BEFORE	Independent Commissioners appointed by Tasman District Council
IN THE MATTER	of the Resource Management Act 1991
AND	
IN THE MATTER	of an application by CJ Industries Ltd for land use consent RM200488 for gravel extraction and associated site rehabilitation and amenity planting and for land use consent RM200489 to establish and use vehicle access on an unformed legal road and erect associated signage

EVIDENCE OF DR CALUM MACNEIL ON BEHALF OF CJ INDUSTRIES LIMITED
(SURFACE WATER QUALITY AND ECOLOGY)

15 July 2022

1. INTRODUCTION

1.1 My full name is Dr. Calum MacNeil. I am a freshwater ecologist and I am employed by the Cawthron Institute in this capacity.

1.2 The applicant has applied for resource consents authorising the extraction of gravel, stockpiling of topsoil, and reinstatement of quarried land, with associated amenity planting, signage and access formation at 134 Peach Island Road, Motueka:

a. RM200488 land use consent for gravel extraction and associated site rehabilitation and amenity planting and

b. RM200489 land use consent to establish and use vehicle access on an unformed legal road and erect associated signage

1.3 My evidence addresses the surface water quality and ecology assessment of the activities for which consent is sought.

Qualifications and Experience

1.4 I have 20 years' experience in Freshwater Ecology / Freshwater Environmental Protection / Water Quality Monitoring in the public and private sectors in New Zealand, UK, Isle of Man, Central Europe, and USA. I have written 67 scientific papers and more than 20 reports related to this work and am currently Deputy Editor-in-Chief of an international aquatic sciences journal. I have undergone T90 Essential Enforcement legal training by the Environment Agency of England and Wales, in respect of the UK Police and Criminal Evidence Act.

1.5 I hold the following qualifications:

a. BSc (Hons) Biology, University of Stirling, Scotland, UK

b. PhD Freshwater Ecology, Queens University Belfast, N. Ireland, UK

1.6 My technical skills and experience directly relevant to my assessment include:

a. Over a decade as the Isle of Man Government's senior freshwater scientist. I was responsible for:

i. river water quality monitoring including routine monitoring of suspended solid levels and turbidity upstream and downstream of potential point source pollutions, such as drainage channels from building sites, landfills and quarries

ii. licensing of in-stream and bankside activities including construction projects involving erosion and sediment control plans from quarrying activity

iii. enforcement and prosecution of illegal discharges to rivers, including those involving the impact of suspended solids and excessive sedimentation on fish and other aquatic life.

b. Since 2020 I have been employed as a Freshwater Ecologist at the Cawthron Institute and in this role I have:

i. designed river health monitoring programmes for a wide variety of government and non-government stakeholders and these programmes include monitoring to detect and quantify the levels and impacts of excessive sedimentation and suspended solid levels on water quality and aquatic life

ii. recommended stormwater monitoring programmes to two district councils that take into account the potential impacts of high suspended solid loads and excessive sedimentation on river water quality, fish habitats and macroinvertebrates.

1.7 I visited the site on 23 February 2022. Myself and another member of the Cawthron Institute inspected the proposed Stage 1, 2 and 3 areas, the general layout and size of stop banks. We also visually inspected the adjacent Motueka River and inspected the Peach Island overflow channel both upstream and downstream of the existing bridge. We also took measurements of the overflow channel's width, as well as its distance from the boundaries of the proposed Stage 1 works. I noticed the overflow channel was completely dry in certain sections, including a section immediately downstream of the existing bridge. Selected photographs are available in Appendix 1.

Purpose and scope of evidence

1.8 The purpose of my evidence is to assess the surface water quality and ecology effects of the proposal RM200488 CJ Industries Ltd and associated application documents (01A, 01B and 01C), and to provide recommendations to avoid, remedy or mitigate adverse effects on surface water quality and ecology. I will be addressing the following aspects of the application:

a. Potential effects of the proposed gravel extraction including formation of haul roads and gravel transportation on these haul roads. This will include consideration of potential water quality and instream ecological effects of any inundation of Stage 1 works during flood events.

b. Recommendations to avoid, remedy or mitigate potential adverse effects I have identified.

c. An assessment of the consistency of the proposal with key National Policy Statement for Freshwater Management 2020 (NPSFM), Tasman Resource Management Plan (TRMP) and Motueka Water Conservation Order (WCO) provisions.

d. A response to issues raised by submitters in relation to surface water quality and ecology.

e. I have considered the Reporting planner's section 42A report and the relevant section on surface water quality.

1.9 I have produced my evidence based on reviewing the application and volunteered conditions and reviewing the following documents:

a. Application for resource consent submitted - 8 December 2021 (01A)

b. Council's request for further information - 3 July 2020 (01B)

c. Response of applicant with further information provided - 10 June 2021 (01C)

d. Standard Operating Procedures produced by the Applicant.

e. Tonkin and Taylor Ltd report on Peach Island Gravel Extraction (flooding assessment produced as part of applicant's response to request for information, June 2021).

f. Evidence of Jeff Bluett in relation to dust control, and the draft Dust Management Plan .

g. Evidence of Ryan Nicol (in relation to groundwater and cleanfill) and the draft Groundwater and Clean Fill Management Plan.

h. Evidence of Reece Hill in relation to soil management and the draft Soil Management Plan.

1.10 I have restricted the scope of my evidence to surface water quality and ecology and will not be addressing issues of groundwater quality, as these issues are

addressed by Ryan Nichol. I have noted the relevant groundwater sections in the application documents (RM200488 01A, 01B and 01C).

Code of Conduct

1.11 I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2014 and I agree to comply with it. My evidence is within my area of expertise, however where I make statements on issues that are not in my area of expertise, I will state whose evidence I have relied upon. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in my evidence.

2. EXECUTIVE SUMMARY

2.1 My evidence is based on the applicant's proposal documents and a site visit. My evidence assesses the potential of the proposed extraction works to degrade instream ecological values in the Motueka River and a small intermittent stream located in the Peach Island overflow channel, through increased fine sedimentation. The Motueka River drains the largest catchment in the Nelson Region and is of generally high water quality, with deposited fine sediment concentrations generally low except for some streams impacted by forestry activity. The Peach Island overflow channel is located to the west of the Motueka River and is called the overflow channel as the Motueka River flows in this direction during extreme flood events. A small unnamed intermittent highly modified stream, which at its southern end, is a tributary of the Motueka River, runs through this channel during normal flow conditions and at its northern end connects with the Shaggery River, which then flows into the Motueka River. Large longitudinal sections of the unnamed stream were completely dry during my site visit, and it is likely it only continuously flows into the Shaggery River and then Motueka River, during extremely high flows.

2.2 The main potential impact on water quality, should unrestricted sediment inputs occur, would be increasing suspended sediment levels or affecting substrate characteristics downstream in the Motueka River, either by altering grain size or increasing deposited and interstitial fine sediment levels. This can directly and indirectly impact on fish and sensitive macroinvertebrate species.

2.3 Given the minimum 20 m distance of the excavations from the stop bank, no workings occurring on the Moteuka River side of the stop bank, and no extraction at or near the Moteuka River itself, in my opinion the above potential effects should not occur as a result of extraction.

2.4 During major flood events, inundation of Stage 1 works (the only stage not completely enclosed by stop banks) may ultimately lead to sediment discharges reaching the Motueka River, particularly if seepage through or overtopping of stop banks occurs. However, it is my opinion in the event of severe flooding, any sediment discharge from the site would also be accompanied by discharges and run-offs from the surrounding landscape. Any impact from the works will be less than minor in relation to the impacts of the flood and the flood's interactions with other anthropogenic features of the landscape, such as forestry and farmland. In such circumstances, in my opinion it would not be possible to realistically ascribe the impacts on water quality and ecological values to any identifiable source. It would not be possible to detect any discernible effect from the site, relative to all other potential simultaneous inputs.

2.5 I have also considered potential impacts of extraction on the small intermittent and highly modified unnamed stream in Peach Island overflow channel but note this stream is approximately 30 m distance from the nearest proposed works (boundary of stage 1). Consequently, during normal flows, I would expect effects, if any, of the works, to be less than minor. During flood events, large areas of the overflow channel will necessarily function as an overflow channel for the Motueka River and this entire stream may be engulfed in the Motueka flood water. In such circumstances, in my opinion it would not be possible to realistically ascribe any subsequent impacts, including increased sedimentation to any identifiable source.

2.6 I have made a number of recommendations regarding temporarily stored topsoil and fill material, dust management on site, and use of haul roads, to minimise the potential of these factors contributing to any sediment / suspended solid discharge from the site. With the adoption of those recommendations, I am satisfied that the proposal will have less than minor effects on surface water bodies and will be consistent with relevant policy direction for freshwater.

3. EVIDENCE

Existing environment

3.1 The Motueka River drains the largest catchment in the Nelson Region (area of 2180 km^2 and main stem length of 110 km)[1]. Water quality is generally high, with evidence of nutrient enrichment confined to lower reaches of the river. Suspended and deposited fine sediment concentrations are generally low with the exception of some streams draining forestry catchments during harvest. The Motueka River has a range of native fish species, including galaxiids, bullies and eels. Macroinvertebrate communities are dominated by fauna typical of good water quality such as mayflies and stoneflies. The Motueka River is an important brown trout fishery and maintains a high-quality fish habitat. A WCO applies to the Motueka River and schedule 2 and 3 of the WCO apply to the stretch of the Motueka River adjacent to and downstream of the proposed gravel extraction site. The relevance of schedules 2 and 3 to the proposed activity is discussed in 3.19.

3.2 There is an unnamed small intermittent and highly modified stream located within the Peach Island overflow channel to the west of the quarry site, adjacent to the proposed haul road. The overflow channel is referred to as such, as the Motueka River flows in this direction during extreme flood events. Large sections of the small stream were dry during my site visit, despite several days of wet weather immediately prior to my visit. The small stream within the overflow channel is approximately 30 m distance, at its nearest point, to the boundary of the proposed stage 1 works, during normal flows, as indicated by measurements taken during my site visit. The unnamed stream connects at its northern end to the Shaggery River, a tributary of the Motueka River. The southern end of the unnamed stream is connected to the Motueka River itself. Many sections of the stream were completely dry during site visit, with grass and other terrestrial vegetation growing in these sections, indicating they had been dry for some time.

[1] Basher LR, The Motueka and Riwaka catchments : a technical report summarizing the present state of knowledge of the catchments, management issues and research needs for integrated catchment management. Lincoln, Canterbury, N.Z.: Landcare Research New Zealand 2003.

The proposal

3.3 The applicant proposes to undertake gravel extraction in three stages over a 15-year period, within an area of approximately 73500 m^2.[2] No processing or crushing of gravel will occur on site. No excavation will occur below the groundwater level as part of quarrying activity. No excavation will occur within 20 m of stop banks, or on the Motueka River side of stop banks. With the exception of a small amount of temporarily stored topsoil, no material will be stored on the river side of the stop banks. Cleanfill must meet the parameters specified in the Groundwater and Cleanfill Management Plan. Backfilling will occur at every opportunity. The ground will be reinstated to original levels as far as practicable.

3.4 For the Stage 1 area within stop banks, all excavation will occur in strips aligned parallel to the direction of flood flow. Any temporary stockpiles in the Stage 1 area will be aligned parallel to the flow of flood water.

3.5 Extracted material will be transported via dump-truck from the site to the processing plant at 34 Hau Road, Motueka. These trucks will travel along the Peach Island 'paper' (unformed, legal) road, then via marginal strip land before entering Motueka River West Bank Road. The existing road will be formed into a sealed haul road to meet TRMP and Department of Conservation (DOC) requirements. The proposed access crosses the small intermittent stream within Peach Island overflow channel via a vehicle bridge to reach the Motueka River West Bank Road. Any upgrade of this bridge and riverbed disturbances of the overflow channel associated with such an upgrade will comply with relevant permitted activity rules. It is noted no activities proposed in this application will cause riverbed disturbances, other than remediation of the existing bridge over the overflow channel.

Potential effects on the environment

3.6 The application shows that there will be a minimum 20 m distance of the excavations from stop banks, there will be no workings occurring on the Motueka River side of stop banks, and no extraction at or near the channel of

[2] Initially it was proposed to start with stage 1 then move to stages 2 and 3, but the applicant is now proposing to quarry stage 3 last. This does not have an impact on the matters I am considering.

the Motueka River itself. If this was not the situation and works were proposed closer to the river channel, my principal concerns would focus on sediment disturbance and erosion associated with the proposed extraction works and the potential for increased stream fine sedimentation to degrade instream ecological values in the Moteuka River.

3.7 Referring to the Groundwater and Cleanfill Management Plan, any source sediment from backfill will be largely chemically inert, arising as it does from only classes of material deemed acceptable for clean fill, under the WasteMINZ document Technical Guidelines for Disposal to Land (2018). Therefore, the main potential impact on instream ecology would be increasing suspended sediment levels or affecting substrate characteristics downstream, either by altering grain size or increasing deposited and interstitial fine sediment levels. Increased fine sediment levels in streams can directly and indirectly impact on fish and sensitive macroinvertebrate species. Large amounts of deposited fine sediment can be particularly damaging to fish spawning areas requiring highly oxygenated gravel areas and can have a general smothering effect on sensitive fish and macroinvertebrate species living on the streambed.

3.8 With reference to the Tonkin and Taylor Ltd report on Peach Island Gravel Extraction, which has been incorporated into the 'Response of applicant with further information' provided 10 June 2021 (see 1.7), it is noted that flood hazard assessment has been carried out for Stage 1 works, as both Stages 2 and 3 are protected by the Peach Island stop banks. Inundation of Stage 1 works during major flood events has the potential to transport sediments to the Motueka River via failure of the stop banks, including seepage when the water level reaches near the crest level of the banks.

3.9 With respect to potential inundation of Stage 1 works and generally for the site as a whole, if the stop banks are overwhelmed by a major flood event, whether via seepage or overtopping, in my opinion any impact on the Motueka River, its quality and fauna, would be no more than minor. This is because if the stop banks are overwhelmed and material even 20 m away is transported to the river, it is highly probable there are numerous simultaneous inputs from the surrounding landscape, as flooding and associated land run-off will not be restricted to the gravel works. The dilution factor for any contaminants present

is also likely to be extremely large in such circumstances. Whilst fish habitat may be disrupted by flooding and fish strandings may occur in the aftermath, in my opinion any effect of the proposed gravel extraction works will be minimal (less than minor) in comparison to the overall impacts of the flood and all the other anthropogenic features of the floodplain, such as forestry and farmland.

3.10 Additional potential sources of sedimentation to the Motueka River are accumulated dust associated with extraction and stockpile sites, increase in sediment loads resulting from haul road construction and then regular usage by vehicles transporting material along haul roads. This could include spills of gravel/fill as well as stormwater run-off of accumulated dust from hard services. Dust is addressed by Mr Bluett, who concludes that dust can be managed so that any potentially adverse effects of dust from the site can be avoided, remedied or mitigated and proactive solutions are promoted to control dust emanating from the site. Noting the dust mitigation recommendations in Mr Bluett's evidence, dust will not be allowed to accumulate on hard surfaces for long periods of time and the dust suppression system, using a water cart or sprinkler system, should avoid significant dust-loaded discharges to either the Motueka River or the unnamed tributary in the overflow channel.

3.11 In terms of contaminated material, my main concern would be accidental hydrocarbon (oil or fuel) spills associated with machinery maintenance or breakdown. Referring to the Application for resource consent document RM200488, 01A (8 December 2021), it is stated that machinery and fuel will be stored away from freshwater bodies and a contingency plan will be prepared to avoid, remedy or mitigate the effects of any accidental spill of fuel or other contaminants. I understand that these requirements are to be included as conditions of consent. Given this and the distance from the stop banks, I view this risk as less than minor for the Motueka River.

3.12 The Peach Island overflow channel contains a small intermittent highly modified unnamed stream. Aquatic life present in the overflow channel, no matter how depauperate, has the potential to suffer from excessive sedimentation if it occurs. In addition, as acknowledged in section 3.5 of the NPSFM (Integrated Management), floodplains are connected even if waterflows in channels are not permanent and only fully connected during flood flows.

However, the distance of the unnamed stream from the proposed boundary of the Stage 1 works makes excessive sedimentation resulting from Stage 1 works unlikely during normal flows. In addition, given the intermittent nature of the stream with many dry longitudinal sections of stream, any sediment inputs into the stream may well be trapped in localised areas of the stream. During extreme flood events, it would necessarily be expected that the entire overflow channel itself may flood and any inputs from Stage 1 works into the unnamed stream will be accompanied by numerous simultaneous inputs from the surrounding landscape. In my opinion any effect of the proposed gravel extraction works will be minimal (less than minor) during both normal flows and flood events.

3.13 A more likely source of sediment input (other than during major flood events) to the unnamed stream within the overflow channel is via the adjacent haul roads, including along the marginal strip. The SOP and Dust Management and Monitoring Plan (DMMP) dust control measures for extracting gravel on site, including regular use of sprinklers, road wetting and use of pea metal to allow good drainage, are control measures that should prevent dust accumulating on roadways and forming sediment-heavy discharges during stormwater events, as well as preventing large standing pools of muddy water.

3.14 In terms of contamination in respect of the haul road and unnamed stream, my main concern would be accidental hydrocarbon (oil or fuel) spills associated with machinery maintenance or breakdown. Referring to the Application for resource consent document RM200488, 01A (8 December 2021), it is stated that machinery and fuel will be stored away from freshwater bodies and a contingency plan will be prepared to avoid, remedy or mitigate the effects of any accidental spill of fuel or other contaminants. Again, I understand that these requirements will be included as conditions of consent. Given this and the distance from the boundary of the proposed Stage 1 works, I view the risk for the unnamed stream in the Peach Island overflow channel as less than minor.

Recommendations to avoid, remedy, or mitigate effects

3.15 The application shows that extraction areas are located a minimum of 20 m horizontal distance from the toe of the stop banks where these are present. I support this condition. This, coupled with no extraction on the Motueka River

side of the stop banks, are adequate measures to avoid potential adverse environmental effects of sedimentation. It is noted that no material will be stored on the river side of stop banks, with the exception of a small amount of temporarily stored topsoil and fill material that is awaiting placement in the excavation area. I recommend a management plan addresses the maximum period such material can be temporarily stored and under what prevailing weather conditions. I recommend such material is temporarily stored for the shortest duration that is practicable and preferably under dry weather conditions. As a mitigation measure, I recommend temporary sediment bunds are constructed, whatever the prevailing weather conditions to prevent any possibility of run-off.

3.16 I also recommend dust and sediment control measures are applied to the site such as sealed accessways and use of covers on all vehicles, sprinklers for wetting down of material and linked to this sediment traps will be constructed and positioned so any sediment laden run-off is directed to bunded sediment traps.

3.17 If unavoidable, vehicle maintenance and/or refuelling should be restricted to a part of the site, where hydrocarbon spills cannot reach any part of the Moteuka River or Peach Island overflow channel, either directly or indirectly. Any accidental spills on the haul roads or site should be immediately contained and then any contaminated soil / gravel removed from the site for disposal. Referring to document RM200488, 01A (8 December 2021), it is stated that machinery and fuel will be stored away from freshwater bodies and a contingency plan will be prepared to avoid, remedy or mitigate the effects of any accidental spill of fuel or other contaminants.

3.18 I have reviewed Mr Hill's recommendations for a Soil Management Plan and the applicant's SOPs. I am satisfied that my recommendations have been captured in those documents, including measures such as sediment traps to avoid soil loss to water.

Consistency with policy direction

3.19 For surface water matters, relevant provisions are found in various Chapters of the TRMP (for instance, chapter 5 'site amenity effects', 7 'rural environment

effects', 12 'land disturbance effects', 27 'activities in the beds and on the surface of rivers and lakes', 28 'rules for activities in the beds of river and lakes', 30 'taking, using , damming and diverting water', and 33 'discharges to land and freshwater' including 33.05 stormwater discharges and 33.0.2 point and 33.0.3 non-point source discharges) and throughout the NPSFM. In my opinion, the 'core' policy directions for the purposes of assessing the actual and potential effects of the proposal on surface water quality and ecology, and the proposal's consistency with these instruments are as follows:

a. Natural and physical resources are managed in a way that prioritises the health and well-being of water bodies and freshwater ecosystems (NPSFM 2.1(1)(a)).

b. Freshwater is managed in an integrated way that considers the effects of use and development of land on 'whole-of-catchment' basis, including the effects on receiving environment (NPSFM 2.2 Policy 3). This encapsulates the concept of cumulative effects.

c. Health and well-being of water bodies and freshwater ecosystems is maintained or improved (NPSFM 2.2 Policy 5).

    i. The above policies are achieved by setting activities back from waterbodies, avoiding excavation on the Motueka River side of the stop banks, applying dust control measures and measures to minimise potential sediment loss.

j. Loss of river values is avoided to the extent practicable, significant values are protected, habitats of indigenous freshwater species are protected, and habitat of salmonids (trout and salmon) is protected as long as this does not conflict with protection of the habitats of indigenous species (NPSFM 2.2 Policy 7, 8, 9 and 10). There will be no loss of river values, and ecosystem health (including components such as water quality, aquatic life, and habitat) and indigenous biodiversity are protected.

k. The values of the Motueka River are set out in row 14 in Schedule 30A of Chapter 30 TRMP. These include a trout fishery of national significance,

native fisheries including eel habitat and aquatic ecosystems, whitebait spawning habitat in coastal streams.

l. The proposal does not include extracting gravel from the riverbed of the Motueka River. Section 27.3.1.2 'Gravel Removal' of Chapter 27 'Activities in the Beds and on the Surface of Rivers and Lakes' of the TRMP notes that while some natural degradation of riverbeds is unavoidable, issues associated with bed degradation have been exacerbated by gravel extraction. It notes further degradation can be greatly reduced by limiting gravel extraction in riverbeds. The proposal states that no excavation will occur within 20 m of stop banks, or on the Motueka River side of stop banks. Nevertheless Chapter 27 of the TRMP provides useful guidance for managing the effects of gravel extraction in a riverine setting.

3.20 The Motueka River WCO is also relevant. The part of the river that is next to the site is listed in Schedule 2 of the WCO. This means it is subject to a direction that no resource consent shall be granted that:

a. Will cause the material alteration of the channel cross-section, meandering pattern, and braided river channel characteristics of the form of any river specified in Schedule 2.

b. Will cause, for those rivers specified in Schedule 2, at any time of year, either by itself or in combination with other existing consents or rules, a 50 percent or greater increase in the deposition of fine sediment (less than 2 mm diameter) on the riverbed after reasonable mixing, relative to the point immediately upstream of the area to which the resource consent or rule relates.

3.21 I consider that the proposal is consistent with these requirements and stipulations. In my opinion the Motueka River should not be impacted by the gravel extraction or activities related to the extraction process provided volunteered conditions are met (such as adherence to an erosion, sediment and dust management plan) given that all works will be setback at least 20 m from stop banks, permitted activity rules under the TRMP are complied with (stormwater management, sediment control and river bed disturbance – in the

latter case, this applies and is limited to the Peach Island overflow channel bridge site and immediate locale only) and my recommendations, as incorporated into the Soil Management Plan and SOPs, are followed.

3.22 I have reviewed permitted activity rule 36.2.2.3 which contains permitted activity standards for sediment-containing discharges that are associated with land disturbance. I am satisfied that the activity will meet those standards, for the reasons already outlined above.

Matters raised in submissions

3.23 I have considered matters in 67 submissions where surface water quality and ecology have been identified as the main focus of concern.

3.24 I have not addressed issues of compliance in relation to protection of surface water quality and ecology.

3.25 A number of submitters were concerned about the impacts of gravel extraction from the riverbed. Gravel extraction will not take place from the river and will be restricted to the areas outlined previously.

3.26 Several submitters noted the NPSFM prioritises the health and well-being of water bodies and freshwater ecosystems above any other concerns (NPSFM 2.1(1)(a)). The first step in the management approach for such an activity is that adverse effects should be avoided. I believe the application has complied with this approach as adverse effects are avoided and there is no loss of river values.

3.27 Ngāti Rārua and Wakatū both consider that the application did not adequately identify cultural values. I understand that rivers like the Motueka River are tūpuna to Ngāti Rārua and Wakatū, and that each river has mauri, wairua, tapu and mana of its own, but I have no expertise on those matters. I cannot comment on the adverse effects of the proposal on these things specifically. However, to the extent that they align with avoiding adverse effects on water quality and ecosystem health, and avoiding loss of riverbed extent, I consider, as noted above, that the proposal is consistent with those outcomes.

3.28 Ngāti Rārua and Wakatū have also specifically raised a concern that backfilling may have adverse effects on water quality of the Motueka River. I do not

comment on groundwater, which is addressed by Mr Nicol, but in terms of surface water I do not consider that the inert cleanfill material that would be backfilled into excavation pits at some distance from the river would have any effect on water quality of the Motueka River.

3.29 Several submitters noted that the NPSFM requires that freshwater is managed in an integrated way and takes account of cumulative effects on the receiving environment (NPSFM 2.2 Policy 3). Submitters were concerned that the gravel extraction activity would ultimately add to the sediment load currently going to the receiving environment during flood events. While this is possible, it is my opinion that in the event of severe flooding, any sediment discharge from the site would also be accompanied by discharges and run-offs from the surrounding landscape. Any additional impact from the works will be less than minor in relation to the overall impact of the flood and the flood's interactions with all other anthropogenic features of the landscape, such as forestry and farmland.

3.30 A number of submitters have expressed concerns about potential for contaminated effluent discharges, such as from back fill material and oil spills from vehicles and machinery. I have assumed safeguards detailed in the application documents are required by consent conditions, which means such discharges should be very unlikely.

3.31 A number of submitters have requested river health monitoring of the section of the Motueka River immediately adjacent to and downstream of the proposed works. Given the conditions detailed in the application and distance of the works from the Motueka River, in my opinion a river monitoring programme would not be justified as a recommendation at this point.

Matters raised in section 42A report

3.32 With respect to section 12 (12.1), it is noted that the NPSFM provisions 'frame or colour' the Council's assessment of effects on water quality (surface and groundwater). It notes that the NPSFM prioritises the health of the waterbody and ecosystem first, before the needs of people or their cultural, social, and economic wellbeing (12.3-12.4). I believe my evidence addresses how loss of river values will be avoided, so the health of the waterbody is protected.

Although economic wellbeing is being pursued, I believe when conditions are complied with and management plans / SOPs are followed, the health of the waterbody and ecosystem should not be diminished in any discernible way.

3.33 With respect to matters raised in section 12 (12.6 - 12.7) of the report relating to Policy 7, I note the Council considers this activity does not constitute a functional need and therefore according to the NPSFM loss of river values must avoided, with no managed decline in river values possible. I do not comment on whether Policy 7 applies or whether the activity has a functional need, but I consider this proposal will avoid the loss of river values.

3.34 With respect to distances of Stages 1-3 from the Motueka River, including a proposed 20 m setback of any excavation from the toe of the landward side of a stop bank, I note it is concluded in section 12 (12.10 - 12.11), that with these separation distances there will be no direct effects on surface water quality of the Motueka River. I agree. As detailed in my evidence, I believe these distances in combination with the existence of stop banks are the principal means to avoid loss of river values.

3.35 With respect to potential effects of dust, sediment, and erosion, I note it is concluded that in section 12 (12.11) these can be appropriately managed with consent conditions so as not to adversely affect river water quality. I agree that strict adherence to these conditions will avoid adverse effects to river water quality. As detailed in my evidence, I believe the conditions, management plans and SOPs associated with the application should avoid loss of river values.

3.36 With respect to large flood events that could inundate the site stages (especially Stage 1 being outside the stop banks) it is concluded in section 12 (12.12) that any effects from sediment originating from the site entering the Motueka River would hardly be discernible. As detailed in my evidence, I also believe it would not be possible to detect any discernible effect from the site, relative to all other potential simultaneous inputs. Likewise, in my opinion it would not be possible to ascribe any measurable impact on the Motueka River, including loss of river values, from the site itself, during flood events.

3.37 The effects on surface water quality of the unnamed intermittent stream in the Peach Island overflow channel is not considered as part of the assessment in Section 12 but has been considered in my assessment

4. CONCLUSION

4.1 In terms of an overall opinion, the measures put forward by the applicant are proportionate and fit for purpose in protecting instream ecological values in the Motueka River. The presence of stop banks and minimum distance of 20 m of excavations from stop banks and no working on the Motueka River side of stop banks are all crucial in protecting the Motueka River. The additional measures I have recommended, would provide further safeguards to prevent sediment inputs. I also believe there will be less than minor effects on an unnamed stream in the Peach Island overflow channel from both excavation activities on site and use of the haul road. During extreme flood events, in my opinion there would be no discernible effects on river values in the Motueka River, directly attributable to the works detailed in the proposal.

Calum MacNeil

15 July 2022

APPENDIX 1

Photographs taken on site visit 22/02/2022

Fig. 1 Cawthron vehicle parked in proposed Stockpile and service area. Stop bank (with Motueka River located behind it) is visible in far distance (indicated by red arrow).

Fig. 2 Peach Island overflow channel immediately upstream of bridge.

Fig. 3 Bridge over Peach Island overflow channel.

Fig. 4 Peach Island overflow channel immediately downstream of bridge. Dry sections of channel evident.

Fig. 5 Peach Island overflow channel several hundred metres downstream of bridge. Channel wet width is approximately 2m, depth is approximately 5-10cm.