OUR REF: 230327

19 April 2023

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Dear Kirstyn and Josie

RE: s92 RESPONSE FOR APPLICATION BY COLD GOLD CLUTHA LIMITED

On behalf of Cold Gold Clutha Limited, we submit our response to the further information requests to both the Otago Regional Council and Queenstown Lakes District Council for resource consent to carry out suction dredge gold mining in the Clutha River.

The proposal is not a new mining venture in the Clutha River. The Cold Gold Clutha dredge has been operating since early 2012 on the Clutha River between Roxburgh Dam and Tuapeka Mouth. These consents were recently reconsented and will expire in 2035 and authorises mining within over 900 hectares of the riverbed. The proposed operation in the Upper Clutha will adopt the same equipment and methodology as that already consented downstream of the subject site.

The existing environment is a relevant consideration as it includes the live consents held by Cold Gold Clutha for the ongoing mining within the Clutha River from the Roxburgh Dam downstream to Tuapeka Mouth over 900 hectares of riverbed. Whilst this activity is within in a different part to the river, it is nonetheless the same dredge applying the same dredging methodology. Both the authorised and proposed mining area are within a statutory acknowledgement areas that enjoy a number of Schedule 1A values. The concept of Ki Uta ki Kai applies presumably in much the same manner for the authorised mining areas and that proposed as it is relevant at a catchment level.

The permitted baseline provides a basis for any assessment of effects. For the river bed contained within mining permits 60515, 60593 and 60299 the permitted activity rule enable up to 55 separate dredges each with a maximum internal nozzle of 150mm. As noted in the application, it is fanciful to consider the permitted area would include 55 dredges equally spaced 500m apart, however this provides some context of what activity and effects arising from that activity could by right occur without consent. The baseline does provide for a 6-inch dredge that can operate in shallower reaches (i.e. in water up to 0.2m deep) that is considered more ecologically sensitive i.e within the confluence of any tributary or areas where finer sediments that host a range of habitat. The proposed activity will, in contrast, ensure those more sensitive areas remain undisturbed.

The matter of the offsetting is also relevant in this situation whereby should the dredge obtain consent to operate in the Upper Clutha albeit with some effects, the dredge will by default not operate in the mid-reaches where those effects that are authorised will not occur.

Appended to this response is the Cultural Impact Assessment (CIA) and a supplementary ecological assessment by E3 Scientific addressing the ecological issues raised in the CIA and also further discussion in relation to the proposed 200m zone of reasonable mixing sought by the applicant.

Below are responses to both the further information requests sought by planners for the Queenstown Lakes District Council and Otago Regional Council.

ORC s92 Questions

1. ***Pages 5 and 6 of the application describe the location of the proposed suction dredging. It states that the mining will be limited to the exclusive area as specified on mining permits 60515, 60593 and 60299 "or any subsequent consolidation or alteration to these permits", with two exclusions.***

   With respect to the statement "or any subsequent consolidation or alteration to these permits", please advise whether the applicant intends that the extent of suction dredging in the Clutha River / Mata-Au may be greater than that shown in Figure 1 of the application, or just that the numbers of the permits may change.

   The statement refers to the option of consolidating the three permits into a single permit covering the area prescribed in the three existing permits which may reduce costs of administration. Alternatively the applicant may wish to surrender a portion of a permit as they no longer wish to mine that area. As an example, it may be credible to surrender the area of riverbed near Luggate identified as having sensitive ecological values as no mining will occur there and annual fees to NZPAM are calculated on a 'per hectare' or 'square kilometre' basis. The applicant will not be extending the area of the permits, and if they do, they will require additional consents if they elect to use a dredge that exceeds the permitted activity threshold where that consent would be assessed on its merits.

2. ***Page 14 of the application states that resource consent is sought for abstraction at a maximum rate of 400 L/s for an average of 12 hours per day. Page 5 states that surface water will be taken at a maximum rate of 400 L/s with a daily maximum take of 18,720 m^3 based on a 13-hour working day. Please confirm the maximum annual volume sought.***

   Page 14 refers to the average period mined in a day, being 12 hours. Page 5 details the take over a 13 hour day of 18,720m^3. The maximum rate of abstraction remains at 400 L/sec however operators tend to run the engines at around 70% rate as this improves gold recovery, reduces noise, reduces sediment discharges and improves fuel efficiency. In that regard, the question asking the maximum rate of abstraction is of little use in terms of assessing effects. At full power, applying the average take of 17,278m^3 over a 12 hour day, should mining occur every day over a year, the maximum take is 6,306,674m^3.

   As the take is non-consumptive, where all the water is returned to the watercourse immediately behind the dredge the rate and volume of take is largely irrelevant. The Clutha River is also not particularly sensitive to water takes, which is in part demonstrated by the permitted activity rule allowing every landholding to take water at a rate of 100 litres per second up to 1,000,000 litres per day, every day.

3. ***Page 19 describes that there are two water intakes – one for the intake to the pump and one for the nozzle. Please confirm whether these two intakes have a combined abstraction rate of 400 L/s. If not, please explain.***

   Correct there are two intakes for the non-consumptive water takes. The maximum rate of abstraction for both takes is 400L/s. To assist, the figure below shows how a suction dredge works. A common misperception is that gravel is sucked through the pump. The pump actually pumps only water shown as the red intake, which is delivered to a venturi or power jet. As the water in the red moves into the powerjet, the pipe narrows increasing pressure creating a

vacuum. The water (in red) joins the dredge immediately above the suction hose (which draws up water and gravels). The vacuum created through the venturi effect seeks to be equalised by drawing water and gravels up the suction hose shown in blue. Both water takes pass over through the dredge and are returned back to the waterbody only a few meters downstream of the take.

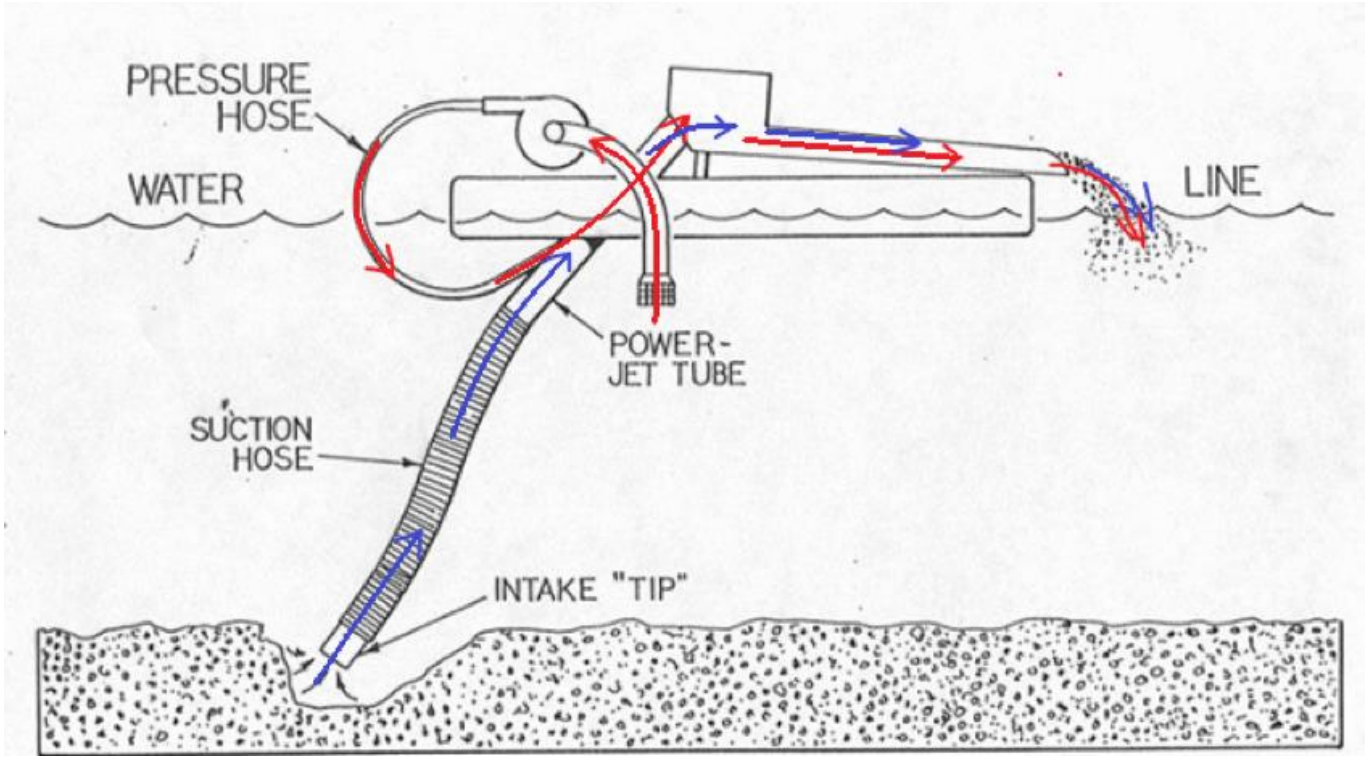

Figure 1 – The intakes and discharge of a dredge

4. ***Please advise how long the works within the bed of the Clutha River / Mata-Au to construct the slipway, remove the dredge and re-instate the slipway at Rongahere Road are anticipated to take.***

   One day for each.

5. ***With respect to the Queensberry slipway:***
   a. ***Please provide the NZTM 2000 co-ordinates, property parcel and land ownership details of the proposed Queensberry slipway location.***

      1,310,061-5,035,771

   b. ***To provide a more comprehensive understanding of the site of the slipway, please provide photographs of the site, in particular the area directly adjacent to and within the bed of the Clutha River.***

      Figure 7 of the application to the ORC provides some context. This is shown again as Figure 2 below which illustrates the vegetation within the slipway area.

   c. ***Please advise how long the works within the bed of the Clutha River / MataAu to construct the slipway at Queensberry are anticipated to take.***

      One day

d. ***It is understood that the proposed slipway at Queensberry is intended to remain in place for the duration of the consent, such that it can be used to remove the dredge as required for maintenance. Please confirm whether that is correct.***

That is correct. Retaining the access will ensure disturbance of the bank only occurs once and allows the restoration with grasses for stabilisation. The form of the riverbank is shown in Figure 2 below which illustrates how the slipway is in a natural lee of the river flow to avoid erosion and scour risk during fuller flows.

e. ***Page 13 proposes a condition of a 100 m exclusion/setback from any bird nesting colonies. Please explain how this condition is proposed to work in practice, e.g., if the ecologist identifies that there is a nest in the location of or within 100 m of the proposed slipway will the slipway location be moved or will works wait until the nesting season is finished. If the slipway is to be moved, please provide details on other potential slip locations including coordinates, property parcel, land ownership, vegetation removal required, etc.***

The suggested condition is upon reflection not considered necessary in my own view which finds support in the ORC audit by Babbage Consultants in questions 10(c) and 10(d) of their assessment dated 10 October 2022.

The applicant is not aware of any nesting colonies in the area and typically they tend to be found on island features where colonies can occupy without risk of predation.

The permitted baseline is also relevant. Permitted activity rule 13.5.1.7 allows a 6-inch dredge to mine immediately adjacent to a bird colony as of right. Jetboats, dog walkers and other recreationalists may also disturb bird nesting colonies. However, the greatest concern to bird colonies are ferrets, weasels and stoats.

f. ***Will there be any deposition of material (e.g., riprap) required for the construction of the slipway?***

No. The formation of the river bed is such that the use of concrete blocks for bank stability will not be required.

6. ***Please describe whether any vegetation removal is required within the bed of the Clutha River / Mata-Au associated with the construction of the Rongahere Road and Queensberry slipways. If so, please advise the species vegetation that will be removed.***

Figure 7 of the application to the Regional Council (also shown as Fig 2 below) shows an aerial view of where the slipway will be located at Queensbury and is shown again below. The site comprises exotic pasture. There is a possibility individual exotic tree species being either willow or poplar may be damaged or removed as part of the vehicle manoeuvring or slip process. The ecological assessment by Babbage for the ORC in q11 finds that any vegetation that may need removal will consist of willow which has limited ecological value.

Figure 2 – Proposed Queensbury slip location

For the Rongohere Road slipway. This site has been used previously and the impact on vegetation will not extend beyond the redisturbance of exotic pasture species.

7. ***Please provide an assessment against the relevant provisions of the National Environmental Standards for Freshwater (NES:F) to determine whether there are any applicable rules, in particular regulations 52, 53 and 54.***

   Regulations 52, 53 and 54 do not apply.

8. ***If any vegetation removal is required within the bed of the river, please provide an assessment against the relevant rules to determine whether resource consent is required (in particular, Rule 13.7.1.1 of the Regional Plan: Water).***

   Vegetation for removal will comprise exotic pastures and maybe a number of individual crack willow which the RP:W considers having an invasive nature. Babbage in their assessment for the ORC considers willow have limited ecological value.

9. ***Page 19 of the application describes that typically there will be no discolouration evident 50 m beyond the point of discharge, and any conspicuous discolouration will be managed to ensure no visual plume occurs beyond 100 m. Page 20 then says that the majority of sediment will fall out of the water column within 25 m of the discharge point.***

   However, the application states that a reasonable mixing zone of 200 m is sought "as a precautionary approach should any unforeseen pulses of clays or finer sediments be released that do not drop out of the water column quickly to ensure

the dredge does not fall into non-compliance". The application describes this as an adaptive management model.

This does not appear to be an adaptive management approach, but instead a set limit of 200 m. An adaptive management approach would need to involve a 'monitor', 'trigger', 'action', 'cease' approach to ensure that the conditions don't allow for a conspicuous discharge to 200 m at all times, given that

At this point, both E3 Scientific and Ms Coates have indicated that they support a zone of reasonable mixing of 100 m.

Ms Coates review describes that if a zone of reasonable mixing of 200 m is sought, there would need to be evidence that sediment plumes beyond 100 m were insignificant enough so as to not alter fish and invertebrate behaviour.

If the applicant is still seeking a zone of reasonable mixing of 200 m, please

a. ***provide an assessment of the effects of the proposal on aquatic ecology, and***
b. ***provide an explanation on the adaptive management approach proposed, including potentially a set of adaptive management conditions for consideration.***

There are a number of key points to highlight in relation to the request to applying a reasonable mixing zone of 200m.

The applicant seeks a 200m zone of reasonable mixing not because they consider there will be a plume extending to that limit, but to provide surety that they will not fall foul of their conditions of consent. In parts of the river, the current is fast which carries the plume downstream whilst it falls out of the water column. Should the dredge hit a pocket of finer sediments, given the flow velocity of the river, there is potential the plume will extend 100m beyond the dredge.

For the sediment plume and any visual or ecological considerations there are a number of issues to consider up front, such as-

a. The dredge mines at a fixed rate which is considered most efficient. The applicant cannot artificially increase the rate of operation to then 'work to' the 200m zone.
b. The Google image (in Figure 17 of the QLDC application) provides a clear indication of the sediment plume when operating. This is shown again below. What is useful to note is the applicant had no prior knowledge of when that image was being taken such that they could actively manipulate the plume extent. This should be treated as a fair representation of the plume under normal conditions. Having first hand experience suction dredge mining in multiple Otago rivers, it is my professional opinion this is a fair representation of the plume.
c. The video provided to the ORC of the water sampling for laboratory analysis shows a similar plume to that of the Google image.
d. The laboratory results show the turbidity returns to the background levels after 45m and the suspended solids returns to the background level after 20m.
e. The permitted baseline provides for a significant number of dredges all operating within the permits held by the applicant. The effects of the single larger dredge will be less than that of the baseline over a number of variables i.e disturbance, effects on ecology, noise.
f. The applicants already hold a consent to mine 900hectares of the Clutha River and have done so for over 10 years with no complaints from the public nor compliance breaches.

The Rationale for the 200m Zone of Reasonable Mixing

Whilst Cold Gold Clutha are confident any discharge plume will typically be less than 100m downstream from the discharge point under most conditions, the risk of breaching their consent conditions (albeit with no ecological consequences) is of significant consent.

Having considered the receiving environment, Council regulations and the permitted baseline, the applicants seek a 200m setback from the point of discharge. I consider that request is both reasonable and appropriate. It is even more appropriate given other Councils provide a clear definition to work with, but the ORC has not.

We promote a condition of no visually conspicuous sediment plume beyond 200m downstream of the discharge point – being the defined zone of reasonable mixing which is consistent with the effects set out under s107(1)(c-g). At the proposed zone of reasonable mixing, the sediment plume will not be visually conspicuous and defines a point sampling where can be taken for compliance purposes. This approach has support from the applicant's ecologist of E3 Scientific.

The statutory minimum standards in section 70 (permitted activities) and section 107 (discharge permits to discharge to water) require that point source discharges should not on their own or in combination with other contaminants, cause standards to be breached after reasonable mixing (e.g. no conspicuous change to colour, temperature or clarity).

The ORC does not prescribe the zone of reasonable mixing and relies on the following definition which is not particularly helpful or relevant in this situation. Their definition reads:

> *The process where undiluted effluent disperses through receiving waters. Mixing results in a mixing zone where the concentration of contaminants varies from that in the effluent to that of the fully mixed receiving water. Reasonable mixing may be said to have occurred at some point between the point of discharge and the point at which the effluent is completely mixed with the receiving water. Beyond the reasonable mixing zone, the effluent and water mix complies with any water quality standards for the water body.*

In this case, the contaminant in question is simply the remobilisation of sediments within the waterbody, rather than the introduction of a new contaminant. The definition has a focus of effluent which is of little comparative use given sediment is naturally occurring within the waterbody, necessary for a waterbodies ecological health and drops out, whereas effluent and the nutrients within the effluent (except for suspended solids) remain in situ and potentially leads to a cascade of environmental outcomes.

Other Councils adopt differing methods to determine the zone of reasonable mixing which is more prescriptive and provide some useful guidance to support the proposed 200m setback approach for compliance monitoring purposes. For example, the Hawkes Bay Resource Management Plan defines the zone of reasonable mixing as: In relation to flowing surface water bodies, for the purposes of rules in this Plan, means the mixing of contaminants in surface water at whichever of the following is the least:

> (i) a distance 200 metres downstream of the point of discharge, or
> (ii) a distance equal to seven times the bed width of the surface water body, but which shall not be less than 50 metres, or
> (iii) the distance downstream at which mixing of contaminants has occurred across the full width of the surface water body, but which shall not be less than 50 metres.

Given the wet bed in this area is approximately 75-80m wide, under this definition limb (i) adopting a point 200m downstream of the discharge is the lessor of the prescribed distances and would apply. Limb (ii) would provide for a 560m zone of reasonable mixing, and given the nature of the contaminant, limb (iii) simply cannot occur.

For the Horizons One Plan, reasonable mixing is also prescribed and states:

> In relation to the discharge of contaminants into surface water, means either: (a) a distance downstream of the discharge that is the least of:

(i) the distance that equals seven times the width of the river at the point of discharge when the flow is at half the median flow, or
(ii) 200 metres from the point of discharge or, for discharges to artificial watercourses including farm drainage canals, 200 metres from the point of discharge or the property boundary, whichever is the greater, or
(iii) the point at which mixing of the particular contaminant concerned has occurred across the full width of the body of water in the river

Again using this prescribed definition of reasonable mixing a 200m setback would apply.

For the Taranaki Freshwater Plan, reasonable mixing is defined as seven times the width of the channel at the point of discharge. Under this definition the zone of reasonable mixing would fall between 525m and 560m.

In Southland Regional Council v New Zealand Deer Farms Limited (2004), which related to a prosecution for disturbance of a river bed (section 13) in contravention of permitted activity standards. The Plan defined the Reasonable Mixing Zone for the purposes of the standards as being 200m downstream. The Court indicated that "a zone of reasonable mixing will vary depending on the size of the waterway, velocity of the water, tributaries and the like."…"I have concluded that in order to properly interpret these provisions it is clear that the question of reasonable mixing will be dependent on site specific factors."

The decision notes the reasonable mixing zone shall be determined on a case by case basis. In my view the site specific factors include having particular regard include-

- The purposes for which the waters are to be managed (where specified in the 3rd Schedule),
- The scale and sensitivity of the waterbody,
- The nature of the likely effects of the particular contaminants in the context of the particular receiving waters, and
- The mixing characteristics of the receiving waters and behaviour of the sediment plume,
- The existing environment which includes live consents to mine in 900ha of the same riverbed downstream of the proposed mining area, and
- The permitted baseline.

Having considered the factors above it is my opinion that whether the zone of reasonable mixing is 100m or 200m, the standards for each water class in the 3rd Schedule would be met. Should the dredge operate in the proposed mining area, there will be no mining (or effects thereof) in the 900ha authorised by consent further downstream. The permitted baseline allows for many smaller dredges creating a 100m sediment plume. These smaller dredges also mine more sensitive parts of the river that the applicant cannot with a larger plant.

IN the absence of a suitable definition in the RP:W, we defer to other Council plans which provide a specified method for defining what constitutes some useful guidance.

It is my opinion the site specific factors of the Clutha River will result in a range of effects that are significantly less than that permitted even when a 200m zone of reasonable mixing is adopted as a performance standard where no conspicuous plume may extend beyond.

Assessment of effects of the proposal on aquatic ecology

Questions have been raised about the intent to extend the reasonable mixing zone to 200m. Irrespective of that, the facts remain the bulk of the sediment plume will fall out of the water column in the first 50m. This is shown in the Google image, video and laboratory testing.

However, given the velocity of the river, there may be times the sediment may persist in the water column longer. The applicant is concerned that at times where pockets of finer sediments are found and the river velocity is high, that the plume will be visible beyond 100m. This does not mean more sediment is in the water, rather it is being carried from the dredge at a rate quicker than the same sediments can fall through the water column.

Both the applicants and Council's ecologists agree the effects on the aquatic habitat are acceptable and by inference consent should not be declined on that basis. In my understanding, for Class AE waters (being water managed for aquatic ecosystems) a sediment plume contained within 100m will not exceed the specified standards in the 3rd Schedule. In my view, the same amount of sediment extending typically less than 100m from the dredge but potentially sporadically no more than 200m will not breach the Class AE standards and therefore it's my understand the effects on aquatic ecology continue to remain acceptable. This interpretation is supported by the E3 ecologists supplementary report dated 19 April 2023.

How other applications for suction dredging have been assessed in terms of ecology

The ORC has processed a number of consents for suction dredge mining, most of which are for rivers that include species considered sensitive to disturbance and are appended to Schedule 7 of the Regional Plan:Water.

The permitted activity rule for suction dredge mining stipulates dredging is not permitted in waterbodies identified in Schedule 7 and therefore consent is required in these waterbodies irrespective of the dredge size. The Clutha River is not identified as a waterbody sensitive to suction dredge mining, which informs the permitted baseline. Of interest no consent for suction dredge mining in the Otago region has ever been declined due to the effects on ecology.

A number of consent applications and the scientific assessments are detailed below and provide some context to the question of how dredging affects ecology. A number of the more interesting applications are-

- the Pomahaka River for two separate mining permits and consent holders each using a six inch dredge,
- Kye Burn using a 6 inch dredge,
- the Clutha River – being the current consents authorising Cold Gold Clutha to mine the middle reaches of the river, and
- The Nevis River using an 8inch dredge and a 20ton excavator, and also a separate permit using a 5inch dredge.

The first examples were all been assessed in 2021 and rely on three different independent ecological peer reviews. They give recognition to the NPSFM and Te Mana o Te Wai.

Jens Schumann – Pomahaka River (Mining Permit 50371)

This application sought to use a 6inch dredge within 39 hectare mining permit. The Pomahaka River is highly regarded for the presence of threatened galaxiid species and is a Statutory Acknowledgement area. The Department of Conservation opposed the application in relation to ecological and heritage values and Te Runanga o Hokonui opposed the application due to cultural values and the proposal being inconsistent with Te Mana o te Wai.

The application was assessed by E3 Scientific for the ORC, who noted with regards to effects macroinvertebrates, macrophytes and water clarity downstream from the dredge, the effects from the activity on these freshwater values were considered less than minor. The presence of Clutha flathead galaxiids and their spawning times were discussed and a condition of consent to avoid the Clutha flathead galaxiids spawning times was adopted. The proposed activity was considered to have a less than minor effect on the ecological values.

The application was also further peer reviewed by Babbage Consultants for the Council. The ecological assessment recommended the consent be granted subject to conditions.

It was found the application would result in less than minor effects and was consistent with Te Mana o te Wai. This consent was approved subject to conditions of consent.

The Big Nugget Company Ltd – Pomahaka River (Mining Permit 41447)

This application was to use a 6-inch dredge with a 46ha area. Like the Schumann consent, the river has significant ecological values and is within a Statutory Acknowledgement Area.

The application was externally peer reviewed by independent ecologists who recommended consent be granted subject to conditions.

In their submission, Hokonui Rünaka stated there are Common and Upland, Non-Migratory Galaxiids, Kanakana, Tuna – Long Fin and Short Fin eel and Koura. The independent ecology assessment also confirmed the presence of the Threatened, Nationally Vulnerable Pomahaka galaxias.

Hokonui Rūnanga opposed the application due to (in their view), insufficient evidence of effects of the suction dredge mining on instream benthic environments. The application was assessed by Council planners as being generally consistent with the Te Rūnanga o Ngāi Tahu Freshwater Policy Statement 1999.

It was noted in a report tabled that many invertebrate species in New Zealand display traits that infer disturbance resistance and some are physically capable of passing through a suction dredge without damage (Griffith and Andrews, 1981). Another study in 1998 (Bagrie) was discussed in which two sites, one dredged, one un-dredged, found higher numbers of invertebrate species and higher values for measures of ecosystem health using the Macroinvertebrate Community Index (MCI) at the dredged site.

The adverse effects were considered to be less than minor and found to be consistent with the relevant statutory documents, including the NPSFM, PRPS PORPS and RPW. The consent was approved by an independent hearings commissioner.

<u>Cold Gold Clutha Limited – Clutha River/ Mata-Au (Mining Permit 53215</u>
This consent was to use a 12inch dredge fixed to a maritime vessel over 901ha of the Clutha River/ Mata-Au. The Clutha is a Statutory Acknowledgement River. This was a replacement permit as the dredge had operated in the river for the previous decade.

It was accepted that accounting for the scale of the river and dynamic nature of the river, the effects of the activity were considered to be less than minor as it is the remobilisation of bed material and the size of the discharge plume is relatively small.

Council staff found, the proposed activity will not adversely affect values of the Clutha River/ Mata-Au as given in Schedules 1A 1AA, 1B, 1C and 1D, nor will it affect the natural character or amenity values associated with the Clutha River/ Mata-Au.

Overall the proposal was considered to be consistent with the policies and objectives of the RPS and PORPS. The application was considered to be consistent with the policies of the NPS-FM and Te Mana o te Wai.

The application was assessed to be in general accordance with the iwi management plan. The written approval of Te Ao Marama, the consultancy acting for Southland Rünaka and Aukaha, the consultancy acting for Otago Rünaka were sought and obtained. They raised no concerns.

The consent was approved under delegated authority on a non-notified basis.

<u>45 South Mining Limited – Kye Burn (Mining Permit 60566)</u>
This proposal was to operate a 6-inch dredge with 40.3ha of Kye Burn.

The Kye Burn is a significant habitat for trout, trout spawning, but crucially habitat for indigenous species threatened with extinction, such as the Central Otago roundhead galaxias (*Galaxias anomalus)* and Taieri flathead (*Galaxias depressiceps*). These species were identified by the Department of Conservation (DoC) in their submission who highlighted the Kye Burn was one of a handful of reference rivers for galaxiid preservation and of the highest value to the Department.

Dr Richard Allibone from Waterways Consulting Limited provided an ecological assessment of the application on behalf of Council's Resource Science Unit. Dr Allibone concludes that the potential impact of the activity will be less than minor in terms of direct disturbance on the fish populations.

The applicant has also proposed a condition that allows the extent of the downstream sediment plume from the mining to 200m. Dr Allibone concluded in his technical audit that effects are considered to be less than minor in terms of direct disturbance on fish populations or ecology as a result of the 200m plume.

The Kye Burn is listed in Schedule 1D of the Otago Regional Water Plan and contains a number of cultural values. Aukaha on behalf of the local Rünaka was notified of the application as an affected party and did not submit. The Ngāi Tahu Freshwater Policy Statement 1999 was assessed by the Council's processing planner and considered that, overall, the application is generally consistent with the objectives and policies of the NTFP.

The effects on the mobile and non-mobile fauna was assessed as less than minor and the proposal was considered to be consistent with Te Mana o Te Wai.

Consent was granted subject to conditions by an independent hearings commissioner.

Golden Bush Mining Limited – Nevis River (Mining Permit 41851)
Golden Bush Mining sought to suction dredge mine a 89ha portion of the Nevis River using up to an 8-inch dredge. They also sought to use a 20ton excavator in the bed of the river to move gravels and rocks.

The Nevis is in Schedule 7, and the ecology is considered sensitive to suction dredge mining due to the presence of the Nevis Galaxias. The DoC website states "the Nevis galaxias were isolated and evolved here after a rare and fascinating geological event where the river changed direction. Classified as 'Nationally Vulnerable', they share the same threat status as Hector's dolphins". Sampling and electrofishing unsurprising found these galaxiids only exist in tributaries where trout cannot gain access.

This application was processed via the limited notification pathway and approved subject to conditions. The ORC's Science Unit considered the effects of the activity on the ecology was less than minor. The use of the excavator in the riverbed was approved with the exception of a reach known as 'the Dell'. It is relevant to note this application was considered prior to the introduction of the NPSFM.

Mokihinui Gold Limited – Nevis River (Mining Permit 52465)
Mokihinui Gold sought to suction dredge mine a 39ha portion of the Nevis River using a 5-inch dredge. As noted above, the Nevis is appended in Schedule 7, and the ecology is considered sensitive to suction dredge mining due to the presence of the Nevis Galaxias.

Affected party approvals from all stakeholders were obtained and the consent was approved non-notified. The ORC's Science Unit considered the effects of the activity on the ecology was less than minor. This application was also considered prior to the introduction of the NPSFM.

Conclusion
Overall, it is my opinion that the effects of the activity on the aquatic ecology will be less than minor. This interpretation is consistent with every other ORC consent application processed for suction dredge mining in Otago including those rivers identified in Schedule 7 of the RP:W.

Whether the zone of reasonable mixing is 100m or 200m downstream will be of negligible consequence to the aquatic ecology.

Provide an explanation on the adaptive management approach proposed, including potentially a set of adaptive management conditions for consideration.

Cold Gold Clutha value the social license they have to operate the dredge in the mid-reaches of the Clutha and take their compliance responsibilities seriously. No complaint has been received to my knowledge to the ORC about the operation of the dredge.

They welcome any sensible adaptive management model and propose the following conditions-

1. Notwithstanding the requirements of any other conditions of this consent the discharge shall not give rise to a conspicuous change in the colour or visual clarity after a reasonable mixing zone of 200m from the dredge discharge point.
2. Prior to commencing mining in a location, the dredge operator shall make visual estimations along the river margin defining 50m, 100m, 150, and 200m from the point of discharge for a reference point.
3. Should there be a conspicuous change in the colour or visual clarity between 150m and 200m from the point of discharge, the consent holder shall-
    (a) Assess whether the 200m threshold has been exceeded,
    (b) Assess whether there have been any events or failures that could have resulted in the greater discharge plume,
    (c) Assess the nature of the sediments and bed substrate,
    (d) Make alterations to the engine speed or hydraulic nozzle to minimise the discharge.
4. Should there be a conspicuous change in the colour or visual clarity beyond 200m from the point of discharge, the consent holder shall-
    (a) Immediately reduce the engine speed and lift the hydraulic arm to cease the intake of additional sediments,
    (b) Make a record of the breach in a logbook specifying date and time, and a GPS location,
    (c) Allow the remaining plume to dissipate before recommencing mining.

10. *Page 23 promotes a condition that no works shall take place within 150 m of designated camping or recreation areas between 24 December and 3 January or the Easter weekend.*

a. ***Please advise the locations of these designated camping and recreation areas within the extent of the proposed dredging activities.***
b. ***Please advise whether other dates or public holidays should be included in this exclusion period to mitigate effects on recreation and amenity. For example, the weekends associated with Otago Anniversary Day, Waitangi Day or ANZAC Day when there may be more holiday makers.***

Having considered the question, it is now my opinion there are no areas within the permitted area that this condition should apply. In the consents previously approved for within the mid-reaches there were a couple of locations such as Pinders Pond public campsite (on the river margin), and the Island Block historic suspension bridge where this condition was considered appropriate.

The public or recreationalists may observe the dredge in various locations within the permitted area. However being visible and on a temporary basis does not constitute an adverse effect. Based on my personal observations of suction dredge mining and having a family home on the river margin within the approved permit in the mid-reaches, I can advise the public are almost always curious about the mining operation and have no concerns. The previous decade of mining on the Clutha River by the applicant provides a useful barometer to the general public's view of the activity.

11. *Please provide an assessment of the effects of the proposed slipways at Beaumont and Queensberry on natural character and amenity, in particular the Queensberry slipway in relation to its permanent nature.*

There will be less than minor effects on natural character, recreation or amenity as the slipway will comprise a gentling inclining slope that will quickly re-grass. The significant scale of the river and limited number of public users further mitigates the effects of any disturbance. In comparison, the river margins include numerous permanent pump sheds and piping infrastructure that are clearly not part of the natural environment.

12. ***Ms Coates has advised, with respect to fish entrainment, that if any At Risk or Threatened Fish are identified as having been entrained during suction dredging activities, the exclusion areas should be revisited, and potentially extended or new exclusion areas created. Please advise whether you are comfortable with this recommendation and would like it to form part of your proposal.***

Cold Gold Clutha are happy to adopt a condition to this effect.

13. ***Ms Coates has recommended amendments to proposed conditions 23 (from application) and the additional condition recommended by E3 Scientific (page 44 of the E3 Scientific report), such that they say:***

Condition 23:

> *Should any sports fish redds be identified by the Otago Fish & Game Council in consultation with the consent holder within the 1,500 metre section of the Clutha River/ Mata-Au approved for mining* ***at any time between 1 May and 31 August****, the consent holder must then liaise with the Otago Fish & Game Council and determine an alternative* ~~***1,500 metre***~~ *section of the Clutha River/ Mata-Au as identified in Condition 22.* ***The length of the alternative section must not exceed 1500m, or 1500m less the length that has already been mined between 1 May and 31 August, whichever is smaller.*** *Once determined, the Consent Authority must be notified of the amended mining location within 5 working days.*

E3 Scientific consent recommendation:

> *The dredge operator is to maintain a* ***photographic*** *record of any fish observed to be entrained by the suction dredge. If the species survives,* ***the fish should be photographed, and*** *the record should be entered into the NZFFD with species and location provided. If mortality is observed,* ***the fish should be photographed and photographs*** ~~***this***~~ *shall be* ~~***reported***~~ ***provided*** *to the consenting authority in a brief quarterly report with species and GPS location provided.*

Please advise whether you are comfortable with these changes and would like them to form part of your proposal.

With respect to the first question, the applicant is agreeable to this suggestion.

In relation to the photographing of any species entrained in the dredge, the applicant advises they have seen this happen with what appeared to be a trout only once, and there is no time to determine species, capture, photograph or determine survivability. One that basis, I do not consider the condition is workable given the frequency of events and that trout function as a pest species.

14. Mr Macdiarmid has recommended the following conditions of consent:

- ***The Applicant shall consult the Engineering section of the Otago Regional Council (ORC Engineering) prior to slipway work commencing, and all works including reinstatement shall be undertaken as directed by and to the satisfaction of ORC Engineering.***
- ***Slipway reinstatement shall include suitable compaction and revegetation to match adjacent ground conditions, contour and cover.***
- ***The applicant shall inspect and photograph the slipway sites annually and following significant flood events during their establishment and for two years after reinstatement, with brief reports and photographs to be submitted to the Consent Authority. Any damage shall be remediated promptly if necessary.***
- ***Slipway gradients should be no steeper than 2.5V:1H.***

- ***If erodible soils, such as silts, are encountered in the Queensberry slipway, temporary erosion protection should be provided to prevent erosion during flooding.***

Please advise whether you are comfortable with these conditions forming part of your application.

The applicant is agreeable to these proposed conditions.

15. **The Clutha River / Mata-Au at the location of the proposed suction dredging is identified in Schedule 1D of the RPW as having a wide range of values to Kāi Tahu and is the subject of a statutory acknowledgement under the Ngāi Tahu Claims Settlement Act 1998.**

    The Clutha River / Mata-Au is within areas for which the Rūnaka represented by both Aukaha and Te Ao Marama Inc.

    Please provide an assessment of cultural effects of the proposal, whether that be a Cultural Impact Assessment, Cultural Values Assessment or other documentation as determined appropriate by Aukaha, Te Ao Marama Incorporated and Te Rūnanga o Ngāi Tahu.

    Please find attached a copy of the Cultural Impact Assessment. The concerns highlighted in the CIA are consistent with those in previous suction dredge mining applications.

    The memo by E3 Scientific dated 19 April appended to this report provides some commentary to the issues raised from an ecological perspective.

16. ***The E3 Scientific report puts forward some additional conditions (pages 40 – 44). Please confirm whether all conditions presented in the E3 Scientific report form part of the application.***

    Some of the conditions are considered ultra vires or unworkable and cannot be adopted. We welcome suggested conditions 1, 7, 10, 11, 12, 13, 14, 15, 16 and the proposed additional condition at the top of page 44.

    We also welcome the suggested approach by E3 in their 19 April memo in terms of using the Secchi disk as an alternative (albeit a little more complex) method of managing the 200m zone of reasonable mixing.

17. ***Proposed conditions 19 – 23 relating to the submission of an Annual Work Programme require preparation of the document in consultation with Otago Fish and Game and the Alexandra office for the Department of Conservation, as well as further consultation with Otago Fish and Game with respect to dredging during sports fishing season and identification of sports fish redds.***

    Consent conditions cannot confer responsibilities to any person except the consent holder, so consent conditions which include requirements of other persons can be risky if the other parties are not fully on board.

    Please advise whether these conditions have been discussed with Otago Fish and Game and the Alexandra office for the Department of Conservation and advise whether they are comfortable with the proposed conditions.

Agreed, please disregard this suggestion. It is my view the third parties do not need to be consulted with further once consent is obtained on the basis that the decision makers will have a sufficient understanding of the effects and issues based on the application, the three Council's planners and multiple ecologists.

18. ***Proposed condition 6 states "No beaches above the normal upper flow level must be disturbed or mined. For the purpose of this consent the level is defined as 400 cubic metres per second".***
    a. ***Please explain why this condition has been proposed and what effects it is to mitigate (e.g., erosion / scour or ecology effects).***
    b. ***Please explain why an 'upper' flow level is appropriate rather than a 'lower' flow level, why 400 m^3/sec flow level is proposed and where this flow measurement is to be measured.***

I understand this phrase was carried over from other consent decisions and is not particularly helpful due to its ambiguity. The intent is to protect beaches that may contain terrestrial plant communities but can tolerate short periods of inundation. It may be better to state no beaches that are part of the dry-bed when the flow is 400 cubic meters per second shall be disturbed or mined. This will ensure beaches cannot be mined during fuller flows. In terms of the origin of the 400m^3/sec standard, it is my recollection this was derived by the ORC's Science Unit and is almost certainly an arbitrary figure assumed to address the risk.

Queenstown Lakes District Council s92 Questions

1. **The Clutha River Mata Au is a Statutory Acknowledgement area and the operational area of the activity is identified as within a Wāhi Tūpuna area under the Proposed District Plan. Please provide a Cultural Impact Assessment of the activity, which addresses the matters set out in the objectives and policies in Chapter 5 Tangata Whenua of the Proposed District Plan.**

   The Cultural Impact Assessment requested is appended.

2. ***The application includes an assessment of the effects of noise undertaken in 2013 between Ettrick and Millers Flat, However, as this noise assessment is 9 years old and is for a different location and jurisdiction, and while the difficulties in providing an updated assessment are recognised, it is equally difficult to rely on this assessment to assess the effects of any potential breach. There are two potential categories under which noise could be assessed; being Rule 36.5.14 for 'commercial motorised craft' and Rule 36.3.2.6 and 36.5.1 which are relevant for assessing noise receivers within the Rural Zone. Please provide an acoustic assessment by a suitably qualified and experienced person which addresses the sound levels of the dredge at 25m from the craft to determine if it does or not meet the specified standards for motorised craft, and that also includes analysis of sensitive receivers in alignment with the respective zone provisions.***

   No noise assessment has been sought from a suitably qualified person as requested. It is the view of Cold Gold that they will comply with the noise standards. Having the luxury of the previous ten years mining with the dredge in the Clutha River, in a less-incised portion of the riverbed and near townships there has been no issue raised about noise. The rural zone is a contrasting environment where rural farming activity or jet boats/ jetski travel up the river. It is not necessarily a quiet area, although it certainly can be very quiet too. Noise is an anticipated element in the rural zone.

   With respect to Rule 36.5.1 in which the assessment location is 'any points within the notional boundary of a residential unit'. The 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. There are many areas within the permitted mining area where there are no residential units for 500m to over

1.0km. When considering the inverse square law where for the doubling of the distance from the noise source (in a free field situation), the sound intensity will diminish by 6dBA and on that basis the likelihood of any breach is low. Given the noise source is within an incised river bed, the sound pressure is assumed to be further diminished given any residential unit will be both set back from the source and within the 'lee' relative to the source and obscuring topography.

It is assumed the few residential properties along the proposed mining permit area 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. Had there been a noise issue, this would have been identified over the previous ten years mining, including near the townships of Millers Flat and Ettrick.

The applicants also advise new baffling and modifications are proposed for the dredge prior to moving upstream to further attenuate noise at the source. Any noise assessment prior to these upgrades would be erroneous.

Should the dredge be found to breach the noise standards, the applicant has advised they will relocate or modify the dredge or alternatively seek an additional resource consent. In the case of the latter, any sensitive receivers (if there are any) will likely to be considered an affected party should consent be sought.

3. ***At the assessment of Policy 6.3.5.1 on Page 32 of the Application, it states that "No new structures will be constructed beyond temporary fuel storage and a mobile office, both of which will be located away from the margins and comply with the bulk and location provisions for the zone." That is the only reference to the mobile office within the application. Please provide details regarding the mobile office and the dimensions of the fuel storage structures. Please confirm the expected timeframes that these will remain in any one place. It would also be helpful to understand site selection process for the storage areas. Please also confirm compliance with Rule 35.4.13 and provide an assessment under Policy 35.2.5.2.***

The location for any office or bulk fuel storage is not yet confirmed. Any structures associated with the mobile office or temporary fuel storage will however comply with the rules subject to the zone, or a fresh consent will be required. They will be sited in a manner and an colours typical of the rural zone such that they are considered discrete. In effect, any structure will not appear any different to any other rural building within the rural zone.

For clarity, the bulk onshore tank will be double skinned, or bunded and will be above a 1 in 50-year flood level and within a safely accessible location. Spill kits will be provided.

Yours faithfully
Terramark Ltd

Darryl Sycamore
Resource Management Planner