alter the existing natural habitat [18, 54], reconfiguration and canalization of water streams are generated which increment the erosion processes and increase their turbidity; in addition the removal and/or cut of vegetative barriers along the banks of the water bodies [32]. All these activities generate impacts on native flora and fauna of the regions.

It is important to mention that many times golf courses may favor the generation of ecosystems, as the same or higher levels of biodiversity have been found as of the habitats they replace [2, 55, 56]. As there is less danger of extinction and greater protection to these, according to the results presented by Colding et al. (2009) about artificial wetlands constructed for the landscape improvement, they contributed significantly to the increase and control of wildlife; however, it is important to highlight that the introduction of foreign species can drastically alter the natural conditions of ecosystems [13, 51].

Bowen and Valiela (2001) determined ecological changes and alterations on water use caused by the process of eutrophication due to the urbanization of a watershed located in the Bay Waquoit in Massachusetts, United States; where higher doses of N were contributed by golf courses. It is important to mention that from area of study these represent only 1 % of the total basin area [57].

On the other hand, the demand of water for field maintenance represents a significant impact to the environment since the maintenance of pastures is continuous and severe. It is estimated that good field watering uses between 15 and 20 billion gallons per year [60]. In Florida, about 1,246.77 m3 of water is used daily for the existing 1400 golf fields [50]. It has been estimated that golf courses in Catalonia use an annual volume of water is from 94,831 m3 to 384,000 m3 [61] and in the Spanish Mediterranean it is estimated that the consumption is 2,000 m3 and 17,000 ha-1 [62, 63] .

It is clear that in order to meet these water supply, many fields, have chosen to use underground water for irrigation; however, it has been determined that during summer time golf courses are exploiting these waters [64] and this excess extraction has allowed saline waters near the bonnet golf of Manly in Australia to invade these aquifers.

Table 3. Concentration and loads of pesticides, herbicides and fungicides on surface and groundwater.

Contaminant	Ryals, et al. (1998) Sediments pond's on Golf New Hanover County Merger (ppb)	Ryals, et al. (1998) Lake from South Golf Course Brunswick County (ppb)	Ryals, et al. (1998) Canals perimeter on South Golf Course Brunswick County (ppb)	Hindahl et al. (2009) Runoff concentrations on a golf course (µg/L)	Armbrust (2001) Runoff concentrations on a golf course (mg/L)	Cohen *et al.* (1990) Concentrations measured in groundwater in golf (µg/L)	Miles, R. J. Pfeuffer Load pesticides estimated by the Water Management District South Florida (Ton/year)
Chlorpyrifos	0.09 (annual average)	7,21 (annual average)	0.09 (annual average)	0.04 – 0.06	0	0.04	202
Chlorothalonil	0.04 (annual average)	0.79 (annual average)	0.03 (annual average)	0.06	0.12	0.05 - 0.08	252
Atrazine	0.04 (annual average)	0.08 (annual average)	Not Detected	----------	----------	----------	----------
2,4-Dichlorophenoxyacetic acid	0.24 (annual average)	0.43 (annual average)	0.17 (annual average)	0.20	----------	Not detected	21
Glyphosate	----------	----------	----------	20	----------	----------	----------
Clopyralid	----------	----------	----------	0.08	----------	----------	----------
Mancozeb	----------	----------	----------	10	----------	----------	----------
Azoxystrobin	----------	----------	----------	0.6	----------	----------	----------
Chlorothalonil	----------	----------	----------	----------	0.57	----------	----------

Table 4. Concentration and loads of heavy metals, pesticides, herbicides and fungicides in sediments [58, 59].

Contaminant	Lagoons from wastewater treatment plant	Lagoons of the fairway	Wetlands	Lagoons from wastewater treatment plant	Santa Rosa Coast	Santa Rosa Coast	Lagoons
As (µg/g)	< 2.3	< 2.3	1.3	2.7	0.3	< 2.3	< 2.3
Cd (µg/g)	< 0.07	< 0.07	< 0.07	3.5	< 0.07	< 0.07	< 0.07
Cr (µg/g)	8.3	0.8	5.9	20	0.5	1	0.5
Cu (µg/g)	35.8	3.8	4.5	24.6	0.2	< 0.09	< 0.09
Hg (µg/g)	126.4	3.1	15.1	62.8	2	0.02	< 1.7
Ni (µg/g)	2.1	< 0.9	1.8	5.5	< 0.9	< 0.9	< 0.9
Pb(µg/g)	5.7	1.1	3.1	15.8	0.4	1.3	2.1
Se (µg/g)	1.8	< 2.3	< 2.3	< 2.3	0.3	< 2.3	< 2.3
Zn (µg/g)	44.2	3.7	16.6	65	0.8	1.3	< 1.6
Dieldrin (ng/g)	17	1.3	< 1.0	3.5	< 1.0	< 1.0	----------
Chlordane (ng/g)	4.8	< 1.0	< 1.0	5.5	< 1.0	< 1.0	----------
t-nonachlor (ng/g)	4.6	1.4	1.1	7.1	< 1.0	< 1.0	----------
Epoxy (ng/g)	2.8	3.1	< 1.0	2.3	< 1.0	2.2	----------

Table 2. Evaluation of water quality parameters on surface water and groundwater.

Contaminante	Kohler *et al.*, (2004) Runoff concentrations on a golf course (mg/L)	Winter & Dillon, (2005) Concentrations of over a river downstream (D) and upstream (U) of a golf course (mg/L)	Kunimatsu*et al.*,(1999) Loads on a golf course (g/ha)	Winter *et al.*, (2003) Concentrations over a river downstream of a golf course (mg/L)	King *et al.* (2007) Concentrations on a waterway, (mg/L)	Graves *et al.* (2004) Runoff concentrations on a golf course (mg/L)
$N\text{-}NO_3/NO_2$	1.38 0.35	----------	----------	----------	----------	----------
NO_3-N	----------	----------	----------	----------	0.33 – 0.44	----------
NO_3	----------	(U) 0.16 – (D) 1.017	65.9	0.004 – 0.8	----------	----------
NH_4-N	----------	----------	----------	----------	0.10 – 0.09	----------
NH_3-N	2.70 1.83	----------	----------	----------	----------	0.20
P	0.31 0.13	(U) 0.0344 – (D) 0.019	81.9	0.0084 – 0.061	----------	0.24
PO_4-P	----------	----------	----------	----------	0.12 – 0.15	----------
K	3.35 0.56	(U) 0.4 - (D) 0.7	966	0.11 – 4.3	----------	----------
COD	294 147	----------	----------	3.2 – 46	----------	----------
COT	106.2 56.0	----------	----------	----------	----------	----------
Dissolved Solids	335 107	----------	----------	----------	----------	----------
Suspended Solids	33 22	----------	5810	----------	----------	8
Al	2.04 0.78	----------	----------	----------	----------	----------
Ca	47.83 8.61	(U) 2.9 – (D) 17.4	----------	3.2 – 42	----------	----------
Cl	44.77 19.61	(U) 0.3 - (D) 0.9	----------	1.7 – 162	----------	----------
Fe	1.49 0.68	----------	----------	----------	----------	----------
Mg	13.13 2.38	----------	----------	0.66 – 10	----------	----------
Mn	0.37 0.11	----------	----------	----------	----------	0.25
Na	20.75 11.02	(U) 0.7 - (D) 1.0	581	1.6 – 79	----------	----------
Si	3.53 0.70	----------	----------	1.0 – 6.2	----------	----------
SO_4	26.67 7.19	----------	----------	3.1–160	----------	----------
Alkalinity (µequiv./L)	----------	----------	----------	174 – 2380	----------	----------
TNK	----------	(U) 0.507 – (D) 0.413	----------	0.28 – 0.94	----------	----------

Strategies to Minimize Environmental Impact

Sustainability is a concept that has been implemented with greater force in sports and recreation over the last decade. Interest in examining the impact of sport in the physical environment has grown strong, including multiple domains of amateur and professional sport [65-68].

Different government agencies, golfing organizations, universities and research centers have begun to include the concept of sustainability in golf courses in the world, mainly for the reduction of environmental impacts, such as decrease water consumption, control of the application of pesticides and fertilizers [69] to take advantage of the design to service ecosystem's biodiversity [54, 70] and for the reduction of greenhouse gas emissions [71].

One of the concepts most commonly used for mitigating the environmental impacts generated by urban processes, is the *Best Management Practices* (BMPs) [72], also known as SUDS *Sustainable Urban Drainage Systems* (U.S. and Colombia) , *Water Sensitive Urban Design* WSUDS (Australia) *LIDS Low Impact Drainage Systems* (USA), SQIDS [73] *Stromwater Quality Improvement Device* (Australia) , ESD [74] *Ecological Sustainable Development* (Australia), which are based on structural and non-structural actions[75] .

Among the structural measures, constructed wetlands are one of the most used SUDS to manage pollutants in runoff [76-78] because they combine the removal of concentrations, the attenuation of tides [79], likewise they enhance biodiversity and are insensitive to variations of pollutant loads [72, 80, 81].

The United States Golf Association (USGA) has recognized wetlands as an acceptable means to reduce drainage flows and improve water quality [82], this is based on several studies conducted.

For example, in 1998 Purdue University (USA) incorporated in its golf courses a series of artificial wetlands that serve to retain water and as a quality control of runoffs. This golf course has 27.8 ha from which 10.1 drains directly into the constructed wetlands [29, 83].

The following results were obtained from measurements made to assess the efficiency of wetlands during six different rain events from April 2001 to August 2002 at 4 different points.

Table 5. Measurements from water quality parameters on the golf course in Perdue University [29].

Parameter	Sampling Site				Relative reduction (%)
(mg/s)	1	2	3	4	
$N\text{-}NO_3/NO_2$	8.15	3.20	1.18	0.25	97
$N\text{-}NH_3$	17.94	3.41	0.28	0.00	100
P	2.08	1.24	0.69	0.71	74
K	28.08	30.81	9.94	32.60	12
DQO	1465.06	330.18	54.04	154.66	90
COT	473.44	91.10	11.43	41.8	91
SST	173.60	339.18	256.14	1212.20	0
Al	10.48	5.51	8.14	24.24	0
Ca	376.94	358.54	93.14	254.98	46
Cl	351.96	287.36	46.33	91.96	77
Fe	9.15	9,39	12.91	19.64	11
Mg	102.31	120.26	27.87	100.32	23
Mn	1.4	1.38	0.41	0.88	51
Na	171.6	128.84	19.16	28.42	85
Si	33.72	31.52	18.32	58.52	0
SO_4	188.36	189.48	74.26	229.9	12

Table 6. Guides and manuals for sustainable design and operation of golf courses.

Guide or Statute	uthor	Country	Year	Description
Sustainable golf courses : a guide to environmental stewardship	Dodson Ronald	EE.UU.	2005	Guide that specifies environmental management methods for the design and operation of golf courses, it presents examples of research conducted by the USGA.
Environment & Sustainability	Golf course superintendents association of America (GCSAA)	EE.UU.	Online	Presents international courses for the sustainable management of golf courses, with emphasis on maintenance, water conservation, pollution prevention and water quality. http://www.gcsaa.org
Greening your BC course. A guide to environmental management	Environment Canada and the Department of Fisheries	Canada	1996	Guide that specifies environmental management methods for the design and operation of golf courses
Best Management practices enhancement of environmental Quality on Florida Golf Course	Florida Department Of Environmental Protection	EE.UU.	2007	Guide to for environmental management and good environmental practices for golf course managers.
Environmental Principles for Golf Courses in the United States	United States Golf Association	EE.UU.	Online	Presents a series of criteria for the design, construction and operation of golf courses. http://www.usga.org.
Improving the Environmental Management of New South Wales Golf Courses	Australian Golf Course Superintendents Association	Australia	2007	Presents a series of environmental problems faced by golf courses with emphasis on water consumption and reuse, use of pesticides and fertilization practices. http://www.environment.nsw.gov.au
Technical Guidance: Pesticides Act and Ontario Regulation 63/09 Golf Courses - January 2012	Ontario Ministry of the Environment	Canada	Online	Prohibits the use of four pesticides for golf course managers.
Environmental Best Management Practices for Virginia's Golf Course	Virginia Golf Course Superintendents Association	EE.UU.	2012	Guide to for environmental management and good environmental practices for golf course man
The Environmental Stewardship Toolkit: How to Build, Implement and Maintain an Environmental Plan for Grounds and Golf Courses	European Institute of Golf Course Architects	England	2012	Provides a guide for environmental and resource management, community involvement and landscaping.
Environmental Issues in Golf Course Construction (SGEG 2005)	Scottish Golf Environment Group	Scotland	2005	Description of good practices for the construction of gold courses and identification of environmental impacts.

Other authors have reported their experiences; Johnson (2007) describes one of the first artificial wetlands implemented on the field of Hillandale Golf in Durham, North Carolina, which was built in 2000 to capture rainwater from a field, a interstate path, a nearby residential neighborhood, a parking lot and a rural area where high nutrient removals were found. In the Chowan Country Club in Edenton North Carolina it was found that the wetland does an excellent control over the flow peak events of rainfall and reduction over nutrient loads (Total Nitrogen 23% and total Phosphorous 27 %) [84]. The Lonnie Poole golf course in Raleigh North Carolina showed a total nitrogen removal of 47% and a total Phosphorus of 59% [85].

However, Schwecke et al. (2007) proposed the use of constructed wetlands for treatment of rainwater, in order to use it for irrigation and to reduce groundwater consumption since according to studies of quality of rainwater, these exceeded permitted levels of total Nitrogen exposed on the Irrigation Guide of Australia.

Moreover, to minimize the consumption of water for irrigation management strategies have been proposed. For example Rodríguez-Diaz *et al* (2011) propose a set of indicators of water volumes controls, usage costs and environmental impacts generated. Additionally, the reuse of wastewater has been implemented for irrigation, decreasing in many cases the levels of groundwater use. In 2001 it was estimated that out of 419 existing golf courses in Florida 110mgd are reused [86], furthermore depending on the origin of the water, treatment could be inexpensive and simple [87] with high removals that facilitate its reuse. However, the major concern of this practice is related to the quality of the water for irrigation [88, 89], mainly microbiological parameters and physical since they can generate the proliferation of vectors [90] and contamination of soil and groundwater [91].

All these activities have led to the creation of guidelines and manuals for sustainable design and operation of golf courses. Table 6 shows some examples.

Conclusions

Golf courses have been proven to be highly impactful to the environment if they do not have measures to control and mitigate the effects on the environment during construction and operation stages; especially in regards to water resources (consumption and pollution) and soil (pollution and modification).

One of the most striking factors is the application of pesticides and fertilizers, which have been detected in a vast majority of tests conducted on water, soil and biological species; finding in many occasions traces of pesticides that environmental authorities have declared not permitted to be used and sometimes at concentrations above regulations in each country.

Moreover, it is clear that the concern of various entities and associations have created and proposed, during the last 20 years, a variety of activities and rules that could reduce environmental impacts leading golf to rationalize the use of natural resources; however, in many countries there is still no evaluation and control of such activities.

In the case of emerging countries, where the growth of this activity has been high, the development of this issue becomes an ideal and appropriate media to conduct further studies and research that will allow the creation of regulations, policies and environmental management systems appropriate to achieve protection objectives, conservation and development of the sustainability criteria for this sector.

It is important to note that currently Manuela Beltran University is implementing a project related to the evaluation and quantification of environmental impacts on golf courses and the research for environmental support schemes to ensure the efficient development and operation of these.

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L

From: Hilary Lennox
To: Joanna Gilroy; Alexandra King
Subject: FW: Lawn growing op
Date: Friday, 31 July 2020 7:43:56 a.m.

Hi Alex & Jo

Details about the turf growing below. I don't remember talking about it onsite but then again it was a number of years ago since I assessed land uses at the site (it was when I was at Landpro).

As Kit points out, there's no difference between growing turf or any other crop which is then on-sold (directly or after via the stock who've consumed it) and so we must've just brushed over this because we didn't allow any extra water for it than normal pasture.

Is this going to be an issue from ORC's view? I wouldn't have thought so...

Ngā mihi

Hilary

From: Kit Gordon [redacted]
Date: Friday, 31 July 2020 at 7:33 AM
To: Hilary Lennox <hilarylennox@ahika.co.nz>
Cc: Tony McQuilkin [redacted]
Subject: Re: Lawn growing op

Hi Hillary

We have had 4 ha of turf farm for approx 4 years which was set up to grow turf for the existing golfcourse and is located next to our front gate. We do sell the same turf to households, landscapers when required so it's not pushed that hard by us. We irrigate from Nov- feb with k lines and don't use huge amounts of water to keep it alive as the grass species fescue that we grow there doesn't require it. I'm sure we had discussed the turf farm over various visits to site but maybe we didn't see it as an issue as farming turf, growing grass for stock, winter feed, baleage or to maintain cover on a golfcourse all seems good use of land to us.

Regards
Kit

Sent from my iPhone

> On 30/07/2020, at 10:44 PM, Hilary Lennox <hilarylennox@ahika.co.nz> wrote:
>
> Hi Kit & Tony

A couple of the submissions from the LOFTS scheme users have mentioned a commercial lawn growing operation... but I haven't heard of or seen this at either of your properties. Do you know what they're talking about? If there is such an operation going on, it doesn't affect your entitlement to water but should have been mentioned in the consent application.

I'm getting an update from ORC about their assessment of the LOFTS scheme (i.e. whether it's lawful or not) tomorrow.

H

<image001.jpg>

L

From: Hilary Lennox
To: Alexandra King
Subject: FW: BSTGT fish survey
Date: Monday, 7 September 2020 5:30:39 p.m.
Attachments: image001.png
Royal Burn and New Chums Creek Fish Survey January 28th 2020.pdf

Helps if I attached the report eh?

From: Hilary Lennox <hilarylennox@ahika.co.nz>
Date: Monday, 7 September 2020 at 5:17 PM
To: Alexandra King <Alexandra.King@orc.govt.nz>
Subject: Re: BSTGT fish survey

Kia ora Alex

We engaged Matt Hickey and Dean Olsen to do the survey with guidance from DOC about exactly how they wanted us to do it. Attached is Matt's report. We didn't raise the fact that we found trout because they were released into that section of creek a number of years ago and they've just a stunted, isolated population that can't migrate up and down to the Arrow i.e. no sports fish values.

Thanks

Hilzry

From: Alexandra King <Alexandra.King@orc.govt.nz>
Date: Monday, 7 September 2020 at 4:05 PM
To: Hilary Lennox <hilarylennox@ahika.co.nz>
Subject: BSTGT fish survey

Hi Hilary,

Did you or DoC undertake a fish survey of the Royal Burn? And if so would you be able to share this information – if available I think it would be helpful for the notification recommendation.

Thanks,
Alex

Alexandra King
SENIOR CONSENTS OFFICER

P 0800 474 082
alexandra.king@orc.govt.nz

L

From: Hilary Lennox
To: Tony McQuilkin; Russell Coutts; Kit Gordon
Subject: Flow data from ORC
Date: Wednesday, 2 September 2020 7:10:32 p.m.
Attachments: proposed-plan-change-7-final-for-public-notification.pdf
Water use RM19.151 method 10.A.4.xlsx

Hi all

We have received ORC's assessment of the historic flow data and some of it is acceptable, but some isn't. This is a complicated process but I'll try my best to explain.

For many years now, ORC have had a policy of 'grant no more water than has been taken historically'. ORC would focus this policy on the rate of take (L/s). The monthly and annual limits were then typically granted based on the calculated volumes required for the irrigation of your crop at your location. For your properties, we based this all on pasture, with a calculated annual demand of 1,349,568m3/yr for 175.2ha (160ha Barley Station, 15.2ha McQuilkin). We also cheekily also asked for 5L/s continuous baseflow in the New Chums race, Brodie race and upper Royal Burn pipeline (I thought it was a long shot asking for this, but worth a try).

Since we lodged your application, Plan Change 7 was notified (the new rule framework). This provides a new method for calculating historic take and now means that ORC are reluctant to grant any more than what was taken historically from 1 July 2012- 30 June 2017 in terms of rate and monthly/annual volume. This is regardless of what the calculated demand for the crop is.

The attached spreadsheet shows what we asked for (irrigation only, and irrigation + baseflow) against what ORC have determined to be representative of what was taken from 1 July 2012- 30 June 2017. This presents a problem for you because it shows that during that period, you were taking nothing near what is required to irrigate 175.2ha. I appreciate that this is because there were major upgrades going on and so you weren't irrigating as intensively as you could have been.

I have attached Plan Change 7 and highlighted Rule 10A.3.1.1. This rule basically states that consent can be granted without any affected party approval provided that all of the clauses are met. The most simple and straight-forward way to get your consents would be to reapply and meet all of the clauses of Rule 10A.3.1.1. However, having reviewed the flow data, I don't recommend this because it means that you'll be restricted to monthly and annual limits that are too low and won't allow you to irrigate 175.2 ha. However, when I spoke to the ORC Consents Manager on the phone a couple of weeks ago she said that if we reduced the consent term to 6 years then we could proceed with no affected parties, and she didn't say anything about having to meet the other clauses of Rule 10A.3.1.

With your approval, I'd like to ask Alex (ORC Consent Officer) if we can please amend the current application as follows:

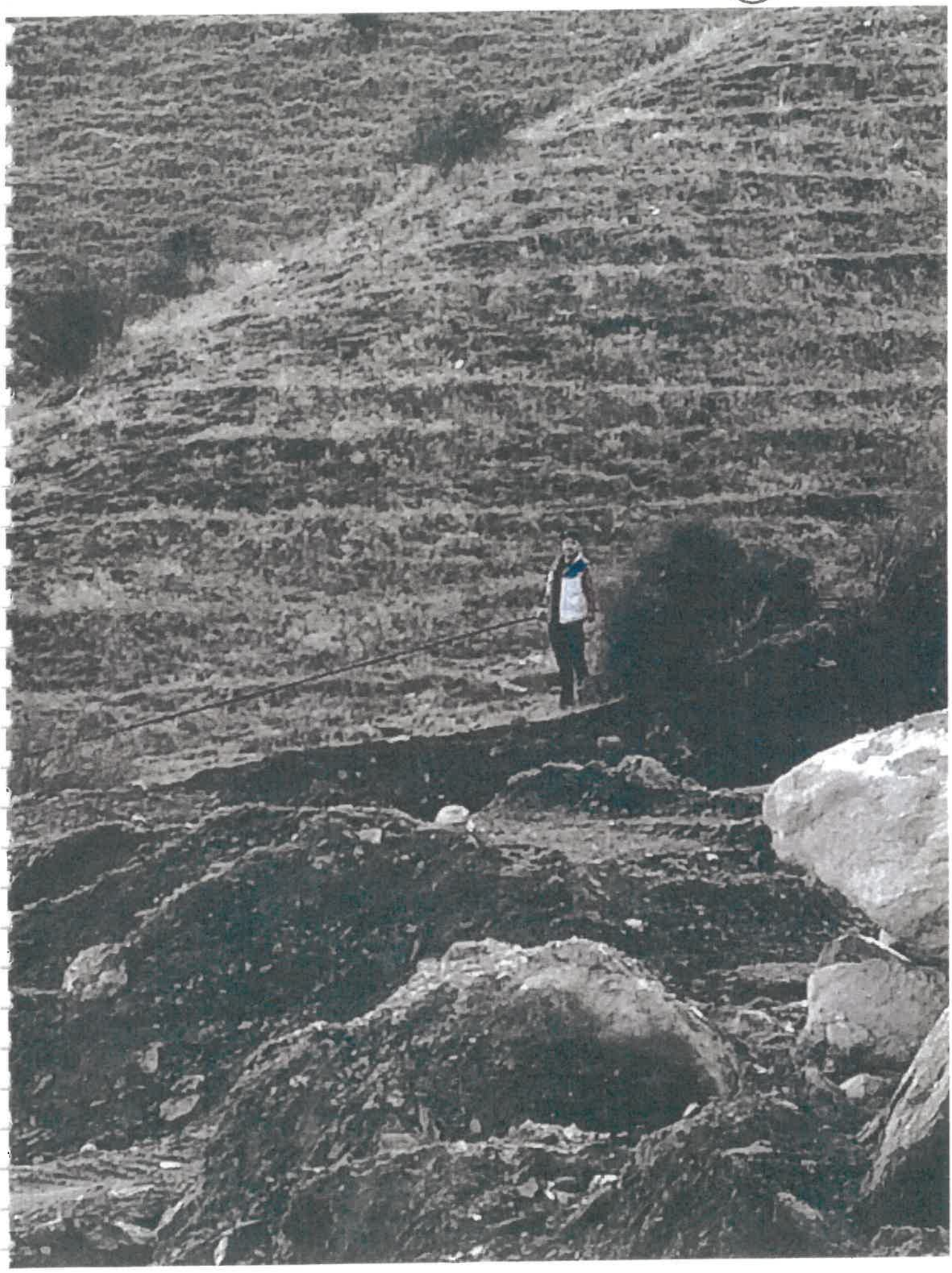
- Consent term of reduced to 6 years to meet Rule 10A.3.1.1;
- Rates of take as applied for, with a reduction on New Chums so that it meets Rule 10A.3.1.1 (so you'll end up with: Upper RBNB **15 L/s**; Lower RBNB **50 L/s**; New Chums **24.5 L/s**);
- Monthly and annual limits as applied for (1,349,568m3/yr), which will not meet the clauses of Rule 10A.3.1.1 but I'll ask for leniency based on the fact that you were

undertaking major positive infrastructure upgrades from 2012-2017, which this is why you weren't irrigating as intensively as you could've been.

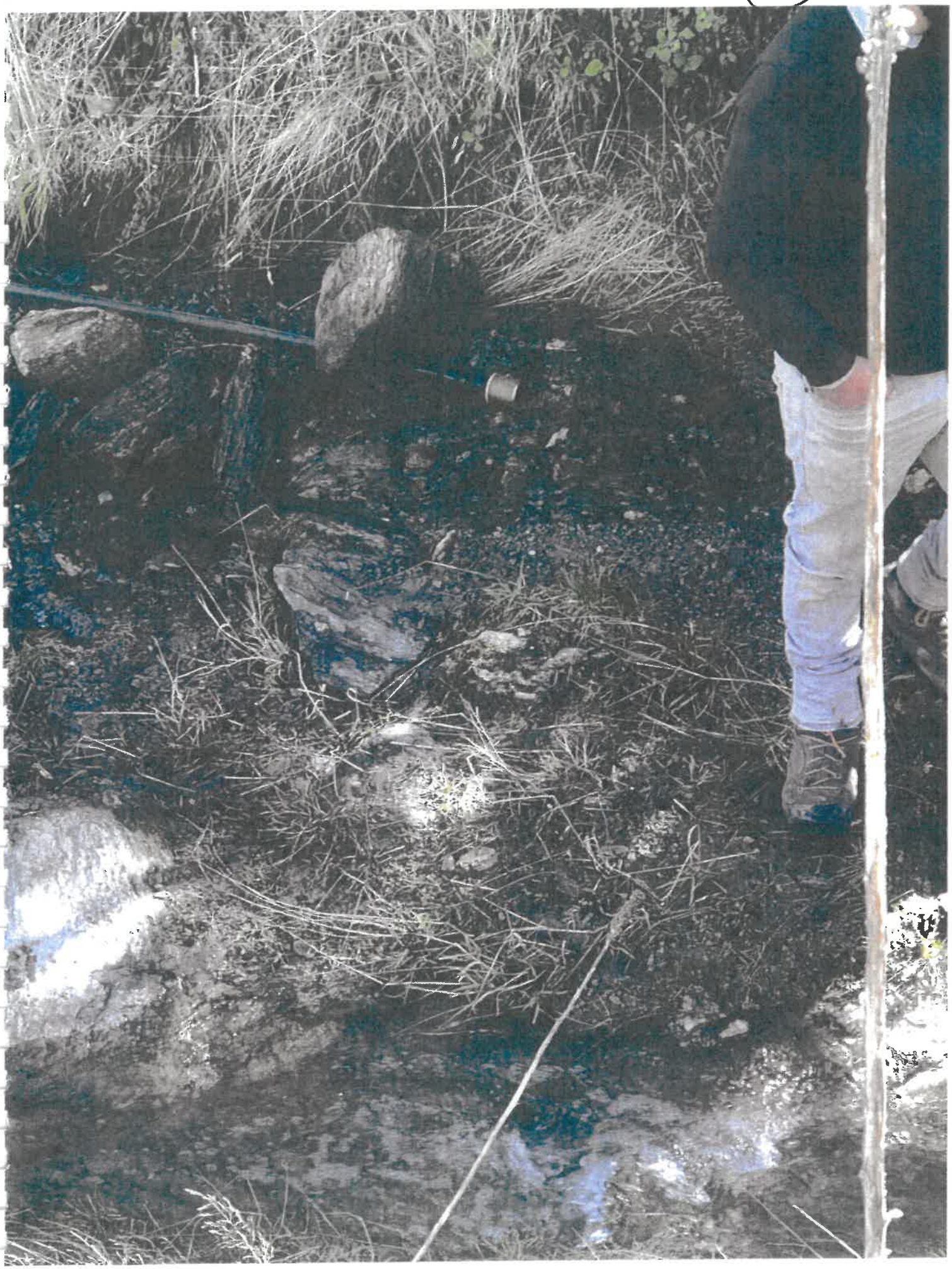
I will ask Alex if this is enough to allow us to proceed without affected party approval, and to check that she thinks amending the application in this way is robust and will withstand any legal challenges. I'd hate to have the consent granted and then for one of the downstream parties to successfully submit a judicial review against ORC, which might jeopardise your new consent.

Thoughts? The current application is only on hold until the end of the week so I'd like to go back to Alex as soon as possible, with your agreement.

Hilary



(4)



(4)