

**BEFORE THE COMMISSIONER APPOINTED ON BEHALF OF THE
OTAGO REGIONAL COUNCIL, CENTRAL OTAGO DISTRICT COUNCIL
AND QUEENSTOWN LAKES DISTRICT COUNCIL**

Under The Resource Management Act 1991
(the **Act**)

In the Matter of an application for resource consents
for Suction Dredge Mining on Clutha
River / Mata-Au

Between **COLD GOLD CLUTHA LIMITED**
Applicant

and **CENTRAL OTAGO DISTRICT COUNCIL**
(RC220255)

OTAGO REGIONAL COUNCIL
(RM22.434)

COUNCIL **QUEENSTOWN LAKES DISTRICT**
(RM220834)

Submission of Duncan Kenderdine
5 November 2023

Introduction

1. My full name is Duncan Brutton Kenderdine. I am the owner of a rural property on Māori Point Road which overlooks the Clutha Mata-Au. I have degrees in Architecture and Building Science and my professional background is predominantly in the design, development, and construction of larger scale social and economic infrastructure. My family's association with area goes back to the 1940s, I first went swimming in the Clutha Mata-Au at the Nook in the 1970s.
2. Recreational users will be measured in their thousands over the period of the mining activity, from fishers¹, jet boaters/jet skiers, rafters, kayakers, cyclists, walkers and a smaller number of people that float down the river, with or without buoyancy aids. And while many references are made to not operating on Public Holidays, the period between the weekend before Christmas and when most people go back to work in early January often has a kayak race with up to 60 kayakers and on occasions multiple jet skis and jet boats in a day. Last year a jet boat race was held in the middle of the week in November, for example, if I recall correctly.
3. The proposed extension to the Wanaka Cromwell river trail from south of Luggate to Smiths Way (refer Appendix A) can be expected to attract thousands of cyclists annually. This proposal has been progressing and can reasonably be expected to be completed in the period of the mining applied for. While the Applicant indicates that users coming across the mining activity see it as a positive, I would differ in opinion that it would deflect from the Outstanding Natural Feature, which includes its quiet amenity and beautiful scenery values.
4. The area alongside the Clutha Mata-Au river is also home to a number of residents who treat the river as a precious resource. It is a precious resource for its peace and beauty in their daily lives, and a solace for the hardworking families along it as they walk its banks in the early morning or evening. It is used for picnics, and swimming, and for wading along the lower flow and depth adjacent to the bank. Restorative native planting

¹ Otago Fish and Game Council, Submission dated 25 October 2023, re RC220255, para 8

along its banks and margins is one activity undertaken by the landowners which takes place, along with wilding pine, and other pest control, gorse, exotic broom, and rabbits.

5. It is clear that the operating dredge will have a major negative impact on the quiet enjoyment of the high-quality rural landscape amenity of the river corridor.

Landscape of the site Clutha River/Mata-Au

Industrial Attributes?

6. At present the Applicant proposes to spot mine the river in 200m sections to identify if economically viable seams of gold are present. If successful, the time spent in a particular area 'may extend to a period of months!² I note that while there is no clear definition of 'temporary' in the Resource Management Act (RMA), that months is beyond what a normal person would consider as a 'temporary' in relation to a noisy and visually impactful small factory on pontoons.
7. There is no clear picture of the duration of activity in an area and how the dredge will move and its actual working hours. In questioning Darryl Sycamore, I queried where the dredge would go when not operating? He replied it would be moved to the side of the river, but it seems only for maintenance repairs or a flood event³. That still does not answer what happens when it is not in operation. It seems unlikely to be operating for 350 days a year, 13 hours a day. Indeed, Peter Hall is quoted as saying "*he said he would like to recover 4oz a day over **the 200 days a year the dredge would be operating***".⁴ In which case it will be tied up alongside the riverbank. Potentially for days, weeks or months. How long does it need to be stationary in a landscape such as Viewpoint 14⁵ before it is considered a 'structure', if only in its visual impact? The CODC would consider this a

² Applicants Evidence, Peter Hall, para 6.

³ Cold Gold Information, Darryl Sycamore, Email 17 Oct 2023 to Duncan Kenderdine, attached as Appendix C.

⁴ <https://www.odt.co.nz/regions/central-otago/job-losses-gold-dredging-operation-ceases>

⁵ Applicant Evidence, Jessica McKenzie, Appendix 2, Photographs

structure, by the definition included in Section 2.1 Introduction of the District Plan.⁶

8. There appears to be no undertaking for the Dredge to be removed from the river if it is not working for any length of time. Clearly parking such a structure in the river or on its banks for the convenience of the operator should not be allowed, if indeed the proposal is to proceed at all. None of the assessment looks to the river as being used as an industrial zone. To that end the Landscape assessment, with considerable emphasis, notes *“Views towards river from Māori point road are fleeting, and the transient nature of the barge is such that it will not remain in location for more than a couple of months”*⁷
9. It is my understanding that ‘landscape’ in all its dimensions exists whether it is ‘seen’ or not.

Cultural Attributes

10. The cultural value of this area is set out in the extensive submission of Aukaha. We support the content of Aukaha's original Cultural Impact Assessment and further submissions⁸. The wider evidence in the CODC Plan Section 3 Mana whenua⁹ is a detailed report on its own findings. Throughout the CODC Plan there is constant emphasis on Landscape and amenity values.
11. CODC Plan Issue 4.6 Principal Reasons For Adopting Objectives, Policies and Methods at 4.6.2 Landscape and Amenity Values identifies s6(e) RMA- the relationship of Māori and their cultures and traditions with their lands, sites and taonga - as a matter of national importance. Mata-Au deserves this recognition.

⁶ CODC Plan, Section 2, The Resources and Significant resource Management Issues of the District, 2.1 *“Structures are defined as “any building, equipment, device or other facility made by people and which is fixed to land and includes any raft.”*

⁷ Applicant evidence, Jessica McKenzie, para 62

⁸ Submitter Evidence of Tim Vial, Riki Parata, Korako Edwards 3 Nov 2023.

⁹ CODC Plan, Section 3 Manawhenua 3.1 and Manawhenua p3ff.

12. As an example, the identification of Māori Point has long been of relevance to those interested in the history of the cultural issues relating to part of the Applicant's worksite.

13. It was part of a major transport system used by Kai Tahu and other iwi such as Waitaha and Kati Mamoe from which to access the interior, and the food sources the river provides. It is significant too, as I note, to the history of Otago for Māori and Europeans in terms of the discovery and the mining of gold. This mining history is not an endorsement of industrial scale mining on this river now.

14. Dr Lloyd Carpenter, a lecturer in Māori Studies, Landscape and the Environment, at Lincoln University, Christchurch, however, explains that overlaid over the significant pounamu trail at Māori Point Tarras are the activities of three Kai Tahu miners - Dan Ellison (ancestor of Edmund Ellison, the Rangatira and leader of Kai Tahu located currently at Ōtākou), Hakaraia (Zachariah) Haeroa, and then joined by Henare Patukopa. Together they mined an area of 20 x 40 ft of the stream bed at Māori Point for which the Māori owners were paid \$800 when the claim was subsequently sold.

15. In earlier years, whilst Swallow's Crossing was the nearest area for crossing the Mata-Au, the land along the Mata-Au was a major river highway for Ngai Tahu as an accessway to pounamu on the West Coast and the fishing grounds (tuna and eels) at the head of Lake Hawea (this Hawea land was returned to Kai Tahu also in the 2008 Crown settlement). It is stated there were two access trails joining at Swallow's Crossing up the river because it was the narrowest part of the Clutha River/Mata-Au¹⁰.

Issue

16. For cultural reasons above, the area around Māori Point and the land/river connection deserves prominent recognition and protection from the relevant

¹⁰ Dr Lloyd Carpenter "the Māori of Māori Point" Māori Journal Vol 2, Issue 2 page 114

provisions of the CODC Plan because of their cultural importance in this landscape. Dredging in this landscape should not be prioritised over its cultural, landscape and amenity values.

Recreational Values

17. Section 6(d) RMA considers it is also a matter of national importance to recognise and provide for *'the maintenance and enhancement of public access to and along ... rivers'*. The warning in CODC Plan Issue 4.2.8 **Access to Lakes and Rivers** cautions:
 18. *"Public access to and along the margins of the District's lakes and rivers is important to existing and future residents and visitors to the district. Such access is not always available and is capable of being obstructed by development adjacent to lakes and rivers."*
 19. The CODC Plan records that most parts of the Clutha River/Mata-Au are used for kayaking instruction, racing and cruising, kayaking and rafting. These activities are witnessed by people on and off the river, from adjacent roads and reserve and esplanade strips.¹¹
 20. Part of the pleasure of those who currently access the Clutha River/Mata-Au is that of experiencing the sheer existence of a wide, strongly flowing deep clear river, which varies from turbulent to calm in various sections. The proposed mining will remove any aspect of the current coherent experience of this amenity.
 21. Sensitivity effects from the proposed activity will arise for those on the proposed bike trail when the barge is operating or parked up adjacent to the River.

Heritage and Archaeological Values

22. As an example of the heritage along the river, early maps indicate three Chinese huts, their location on Māori Point reinforced by the Chinese ceramics they left behind. Those would have been obliterated if the dam at Māori Point had gone

¹¹ CODC Plan 2.4.3 Use of Water resources 2.4.3(i) Recreation para 3 page 2.23

ahead.¹² Now, the maps are the only part of the visual heritage history of this culture's occupation on that site.

23. There are the gold mining sluicing remnants left behind on this section of the riverbank site. In his report to the Government on a proposed dam site at Māori Point, Neville Ritchie, the archaeologist who undertook a review of cultural and heritage sites along the Clutha River/Mata-Au in 2008, noted on one of his maps (124/215) *'a flying fox upstream of Māori Point spans the river [with] pyramidal piers of dry schist (just up from the Edward Burn on the west side of the river) construction.*¹³³⁰ *It is the last survivor of numerous chairs placed across the river in the past. With new tow ropes, the flying fox would be easily serviceable across Mata-Au on the western side of the river'.*

24. These schist pyramided piers on the land remain almost intact, together with the mining tailings.

25. Evidence indicates that the early European miners subsequently used the area extensively. In the publication 'Costly Gold: Clutha Riches and their Human Toll - accidents by flood and fire':

26. *At Māori Point miners run the risk of losing their lives crossing and re-crossing to and from their work at Māori Point. The way in which they go is by means of a bullock hide rope extended from side to side and fastened to a rack. Next comes two logs hollowed out tied together with the same material. An old man acted as a ferryman pulling the structure backwards and forwards by means of a rope for a charge of a penny made for the transit.*¹⁴

27. The Aukaha Cultural Assessment identifies that Māori Archaeology is not discussed in spite of a strong focus on dredging relics. The Cultural Assessment warns *"the adoption of an accidental discovery protocol may not be sufficient to identify and protect Māori Archaeology sites'*. The mana whenua identify that the current

¹² Neville Ritchie Contributor and Publisher New Zealand Historic Places Trust, Cromwell, NZ, July 1980

¹³ Neville Ritchie p28

¹⁴ JS and R W Murray citing an early copy of the Lake Wakatipu Mail, page 46. AH & AW Reed, Auckland, 1978.

dredging proposal perpetuates a pattern of extractive use of the Mata-Au.¹⁵

Issue

28. The CODC Plan records *'The interaction of cultural and heritage elements with the natural landscape contributes significantly to Central Otago's distinct character'*.¹⁶

Clearly allowing this proposal fundamentally disrupts this connection between culture, heritage and natural landscape.

¹⁵ Aukaha Cultural Impact Assessment, Archaeological Values, para 8.5, 8.6

¹⁶ CODC Plan, Section 2.4 Water Resources, para 6, page 2:20.

An Outstanding Natural Landscape or Outstanding Natural Feature

29. The CODC Plan at 4.2 Issues 4.2.1 – 4.2.3 and its cross references are to Outstanding Natural Landscapes (ONL) and Outstanding Natural Features (ONF) highlight what I consider is important to this section of the Mata-Au, from the Luggate Red Bridge to its confluences with the Lindis River.
30. At Issue 4.2.4 the CODC Plan references Development of Mineral Resources, and notes the activity has the potential to have significant effects on, among other things, landscape and heritage values. Effectively, this is the case here.
31. In the QLDC Plan the title Outstanding Natural Feature has been designated on the Clutha Mata-Au upstream from the Mata-Au Scientific Reserve¹⁷ at Long Gully, where the CODC and QLDC boundary is located.
32. I generally endorse the landscape evidence of Jessica McKenzie (Landscape Architect for the Applicant). That endorsement begins with her description of the existing landscape namely its Associative Attributes, Perceptual Attributes (except where she considers there is limited public access with which I do not agree), Natural Character, and Landscape Values¹⁸.
33. Jessica McKenzie also references the Queenstown Lakes District Council (QLDC) Plan which provides a guide to the objectives and policies underpinning its own resolution to designate the Clutha Mata-Au as an Outstanding Natural Feature (ONF)¹⁹. Usefully, and logically, the boundary on paper between the QLDC and CODC is not seen as a barrier to the consideration of the river and river corridor as '*outstanding*'.
34. While I am supportive of sections I do not endorse Objective 21.2.5 nor Policy 21.2.5.1 of the QLDC Plan²⁰, both of which support extractive activities (including minerals). But even the exploitative Policy 21.2.5.4 seeks to ensure potentially

¹⁷ <https://www.doc.govt.nz/news/media-releases/2014/a-new-reserve-in-the-long-gully-terraces/>

¹⁸ Jessica McKenzie, Landscape Architect paras 17-29, pages 7-8

¹⁹ Ibid paras 30-31, page 9

²⁰ Ibid paras 39, page 12

significant adverse effects are avoided or remedied, particularly when they have the potential to degrade natural character and amenity values.

35. To that end, Policy 21.2.5.2²¹ specifically creates an expectation of small scale prospecting by hand or suction dredge mining less than 13 horsepower “*where they have limited environmental impact:*”
36. The Boffa Miskell Report cited finds the Clutha Mata-Au as having a high degree of natural character due to the relative lack of development²². Jessica McKenzie generally agrees with the findings in that report and summarises them to include in her report.
37. I am also concerned with what appears to be significant reliance by what is experienced or seen of the river by a car driver, when very clearly the weightier experience is that of people on and along the river and river banks. These are dismissed by the phrasing of “limited public access”.
38. In her evidence Jessica McKenzie’s omits in her review of sites to mine the appreciation of the Clutha River/Mata-Au for this area, and the significant influence the largest river in New Zealand, the Clutha /Mata-Au, has on this particular landscape.
39. The Clutha River/Mata-Au is the major catchment system within the district (Mata-Au System) and as such has the largest flow of any river in New Zealand.
40. There should be such landscapes within the district that are significant for landscape qualities are identified as providing a significant contribution to the cultural (and amenity) values of the environmental quality of Central Otago. The designation within the QLDC Plan of Wahi Tupuna, logically follows the ONF down the river.

Issue

41. 2.4.3 **Use of Water Resources** of the CODC Plan states that *‘the rivers ... of the district are also significant components of the landscape and natural character of*

²¹ QLDC, Proposed District Plan Decisions Version (Aug 2023), Policy 21.2.5.2 page 21-4,

²² Jessica McKenzie, para 5-29 citing Natural Character, Riverscape and Visual Amenity Assessments Clutha Mata-Au Water Quantity Plan Change – Stage 1 Boffa Miskell 13 October 2018.

the District²³ (emphasis added) The statement suggests a direction from the Council that rivers are to be regarded as part of any analysis of the district's landscape. This also reflects Māori holistic approach to the environment, that is, the two attributes are regarded as one in any assessment by Māori that should arise as a result of centuries of exploration, travel and use of local resources in the area both from the land and the water²⁴.

42. As a result, the Clutha River/Mata-Au contains a rich heritage of adjacent land trails, mining and living sites, archaeological artifacts and structures, and boating craft made of flax. The interaction of these cultural and historic elements with the natural landscape is recognised in the CODC Plan as contributing significantly to Central Otago's distinct character, as it does as a matter of fact in the context of Māori Point which sits within the Application area.
43. The expansive nature of this landscape holds elements of all of the issues raised above. Its landscape values are the results of natural character on the proposed dredge mining site and the natural character and influences of the Clutha River/Mata-Au. The proposal put forward by the applicant in this area has all the elements that will disrupt this significant landscape and distract from its values.
44. I support the exclusion zones around the Devils Nook and from below the Lindis confluence, however as set out below, as a minimum there should be further areas of exclusion around impacted dwellings, if not declining the consent in total.
45. I consider this section of the Clutha Mata-Au should not be dredged. The ONL status requires the assessment of biophysical values, including aesthetics, noise, natural beauty and relevant experiential matters, none of which support an intrusive activity, orders of magnitude greater than the permitted baseline. Clearly the associative values of Central Otago's tangata whenua require recognition.

²³ CODC Plan, Section 2.4, Water Resources, p2:23

²⁴ Neville Ritchie, Contributor and Publisher New Zealand Historic Places Trust, Cromwell NZ, July 1980.

Operational Constraints and Risk

46. Proposed Conditions 9 – 13²⁵ attempt to address the clash between recreational users and the dredging activity. I have looked at the Applicants submission and evidence, particularly The Maritime Transport Operator Plan²⁶ as while I am not familiar with the wider and generally slower region of the river that the dredge has been operating in, I am more aware of the activity on the proposed worksite. What I have been looking for is an understanding of the likely risk, health and safety particularly, that the dredging poses for recreational users.
47. While the activity is not as great as the stretch around Alberttown, we do get several kayakers, jet skis and boats, and rafters and floaters coming past our property at the lower end of the application site. There appears to be little in the Operator plan that deals with this aspect of water safety, focussing more or less solely on the staff and the dredge²⁷. Consenting the Application as it stands would effectively endorse this approach. Of particular concern are rafters and people floating down; we have had people on 'lilos' coming past, which have limited navigation ability. How they are to avoid the trailing anchor ropes is unclear and given they will be hard to see and hard to hear above the operating noise of the dredge the proposed conditions appear inadequate.
48. The QLDC Harbour Master recommended Conditions²⁸ to mitigate some of this risk, particularly *"No mooring or anchor lines extend into the river beyond the port or starboard beam of the dredge to minimise health and safety risk or restrict access to other users"*²⁹. This is quite different to the Applicants current operation. I have added the port and starboard lines for clarity and to highlight the difference in Figure 1 below³⁰.
49. I assume the Harbour Master has proposed this to reduce the area of river covered by ropes directly above or below the surface of the river and hence reduce the risk to recreational users. There is no discussion that I can see, however, as to how this anchoring occurs when going around a bend without covering the whole width of the

²⁵ s42A report by Kirstyn Royce, p86

²⁶ Applicants Submission, "Dredging Operation Clutha River Central Otago", Version 7, 30/56/21.

²⁷ Ibid "B5 Emergency Procedures" p4 and B4 Safe operating procedures "The skipper must consider" Other river users traffic..."

²⁸ S42A report para 185 – 187, pages 44,45

²⁹ Ibid.

³⁰ Darryl Sycamore, "RE: Reply to additional s92(1) request" to Joise Burrows, ORC, 18 July 2023, page 8.

river (think of a very long truck going around a small roundabout), noting that parts of the river under consideration are faster and narrower than the Etrick area. This requires detailed review and certification by the Harbour Master if it is to be considered a safe operation.

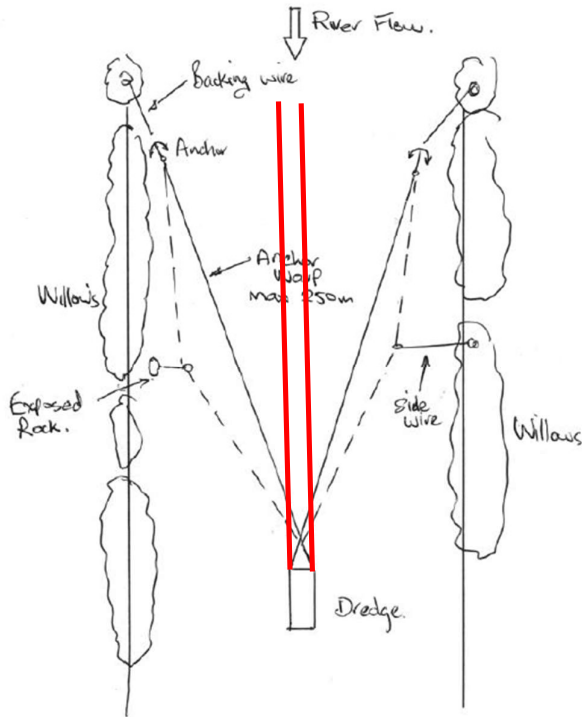


Fig. 2 – Full Anchor Configuration

Figure 1 Anchor Configuration from Applicants Submission with Condition for Port and Starboard Limits added

Noise

50. There was considerable discussion about noise in the various Applications, Evidence and Submissions. No expert evidence has been called despite requests. Despite this, and my original submission that a number of properties are inside the 175m boundary indicated in the applicants test result, no effort appears to be made to clarify this significant impact. Instead, we are given repeated statements that all noise will be acceptable (Peter Hall, Darryl Sycamore, Jessica Mckenzie)³¹.

51. I am not a noise expert but have taken the Applicant's statement of 175m distance

³¹ Applicants evidence Peter Hall, para 29, Darryl Sycamore, para 62, Jessica McKenzie Parra 44 "I understand that the dredge will operate within the noise limits permitted, and as such this has not been addressed."

as a reasonable proxy³² for compliance with the CODC rule (see below). While there is also the QLDC Rules, which appear more restrictive, I have used the CODC ones in my review.

52. I have attempted to check the distances from a point some 15-20 metres into the river to the notional boundary of several dwellings in this section of river covered by the Application. These are indicated in Appendix B. What this shows is that some notional boundaries are **significantly** closer than the 175m boundary, some as close as 60 metres. It is logical to assume that the noise level will be breached in those situations, and in some cases, using the inverse square rule, it could equal 65dBA at the closest house, and as the Applicant notes, this could be for “months” (Peter Hall)³³.

53. The maps in Appendix B have been generated from Google maps. I zoomed in where either I knew a house to be, or it was obvious from the image. I then took the measurement calculator to measure 20m from the house towards the river, and then again to measure from that point to a point 10-20m into the river. I understand this tool to be reasonably accurate, any errors noted may be mine despite best endeavours.

54. The locations of the house in the general landscape are noted on Maps 1 and 2. It is not intended to reference every dwelling from above the Red Bridge to the Lindis confluence but show the proximity of some of the houses to the river. This is important due to the lack of a) any assessment by the Applicant of the actual position of houses relative to the river and b) the lack of assessment by Jessica McKenzie of the significant noise levels in the ONF corridor that will be observed from these houses.

House reference	Distance from “notional boundary” to a point 10-20m in the river	House reference	Distance from “notional boundary” to a point 10-20m in the river
A	70m	G	100m

³² Noting the reservations of the s42A report para 117 as to its lack of reliability.

³³ Peter Hall para 6 “..; it is possible to spend anywhere from a week to 3 months on an anchor set covering 200m.”

B	90m	H	70m
C	130m	I	60m
D	90m	J	55m
E	145m	K	230m
F	115m	L	100m
		M	100m

55. In his response to s92 requests Darryl Sycamore states³⁴, *“There are many areas where within the permitted mining area where there are no residential units for 500m to over 1.0km.”* Further *“It is assumed **the few** residential properties along the proposed mining permit will be buffered to some extent as the residential units are set back from the bank margin such that the topography will reflect or attenuate pressure.”* emphasis added.

56. My understanding of the rules within the CODC plan, is that they do not make exceptions for **“the few”** and that the rule is **any** dwelling is covered by the 55dBA limit. And as shown in the appendix there are many areas where there are houses within 250-300m from the river, some where the river is incised, and some not.

57. To say this industrial activity impact is the same as those permitted is quite wrong. There is some debate as to whether aspects of, or the proposal overall, is non-complying or discretionary. As regards to noise, it is reasonable to assume that it will not comply with the CODC or QLDC rules as I read these³⁵ for a number of the houses shown.

58. Mention is made by Darryl Sycamore³⁶ of having 55 smaller barges operating at 500m distance to each other. Taking this at face value, my observation is that would be much more preferable, as having floated past a number of these smaller dredges in the last decade on the river, they have a very small and localised impact measured in a radius of metres or tens of metres vs hundreds of metres, hence why they are “permitted”, and floating factories are not. Discussion occurred³⁷ that

³⁴ Darryl Sycamore, pp15 and 16, s92 response dated 19 April 2023 to Royce and Burrows.

³⁵ I concur with the s42A report for QLDC and CODC, para 123 p 30 regarding which QLDC rule fits this activity.

³⁶ Darryl Sycamore, pp15 and 16, s92 response dated 19 April 2023 to Royce and Burrows.

³⁷ s42A report for QLDC and CODC, paras 79-81 p 21

perhaps 4 of these smaller dredges operating at the same time would be more likely, and I have no issue with that occurring instead of the current proposal.

Noise Rule and Discussion

59. Noise from the activities at the dredge should be measured in accordance with NZ6802 Environmental Noise / CODC plan Rule 4.7.6.E. The applicant is expected to comply with those limits— namely with all days at 7a.m. through to 10 p.m. at night for all the days of the year with very few exceptions (Public Holidays).

60. I have reprinted below the excerpt from the Applicants noise test.

Specifically, Central Otago District Plan Rule 4.7.6E (a) specifies the following noise levels are not exceeded at any point within the notional boundary of any dwelling, rest home or hospital, or at any point within any Residential Resource Area or any Rural Settlements Resource area:

On any day 7.00am to 10.00pm – 55dBA L10

10pm to 7am the following day – 40dBA L10

70dBA Lmax

Provided that the above noise limits shall not apply to:

- 1. Any temporary activity (as defined)*
- 2. Devices used to protect crops from birds or frost*
- 3. Sirens associated with the emergency service activities*

“Notional boundary” is defined as a line 20 metres from part of any living accommodation or the legal boundary where this is closer to the living accommodation.

61. The Applicant has provided Cold Gold Dredge Noise testing results on the Clutha Mata-Au between Etrick and Millers Flat to determine a notional boundary from the dredge at which the noise emissions are at or below the allowable noise levels specified in the CODC Plan.

62. Results published from this exercise found the Ambient noise level was 42dBA with two of the relevant noise levels taken for the Dredge 1 at 173 metres from the dredge. Hence the sound pressure level (dBA) was found to be 54.5 dBA and position 3 of the same dredge was 177m at 53 dBA.

63. The result was that the dredge didn't exceed the noise level of 55dBA L10 at a distance greater than 175m. At distances less than this however, it can be assumed to exceed this noise boundary, and hence be non-complying with the Objectives, Policies, and Rules of the CODC Plan.

64. The Applicant repeats a number of times that the incised nature of the river will have a positive impact on receivers of noise along the river. My observation and submission is that if the houses are on the edge of the terrace, or in close proximity to it, the opposite bank can act as a reflector and hence increase the observed noise.

65. As shown in Appendix B there are a number of dwellings on the side or top of the ridge where there is either no interference from willows or substantial trees, or some minor visual screening from the river by vegetation. As set out below such vegetation screening will do little to reduce noise.

66. I note the following excerpt from the New Zealand Acoustic Society Journal;

*"Although this topic is normally misunderstood or neglected it appears that research results indicate that trees and scrubs used in research can provide only minor attenuation through scattering by the dense trunks and branches. However, hedges and trees provide little to nil attenuation unless extremely dense with branches reaching to the ground, even then the application of sound attenuation is very limited. Unless the hedge or trees are extremely tall sound will propagate over them rather than through it. Generally speaking, it is not recommended that vegetation is used or relied on for any form of real life attenuation loss in noise calculations or predictions."*³⁸

67. One other aspect is required to be taken into account in the potential noise impact and that is the effect of wind on the received noise. As those who have spent time in the area will be aware it can be very windy, particularly in spring and summer from the north/nornorwest and northwest. This will have the effect of reducing the impact of the incised terrain, on those dwellings situated further back from the river;

"In summary, downwind can reduce or eliminate some of the attenuating effects of terrain and

³⁸ Pages 24/25 Vol. 20 / #3 New Zealand Acoustics "Ground, Terrain and Structure Effects on Sound Propagation" Lindsay Hannah, https://www.acoustics.org.nz/sites/www.acoustics.org.nz/files/journal/pdfs/Hannah_L_NZA2007_c.pdf

vegetation or a solid barrier that otherwise would “intercept the sound path”.³⁹

68. Hence testing in strong winds as well as calm days is of some import, I would suggest.

Relief

69. I do not accept the undertakings that no houses will be impacted by the noise of the dredging, and I do not accept that noise generated by 10 years of 13 hour a day operation will have “no more than minor” impact on the rural and landscape amenity of the Clutha Mata-Au River corridor.

70. I request that the application is **declined**.

71. If the Commissioners feel that this activity will have less than minor impacts then I request the following condition:

a) *Prior to first operating within 400m of any dwelling that is within 250m of the riverbank, an independent noise assessment must take place. From this assessment an operating buffer for each house that can see and is within 250m of the river is to be created by the independent noise expert to ensure an operating buffer is created around any such house such that no noise breach can occur. This assessment to be certified prior to operations continuing by the relevant general manager of CODC and QLDC and provided to the house owners prior to operation beginning.*

72. This is proposed because it should not be incumbent on those enjoying the quiet enjoyment to their property to have to do something to minimise adverse effects of noisy mining; that is incumbent on the applicant, surely.

³⁹ Page 22 Vol. 20 / #2 New Zealand Acoustics “Wind and Temperature Effects on Propagation” Lindsay Hannah
[https://www.acoustics.org.nz/sites/www.acoustics.org.nz/files/journal/pdfs/Hannah,_L_NZA2007_\(a\).pdf](https://www.acoustics.org.nz/sites/www.acoustics.org.nz/files/journal/pdfs/Hannah,_L_NZA2007_(a).pdf)

Appendix A

Proposed Luggate to Cromwell Cycle Trail Link⁴⁰

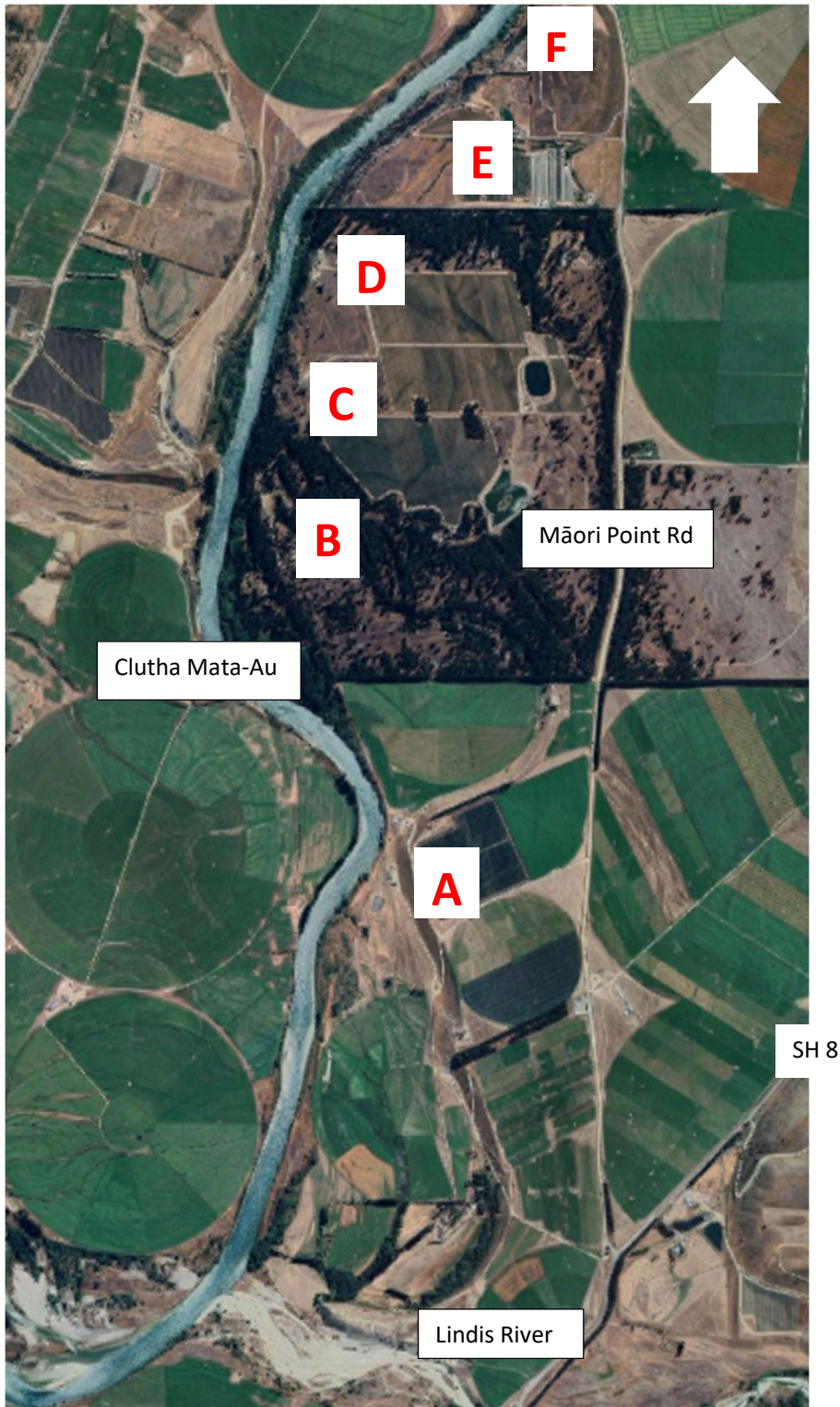


I understand from the CEO of the Southern Lakes Trails Trust that work should be starting on this section in the next 12 months, mostly running along the true right-hand side of the Clutha Mata Au before bridging over at the north end of the Scientific Reserve to run down the true left hand side to the Lindis, mostly just above the river level.

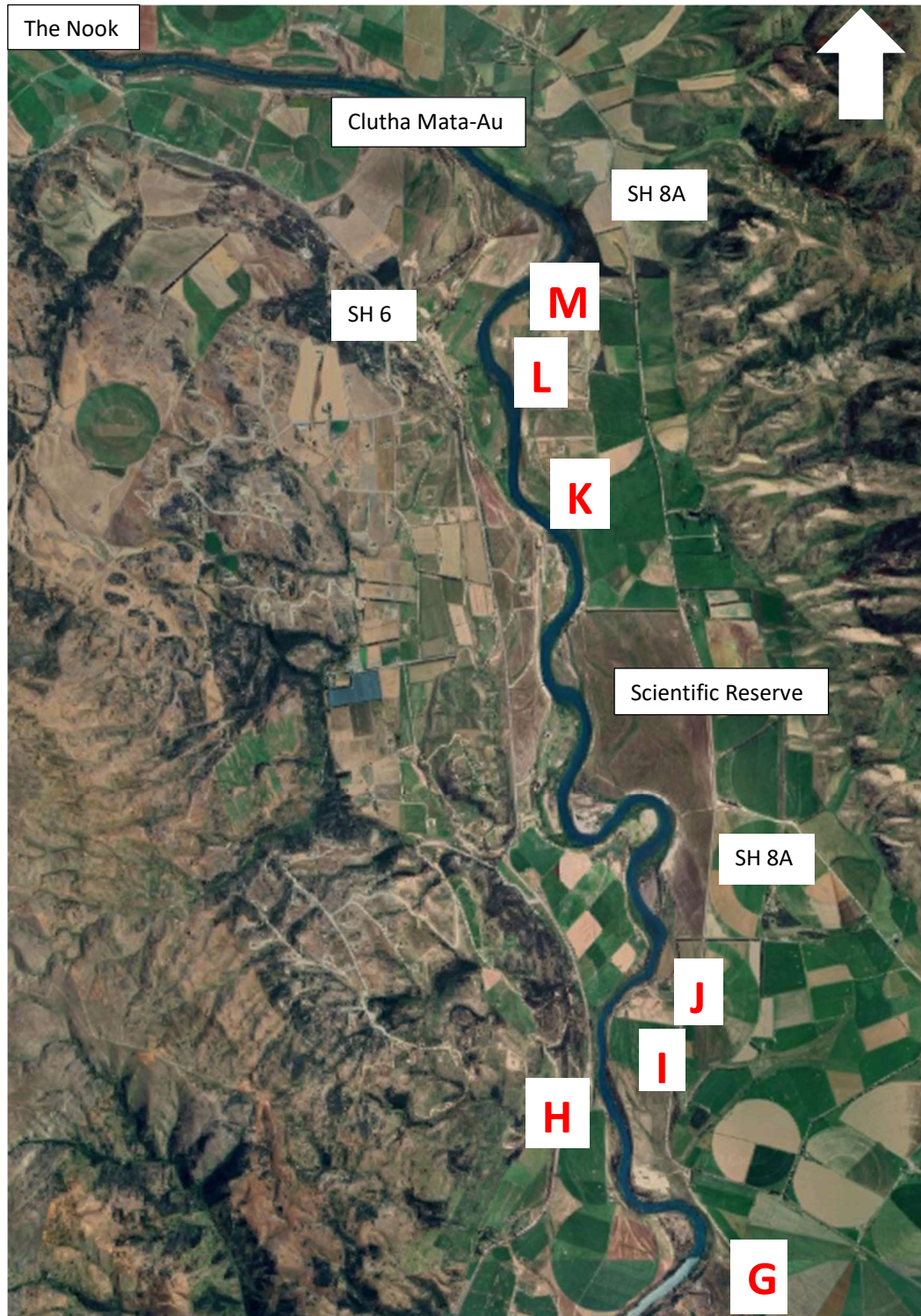
⁴⁰ <https://www.southernlakestrails.nz/trail-map>

Appendix B

MAP 1 - Residences adjacent to the Clutha Mata-Au from the north end of Māori Point Road to just above the Lindis confluence.



MAP 2 showing the Clutha Mata-Au from just downstream of Luggate, or the Nook, to just past the northern end of Māori Point Road



A - Polson Terrace

Approx 70 metres from a point 20 metres into the river, to 20 metres from the house.



Photo of river from about 20m in front of house



B - Māori Point Road – Approx 90m



C - Māori Point Road – approx. 130m



D - Māori Point Road – Approx 90 metres



E - Māori Point Road – Approx 145 metres



F – Māori Point Road – Approx 115m – Dashed yellow line approx. 175m out

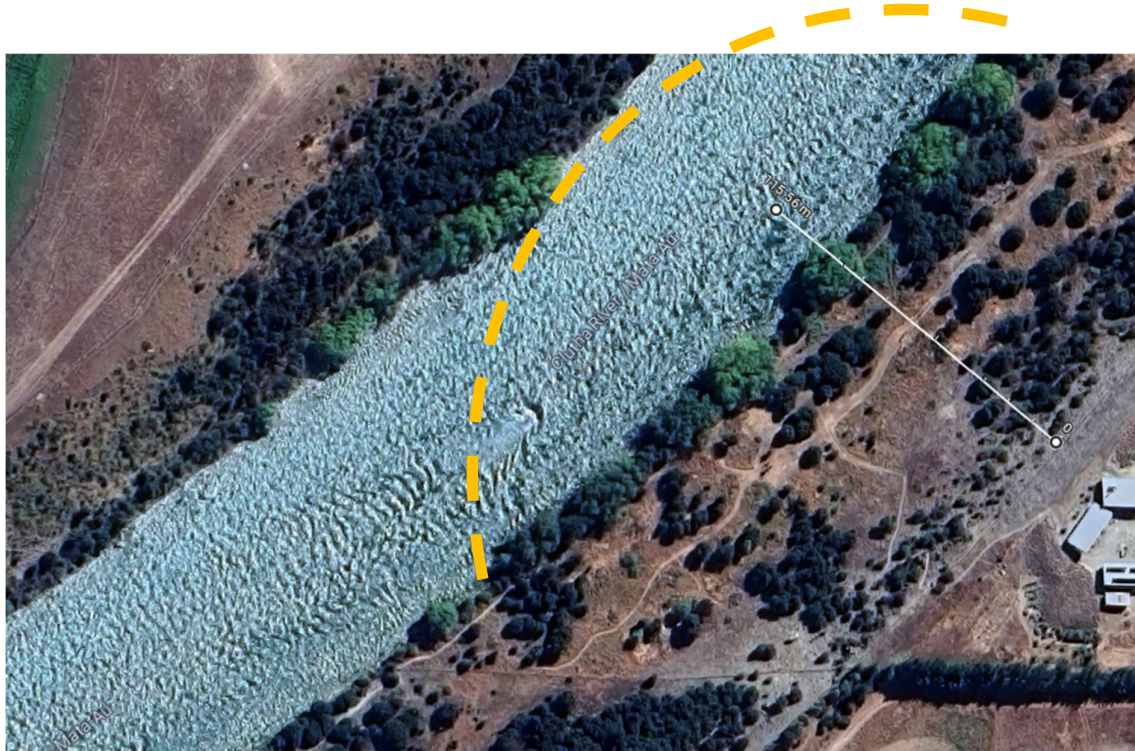


Photo towards river from approx. 10 metres from house



G - Māori Point Road – Approx 100m – NB from this house you can see 1.25km downstream and 500m+ upstream as refers in Jessica McKenzie Viewpoint 12



Photo of river from bank adjacent to house



H – Luggate Cromwell Road (consented building platform) approx. 70m

This is shown to indicate that while the area may be seen as agricultural, there is distinct likelihood of more houses being built adjacent to the river corridor. There are 7 houses in this consented subdivision. I note Jessica McKenzie provided Landscape assessment and evidence for that application.



I – Luggate-Tarras Road – Approx 60m



J – Luggate-Tarras Road – approx. 55m



Interestingly, if I take a line 20m from the house, and stretching 175m upstream and a similar one 175m downstream, there is a length of 300m (approx.) that should not be mined if the activity is not going to breach the Noise Rules.



K – River Ridge Road – approx. 230m



L – River Ridge Road – approx. 100m



M – Luggate-Tarras Road – approx. 100m

