

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

<b>Under</b>	The Resource Management Act 1991 (the <b>Act</b> )
<b>In the Matter</b>	of an application for resource consents for Suction Dredge Mining on the Clutha River/ Mata Au
<b>Between</b>	<b>COLD GOLD CLUTHA LIMITED</b>  <b>Applicant</b>
<b>And</b>	<b>OTAGO REGIONAL COUNCIL</b> <b>(RM22.434)</b>  <b>QUEENSTOWN LAKES DISTRICT</b> <b>COUNCIL (RM220834)</b>  <b>CENTRAL OTAGO DISTRICT</b> <b>COUNCIL (RC220255)</b>  <b>Local Authorities</b>

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**BRIEF OF EVIDENCE OF PETER FRASER HALL**

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## **BRIEF OF EVIDENCE OF PETER FRASER HALL**

### **Introduction**

1. My full name is Peter Fraser Hall, I am a Director of Cold Gold Clutha Ltd. I reside in Dunedin. While my background is Electrical Power Engineering and Project Management, I have approximately 15 years gold mining experience. I have 3 years direct experience operating a suction dredge and I have been involved in a large alluvial mine abroad. I have been the Project Manager and Director of Cold Gold Clutha Limited (Cold Gold) since its inception.
2. Cold Gold was formed in 2010 and has been operating dredging activities within the Clutha River since 2012 when the dredge was launched. Our activities on the lower parts of the Clutha/Mata Au River have just about concluded hence these applications to move the dredge higher up the river.

### **Background**

3. The gold we are searching for in the Clutha River /Mata Au is alluvial gold. That being gold eroded and transported from its host rock by fluvial action where it concentrates into waterways and terrace deposits). It has long been established that alluvial gold is found in the Cromwell Basin both within the terraces and the Clutha River/Mata Au itself. Despite widespread mining activity since the 1860's, there remains many tens of thousands of ounces of gold in the region. Gold within the Clutha River has to some degree replenished from continued terrace erosion but also remains in previously unworked areas where concentrates were too low grade to be economically viable to mine historically.
4. The sections of river we have obtained mining permits for have been chosen based on historical information including exploration and mining reports, written and verbal information from past and present miners, location and extent of old mine sites and tailings, literature reviews as well as our own testing. Our experience from the lower Clutha indicates the gold is not omnipresent within a permit area.

Rather, it is patchy and has formed in leads or natural low-pressure zones. We are only able to determine where these are by actively spot mining until a viable area is found which can support a sustained presence.

5. Mining locations are limited to 1500m stretches identified in our annual work programme. The anchor range of the dredge is 250m and we dredge 200m of each 250m anchor line. We select a location, establish the anchors and then commence dredging. In a new location we will carry out a series of 'spot dredges' to see whether there is enough gold present. If not, we move along the anchors and try again in a different location. If no locations on an anchor location work, we will pick up the anchors, move them and try elsewhere. We always work heading upstream from a start location.
6. The amount of time we spend in an area depends on a number of factors; it is possible to spend anywhere from a week to 3 months on an anchor set covering 200m. The time spent is typically affected by the depth of the gravels to bedrock which can be anything up to 12m deep. The dredge has a maximum dredging depth of around 16m from the water surface.

### **Operation of dredge**

7. The dredge works by utilising high pressure water derived from an engine driven water pump. This high-pressure water is injected into the main suction pipe via venturi jets which establishes water movement in the pipe and creates suction at the open end of the pipe known as the "nozzle". This suction draws in water and gravels much like a vacuum-cleaner draws in air along with dust and dirt. The main dredge pipe is lowered to the river bottom and river gravels are entrained as a slurry. At the surface the slurry is passed through a classification screen removing oversized materials and excess water. This component is discharged straight back to the water body. The fine alluvial material and water is passed onto gold recovery riffle tables and then also discharged less any gold.

8. The dredge employs six full time employees including a certified Skipper. The dredge is generally operated by a two-man crew who undertake all necessary duties during normal dredging activities from start up each morning, operating, engineering inspections, maintenance and general upkeep of the dredge, gold clean-up, refuelling and shutdown. They are supported by an Operations Manager along with myself or other crew members at times when more hands are required such as during anchor moves or major maintenance. We prefer to engage local employees, but this has not always been possible particularly in lower reaches of the river, much of which is geographically isolated and has a limited employee pool. At times, we have provided accommodation for out-of-town Operators. For the upper section of the Clutha, subject of this application we expect our existing staff will continue to work with us. Contractors, such as mechanics, electricians, hydraulic engineers, etc are engaged as required.

#### **Engine and hydraulics**

9. There are effectively two sets of engines on the dredge. Those that manoeuvre the dredge into position and those that drive the hydraulics for the mining itself. Only one set will be working at any one time. By way of demonstration, I checked the hour-timers on the two Detroit Engines. Since we commenced operations in 2012 (roughly 600 weeks ago) the engines have done 602 hours (Port) and 607 hours (Starboard). So, on average the Detroits are running an hour a week. In practice they typically run for about 4 hours at a time while we complete an anchor move.
10. I have read a number of submissions that have raised concerns about the use of the Detroit Engines, on the basis that they are no longer being used in some locations overseas. The Detroit Engines we use are much the same as many engines used on boats. They have a 'wet exhaust' system which is used to help reduce noise. Most small recreational boats with normal outboards etc will have a similar system along with recreational and commercial jet boats.

11. The Detriots are reliable and effective and although 2-stroke, they have a wet oil crankcase for lubrication. Oil is not injected into the combustion chamber as with petrol 2-stroke engines.
12. As with all our engines, they are maintained on an hours-run basis which is specified in our Maritime Transport Operator Plan (MTOP).
13. I would also like to specifically address the matters raised in the submission of Mr Moon. I wish to note that Mr Moon is a former employee. He worked as an operator for approximately 5 months from September 2022. He provided a number of images as part of his submission. We were not aware that Mr Moon was taking photos on the dredge and he did not raise any concerns with Management that I am aware of during the course of his employment.
14. I want to describe what the images show for clarity, as it is not described in Mr Moon's submission. The photos show an air intake opening below an engine. This allows airflow into the engine room as well as an exit point for cooling water discharge. The cooling water passes through heat exchangers only and does not come into contact with any oil or pass through an engine. The grill is elevated from the floor to provide bunding in the event of oil loss. ORC compliance inspection nor MaritimeNZ have not found issue with the hydraulic room (nor anything else for that matter but that is not to say we can't improve).
15. The dredge is built to satisfy Maritime rules and regulations and is operated and maintained in accordance with the MTOP. We are conscious of the sensitive environment within which we operate and do not take that for granted. We ensure that we keep up with our maintenance schedule and conduct frequent checks of the equipment and machinery to ensure potential issues are identified early.
16. We have processes and procedures in place to manage waste products from the barge. Waste products such as used engine oil and oily bilge water is transported off the dredge, transferred into 200L steel drums and disposed of through a third party to an oil processor in Christchurch.

17. We are subject to a regular maritime audit process, the latest of which was undertaken in July 2023, and were also subject to a monitoring and compliance process with the Otago Regional Council in October this year. The report from that visit is attached at Appendix 1.

### **Refuelling**

18. Refuelling the dredge is a two-step process. The first step uses a pilot boat that is refilled from a South Fuels self-bunded bulk diesel storage tank. There are multiple shutoff points in the system which are kept closed unless refuelling including an automatic shutoff nozzle similar to that found at any petrol station for filling vehicles. Additionally, a remote cut-off switch is used to stop the tank pump from the pilot boat.
19. The second step involves the pilot boat with a 400L ute tank installed into the cockpit. The ute tank has its own electric pump with a hose and automatic nozzle. Fuel is ferried to the dredge which is refuelled on site.
20. Refuelling is a fully overseen process with specifically trained staff. Depending on the distance between the dredge and bulk tank location, it typically takes 20 minutes to complete a round trip. The dredge consumes approximately 700L for a 12.5-hour shift and may be refuelled daily or every second day.
21. The 1000 HDPE fuel tanks on board are appropriate for the dredging operation. They are non-corrosive, robust and light. They were recommended by the naval architect who designed the dredge. They are individually isolatable and can each be filled/emptied via a fuel transfer pump.
22. Mr Moon is right that we use an egg timer when transferring fuel from one side of the dredge to the other. Fuel is kept reasonably well balanced between the tanks of each side of the dredge so that the dredge itself remains well balanced. The egg timer acts as a reminder to stop the transfer to avoid an imbalance on the dredge and to prevent the tanks being emptied and sucking air into the fuel lines, but it is not the only measure we have in place to avoid overflows. The tanks are

fitted with float switch cut-offs which stop fuel being pumped and the tanks overflowing. These are the fail-safe systems, while the egg timer is about optimising the operation of the dredge.

23. There is a spill kit present at each point in the refuelling process. As this process is strictly monitored, there has never been a spill that has occurred during this process.
24. I would note that since we first commenced operation of the dredge in 2012 we have refined and continually improved our operational systems. The way we do things now is in many cases quite different from when we first started. We have learnt a lot and are proud of how we have been able to improve our operations both in terms of efficiency and environmental risk management.

### **Operational Matters**

#### *Water clarity monitoring*

25. There have been concerns raised about monitoring water clarity. The secchi dish has been criticised as it is not appropriate in rivers with strong flows. We are happy to measure the clarity of water, however the method must be one that one of our staff, who are not qualified ecologists, can carry out. Attaching the secchi dish to a rod would be reasonably easy and would enable water clarity to be measured in strong flows and allow our staff to undertake the measurement.
26. Previously water clarity has simply been monitored by staff watching the water closely and adapting operations as necessary. This approach ensures that we are actively watching and tweaking our activity to achieve the best outcome, as opposed to spot checking a couple of times when requested pursuant to the consent. We are not aware of any issues arising from this and certainly the aerial imagery we have available indicates that any visible sediment plume dissipates quickly.
27. The dredge operator also has good visibility of the material that we are working in using the camera on the end of the dredge pipe. This allows us to anticipate to a degree and adapt in real time. As an operator, my

preference would be to continue with this as we know it works and occurs in real time.

#### *Operational hours*

28. There have been some queries raised about the proposed operational hours of the dredge. Based on feedback from submitters we are happy to reduce our hours from 7am-10pm to 7am-8pm. We do not want to be a significant disruption or frustration in people's lives. As I mentioned before, we are cognisant of the environment within which we are operating, and we strive to minimise our impact. We have always engaged with nearby residents if we are operating in the vicinity and encourage them to let us know if our presence is impacting their lifestyle.
29. Whilst we are confident that the dredge does not breach the noise limits where we are currently operating we are taking some further steps to minimise noise from the barge. This includes enclosing with acoustic barriers the classifier at the stern of the barge which does create a bit of noise currently. We are confident that covering this part of the dredge along with other measures will reduce the noise generated at the dredge and further mitigate the potential effects on people in proximity to the dredge.
30. Regarding public holidays, we understand that people will want to enjoy and recreate on the river. We are happy to cease working on public holidays as is required under our existing permit on the lower parts of the river.

#### *Ability to halt the dredge and record fish*

31. The ecologists who reviewed the application on behalf of the Council suggested a condition that would require us to capture and identify any fish that got entrained in the dredge.
32. From my experience on the dredge, entrainment of fish is extremely rare, I have only witnessed it perhaps twice. Fish do show some interest in the dredge as we observe them from time to time on the underwater camera. Although they tend to keep their distance from the



suction pipe, skirting around picking up food etc. Anecdotally, a diver has witnessed 20-30 fish swimming in the hole below and behind the dredge when operating near Millers Flat.

33. If a fish does get sucked up it would not make it past the first classification screen due to size so there is an extremely limited ability to identify the type of fish, let alone catch it.

*Ability to avoid Lagarosiphon major*

34. The Otago Regional Council's s 42A report identified the methodology for recognising *Lagarosiphon major* (LM) prior to commencing suction dredging as a key issue. It is my understanding that LM does not typically frequent the deeper and fast-moving areas of the river so it is unlikely that we would not spot it via a visual inspection from the tender. However, if it was to be present in deeper water we would see it through the underwater operating cameras prior to commencing dredging.
35. LM and other periphyton block the dredging system so we would not like to continue operating if it is present and would move to a different location.

**Conclusion**

36. As I have said before we do try and operate in an 'out of sight, out of mind' way to an extent. We are conscious of the fact that we operate on a water body which other people utilise and want to enjoy too. In light of that we do take as many steps as we can to reduce and manage the potential impact that we have so that we don't unnecessarily impact other people. This approach has worked well for us previously with very few concerns having been raised. Where the odd issue has cropped up we pride ourselves on taking a proactive approach to responding to them and addressing the issues so that they do not continue.
37. Likewise, we have always encouraged crew involvement and ideas to improve operating systems and procedures. The dredge has significantly morphed with positive improvements since its launch and

will continue to do so, much of that thanks to diligent, responsible employees.

Date: 24 October 2023

Peter Hall

Director

Cold Gold Clutha Limited