**SUBMISSION BY DAVINA PENNY. (ADDRESSING OF REBUTTAL BY APPLICANT)**

**IN THE CASE OF:- APPLICATION BY FULTON HOGAN TO OPERATE A QUARRY, DAWSONS ROAD, TEMPLETON.**

Thank you for giving me the opportunity to present to you today.

To introduce myself, my name is Davina Penny. I live in Iraklis Close, and as such am at the 700 metre mark in relation to the proposed site, Iraklis Close being off of Globe Bay Drive.

I acknowledge I may not be directly affected to the extent those will be who are much closer to the site. However, dust will still reach where I live when certain wind directions prevail, albeit in a dispersed volume. Any time I drive to Rolleston along Jones Road, I will be running the gauntlet of quarry trucks. When using the cycle way (which will be extended through Templeton) I will be acutely aware that there will be heavy vehicles coming off a roundabout both to my immediate left and to my immediate right. With vehicles not coming into sight until I have perhaps committed to cross over Dawsons Road. There is also the likelihood my path across Dawsons Road as a cyclist, will be blocked by trucks queuing to get across the railway line. I consider myself part of a community. I have friends in Maddisons Road and Curraghs Road. Therefore my submission is taking into account their interests as well as my own.

With regards this submission, it is also available in electronic form. My submission slides, and all reference / source material is also to be copied for you. As I read my submission, you will find references to the folder where you can find that particular reference document. I hope this helps should you wish to verify parts of my submission.

I apologise for the fact there is some very real cut and paste on these printed submissions. I was originally to present in week one of the hearing, and due to the fact I was planning on being in attendance all days? It was necessary to have the submission printed prior to hearing. It became clear there were points that had to be addressed, but it was not economically viable to have everything reprinted. Therefore you will experience the 'old school' - and very literal - cut and paste in places. My husband has been horrified by this, but the Amazon rainforest has thanked me.

To try and reduce the amount of time needed, you are aware I submitted part of my submission prior to the hearing. I would like to address parts from that submission that have been rebutted or discussed at this hearing, as well as statements made by the applicant at the start of week 1 where I was an observer. It should only take a few minutes, and then I will present the main body of the submission.

**1)** Mr. Chittock has now admitted that the Golf Course swap is only on hold. Therefore we can assume it is likely to proceed, and therefore this land is not their only viable option. It is an additional option whereby it is likely consent will be sought to continue with the proposed land swap. I would suggest in a few years Templeton will therefore have 2 Fulton Hogan quarries operating. The reasons given on day 1 of this hearing did not give cause to doubt this scenario.

**2)** With regards the inadequacies of the proposed mitigation I have proffered - with particular reference to dust, I note that the applicant is standing by its proposed measures. The applicant has not commented on the more robust measures I have shown as being available and used overseas, or commented on their suitability. They have not been discredited, so I therefore ask that the measures be compared to those proposed at this site, and given due consideration.

**3)** You have been referred back to the initial application with regards my concerns about monitoring by the Regional Council.

I do not believe we can accept the word that the applicant has implemented measures **reducing** the need for monitoring by council or the community. Unless there is ZERO cause to make a complaint regarding a potential condition breach, my concerns I believe are still valid. I therefore endorse the suggestion made to the applicant that they do indeed incorporate viewing platforms so that the community can at any time observe operations. In line with this, I ask that consideration be given to making available water level readings in a timely manner, whereby any rise above the stipulated level can be checked against operations to ensure backfilling is indeed occurring - in a timely manner. This applying should there be no increase in the buffer zone which I will be discussing in detail.

**4)** There is no indication of a wheel wash being installed and utilised in the consent conditions, something that was raised by yourselves on day 1 of the hearing. I again reiterate the importance of them, and will demonstrate their use with a short video. If it is not included in consent conditions? It is not enforceable, and in all likelihood - will not eventuate. The photographs I provided showed what is likely to ensue if there is no evidence of appropriate washing being undertaken.

**5)** We have seen that later reporting has indicated reject aggregate will be on internal access roads. The photograph supplied by Mr. Cudmore indicates this material is angular with points/edges. It is certainly not smooth. I understand this has recently been introduced at another of their sites. What analysis has been done to establish the effectiveness of reject aggregate in mitigating dust? (i.e. - comparison of dust produced before and after introduction, with long term data available. To include comparison recordings of PM10, PM2.5 and RCS). I would anticipate this will have large and heavy vehicles driving over it to the extent there is going to be potential for compacting and grinding down of the aggregate. Therefore it would be inappropriate to only rely on the fact there is no visible dust.

**Other issues not disputed through rebuttal**

**6)** I note that my concerns over the lack of certainty regarding junction control at Jones road / Dawsons Road have not been addressed. Therefore it can be assumed the applicant cannot give any assurance regarding the inclusion of a roundabout - of any kind, despite having had 2 years in which to obtain certainty. I reiterate my concern. There is the possibility of having no junction control. Yet the applicant has not supplied a plan C to account for this eventuality. Nor has the applicant supplied a contingency plan for when the railway crossing is out of action due to rail

maintenance. Something that has happened twice in recent months at Kirk Road junction with SH1, necessitating detours.

**7)** I also provided visual evidence that trucks leave their Pound Road site inadequately loaded, and with seriously inadequate dust mitigation.
These concerns were not addressed in the rebuttals. Nor were they explained in any way, so I will suggest that in the absence of assurances this will not happen at Templeton? This will be a SOP by the applicant and is indicative of what we can expect should consent be granted.

**Issues of note from opening week of hearing**

**8)** Mr. Van Nieuwkerk did not know where the nearest wells are in relation to the proposed site, and at one point mentioned "few hundred metres". The application has indicated the closest is 50m from the south east of the site. However, there is a domestic use bore that is much closer - it is actually next to the central plant and is a sensitive receptor. This will be described in the main body of this submission.

**9)** Mr. Van Nieuwkerk did not know what size area would be affected in the case of trigger levels occurring at M36/0217. I can confirm there are a total of 72 consents / well owners who are affected by the levels at this bore. Area includes Hoskyns Road, Madisons Road, Knights Road, Finlays Road, Dawsons Road, Curraghs Road. A sizeable region. In the main body of my submission I will specifically discuss the most recent occasion whereby triggers occurred leading to reduced access to water from the site bore.

**https://www.ecan.govt.nz/data/irrigation-restrictions/areadetails/5/South-of-the-Waimakariri-River-to-the-Halswell-River---Banks-Peninsula/416**

**10)** There has been a claim that this site has been in the planning for 12 years. This site was purchased in April 2017. Can the applicant provide you with evidence of this planning, as it been a key component of justifying the importance of this site, and the importance of planning for needs well into the future. If there is no evidence, (which would have to compromise of more than just having an eye on that land) I believe it should be accepted that quarries can be sourced, researched and applied for in a much shorter time frame.

**11)** Can I finish this section by highlighting a concern that there is no consistency with regards the size of area that is to be subject to dust control. On one occasion 9 hectares was mentioned, which was subject of correction at the hearing. It is then shown as being 6 hectares in Mr. Van Nieuwkerk's report, yet Mr. Cudmore on the 19th November at this hearing stated 5 hectares or less were susceptible to dust.

**12)** Mr. Cudmore was asked what would ensue should any monitoring undertaken show any discharge measured was more than assessed. The response included extending the study to rule out a false positive, then an evaluation of health risks. I am of the opinion the personnel reporting

on behalf of the applicant have made it clear they do not believe there are health risks posed from dust from the quarry. Therefore I believe any analysis of 'health risks' would in all likelihood be conducted with prejudice, and subsequent reporting would not be reliable.

**13)** There is the issue of offsetting discharge to the air shed, whereby you were told on Wednesday 20th November, the Pound Road quarry would be closed to ensure this offset. However, the s92 response was:

*"Furthermore, after the site becomes operational, it is anticipated there will be a reduction in overall site activity at Pound Road".*

A reduction will not offset and therefore I do not believe the proposal from the applicant is real or will be delivered upon. The word 'anticipated' is also not definitive. I would ask for assurance, should the Pound Road site close, they will not just transfer the processing of aggregate from other aggregate extraction operations to the Roydon site.

**14)** This is only a minor point but will explain the approach I have taken in my main submission to follow. Mr. Van Nieuwkerk indicated that water would be used from the bore, with the storage as back up if extra water was needed. Page 58 of his report states:

*"It is assumed that water is supplied from the borehole to the storage tank continuously, on a daily basis at the rates required on site up to the maximum extraction rate"*

I read that as being water being fed to the storage tank, than taken from the tank for onsite use.

**15)** I concur with Mr. Kirby regarding the contradictive claims regarding dust impacts. It is clear, it is believed dust will not be an issue beyond 200m from the quarry. Yet Mr. Cudmore has indicated the monitors have measured dust at Yaldhurst from ALL quarries, therefore he believes it is appropriate to apply a factor to 1/10th as a representation of what can be expected at the Roydon site. Some of those quarries would be more than 500m from the monitors. So which is it to be?

If dust does travel more than 500m, he is supporting our claims that a substantial setback is needed - certainly more than 500m. If the applicant sticks by its claims dust is not an issue more than 200m from the quarry boundary, then Mr. Cudmore will have to accept that those monitoring results accounted for dust from just one or two nearby quarries. Therefore discrediting the 1/10th factoring, which in itself compromises the claims in the application. It will show that a) dust to the airshed will be substantially more than Mr. Cudmore is predicting and b) there will be substantial levels of dust released from this proposed site.

I guess the applicant has to choose which way it wants to jump. Rock or hard place.

With regards to what you have seen at the crossing, to give some perspective? A submittor presenting tomorrow has advised: From the centre of the tracks to the centre of the stop line at Dawsons Road (Jones Road side) is 17m. Kirk Road has a 9m limit - and measured at 16.2m

SUBMISSION BY DAVINA PENNY. 17 IRAKLIS CLOSE, TEMPLETON CHRISTCHURCH.

IN THE CASE OF:- APPLICATION BY FULTON HOGAN TO OPERATE A QUARRY, DAWSONS ROAD, TEMPLETON.

**CONCERNS REGARDING RISKS TO AND NEGATIVE IMPACTS ON WATER**

1) This opening section is evidenced and will show that the applicant has not been entirely honest with regards the water levels applicable to the proposed site, has potentially misled the proceedings, and in turn is risking exposure and contamination of our water. In lieu of the evidence I am about to present, it will be very apparent - consent should not be considered.

**2)** Two aspects of the application are of serious concern:

a) Fulton Hogan's intent to quarry to a depth of 9.9 metres.

b) Taken from page 31 of the Golder report: *According to the CRC well database there are two active bores within the site (not including the four new monitoring bores installed on the site boundary), M36/0257 and M36/2743 with depths of 63.4 and 24m respectively.... The water level record is not available for either bore.*

I would now like to talk you through the water level record for well M36/0257 - something the applicant indicates 'is not available', but has been since July 2018 when I first researched wells on that land.

**3)** Firstly slides 1 + 2 1 shows where this well is situated. It is actually on the proposed site. This along with all the images I am about to show you are from the same source: the CRC well database.

The next image shows the main data, including reference to the measuring point which is 1m above ground. Therefore readings to ground can be adjusted to be accurate - 1 metre is deducted when taken according to the measuring point. This is the first tab displayed on this page. The initial reading in 1974 was 8.06m to ground level. The highest recording was from September 1975, where it was 7.95m. It is this figure that is of significance - a figure that is referenced in several places on the database.

Slide 4 shows the full record as a line graph. A total of 28 readings have been taken for this well. Readings were infrequent until the late 1980's with no readings then shown until 2017. In August 2017 it was 9.55m metres, and in September 2017 it was 9.39. You can see it was on the rise. My research has shown that water levels can be even higher in October, so it is possible it would have been higher still. Slide 5 shows all readings.
Fulton Hogan purchased this land in April 2017. Therefore those two final readings shown were taken under their ownership. We can therefore assume they knew what the readings were. The readings are taken manually. Yet they have made no mention of them in the application. Nor are

there further readings shown from this well. The question needs to be put to them as to why there are no further readings recorded, and why they have stated there is no data available.

**4)** Slides 6 - 8 show the bore depths and gravel composition, as well as again confirming the highest recorded level of 7.95m - on the same tab. This is the database the applicant obtained the information from regarding the bore depth of 63.4m. It is not possible to be unaware of the information supplied for this well. In the time frame after the closing of submissions, this data was removed from being viewable on the public website. But was still clearly displayed on ECAN's server. As you can see from slide 9, the database on ECAN's website instead showed the message "no bore log image available". Therefore anyone researching wells on the land over this time period in order to compile a report for this hearing would not have access to important information that had previously been shown. This data was shown as being restored on the 26th June.

**5)** Image 10 shows how the water graphs are presented on one of the pages from this site. (Well M35/1080 shown as an example). You can see it is a split graph. The bottom part which would represent readings for M36/0257 you have seen on slide 4.

Image 11 shows how this is now shown for well M36/0257. As you can see the top graph is missing, which is shown as a close up on Image 12.

**6)** This data has been removed or hidden, permanently so. Slide 13 and 14 show what WAS there prior to it being removed or hidden. Slide 13 shows various ways of viewing the data. These can be toggled on and off. The cursor position shows that again the HRGWL as being 7.95m. This was present on the website as of August 15th 2018.

I cannot recall the exact date it was removed, but I can say it was after August 15th, and it was still missing when I created the slide on the 27th November. At the time of making this submission, it is still not shown. The two removed pieces of data both had clear references to HRGWL of 7.95m shown.

All of these images are in folder 1.

**7)** With regards to the other wells on the site, 2 are historic with no regular data. The applicant installed site bores around the site perimeter April 2018 (just 7 months prior to the application being lodged). These site bores only show initial readings, and at the time of this submission no other readings are shown on the CRC well database.

All of these images are in folder 2 labelled Fulton Hogan's bore info.

**8)** My attention is now turned to these wells.

Although the readings were showing levels between 15m and 13.46m below ground level, I believe these to be irrelevant and should be ignored on the following grounds:

a) There is no historic data, with just the one reading / recorded water level. M36/0257 does show historic data, and numerous readings that give a more accurate representation of the water levels at the site.

b) The readings appear to have been taken in April - this being the time of year where water levels are usually around their lowest. Therefore, the readings would not be representative of higher levels that could be expected at other key times of the year (September/October).

**9)** The bore log data was removed / hidden from public view for these wells also. Slides 19 - 22 show what had previously been shown. (Original screen shots from August 2018 are in folder 2) Slides 23 - 26 show what was on ECAN's website as of the 19th June 2019 when I first realised the data was altered. Again, this is key information that has been made unavailable to anyone writing their submissions for this hearing, or for reports pre-hearing. This will be of benefit to the applicant, but will be disadvantageous to those opposing. It was seen to be reinstated on the 26th June. This brings into question whether this process up to the hearing has been conducted in an open, fair and transparent manner. I ask that this be given serious consideration in your decision making. I do not need to elaborate on how serious the implications are.

**10)** I have found no reference to what those actual readings were for these bores, in any of the application documentation. Yet they have played a pivotal role in the applicant's calculations / estimations. In lieu of the fact full data has not been provided to allow anyone to verify the accuracy of their findings, I suggest this alone is cause to disregard and question the validity of the figure of around 11m - a figure the applicant uses to justify the quarrying to a depth of nearly 10 metres. All we have shown are initial readings. It should be of concern the applicant has denied the existence of a key readings log, yet expect us to blindly accept calculations they claim based on readings from their own wells - readings that have not been made available.

**11)** It is therefore clear, the citing of 'seasonal' levels is irrelevant. They had been calculated on the guise there was no definitive data to provide the HRGWL. We also see there has been a level of manipulation involved in the calculations. You have been presented with very clear evidence of available data. In addition, due to the shallowness of the water table, there is no room to allow for approximate measuring. This concern is heightened when you read words associated with it. Those being 'expected', 'anticipated' and 'around'. There is nothing definitive about those statements. Yet they are used continually throughout the document I am currently referring to, and give the impression that the figures supplied are barely more than estimates.

I will now describe how the applicant came up with the figures of 11m and nearly 10m. Those figures have to be seriously questioned with regards their validity.

**12)** "*The CRC wells considered in this analysis are somewhat distant from the site being between 1 and 2.5 km away and are situated to the south and southeast. Therefore, actual site conditions may differ from those determined from this information"*
"*The site monitoring bores are considered to better represent the groundwater levels applicable to the site than the remote regional monitoring bores"*

**13)** This is an important acknowledgement. Reliance on data taken from wells a substantial distance from the site is very obviously flawed. Which raises the question as to why they have even been considered / included in the analysis. Particularly as there is a more representative well with M36/0257 - which is actually positioned on the land. I now discuss why their site bores are no more reliable / representative.

***** Please see appendix C for further details of misrepresented data relating to the regional bores******

Incorporated into the calculations, are readings from their own wells which were taken over winter. A time of year which will give a false reference point due to the water not being at its highest, and therefore not reflective of levels that are experienced in September / October. How can readings from ONE single 3-month long season from newly installed wells be classed as truly representative. I also wish to reiterate - we have not been provided with any readings for those wells. Therefore they are unsubstantiated. These bores have had barely enough time to get their feet under the table, let alone enough time to provide reliable and truly representative data. They were only installed 7 months prior to the application being lodged. It is dangerous to give credibility to such a small readings sample over a VERY short period of time. Why were spring time readings not used which would have been more relevant?

ALL FIGURES CITED IN THIS APPLICATION SHOULD THEREFORE BE DISREGARDED AS UNRELIABLE AND NOT REPRESENTATIVE OF TRUE WATER LEVELS FOR THE SITE.

**14)** The applicant has made it clear they will take no further readings from M36/0257 and is further confirmation that they are fully aware of the consequences. The question has to be asked of why.
Page 78 of the Golder report indicates they will only take readings from their own bores moving forward. What is even more concerning, is the statement contained in the Golder report from March 2019:

*"The consent holder shall monitor water levels for the first five years after commencement of consent in the four bores specified below: (**All site bores installed by the applicant*)

It then goes on to say that a report will then be submitted to CRC recommending a revised maximum depth of quarrying. Not withstanding the aforementioned process, at all times and in all circumstances quarrying will be limited to 1 metre above the seasonal high water table referenced to the datum point in Condition 7.

**15)** Later documentation cites water levels will be reviewed every 5 years. It should be under constant review. Any rise which changes the HRGWL should be adopted there and then. It is unacceptable to have this happen year 1 into a 5 year review period - and only 4 years later consideration given to having a revised depth of quarrying. It also goes without saying, M36/0257 should be included for monitoring, not just their installed site wells.

**16)** I now wish to bring in the Central Plains Water Scheme, and the impact this is going to have on water levels accordingly. With just a measurement of 7.95 metres as the HRGWL, it is apparent there is a propensity for water levels in this area to be close to the surface. And that is likely to be higher in the future.

With regards to the changes that may occur as a result of the Central Plains Water Scheme, I would firstly like to refer to a quote by Kevin Bligh (consultant for this application) from the Aggregate News Publication from June 2014. (Aggregate and Quarry Association of NZ).

He acknowledged that there had been a predicted increase in groundwater levels in areas of authorised aggregate extraction of between 1 and 5 metres. This was deemed to pose a threat to aggregate extraction operations within the Greater Christchurch area. I now show you this quote directly from the publication on this next image, which is being copied for you from the memory stick I am using.

Please see Folder 3 - Other material referenced at hearing - ("quote from Kevin Bligh")

**17)** In 2017, the scheme was piloted in the Ashburton area, and has shown there are significant rises to aquifer levels. In addition rural drinking water had improved. I am cautionary in acknowledging this was only a pilot scheme across a small area compared to the size of area that is now affected due to stage 2 being implemented. However, the pilot scheme has seen rises in levels of 5m, with one bore showing a rise of 18m. Effects were witnessed 7km from the pilot site.

A 2013 prepared by Tonkin & Taylor for the EPA indicates there is a predicted rise of water levels of 2.5m due to the CPWS at the Robinsons Road flyover. (Less than 260m from the proposed site). It can therefore be considered as indicative of what could reasonably be expected for this site. This site already has a HRGWL of 7.95m, with levels at 9.39m in late Sept 2017. A buffer of 1m is clearly inadequate and it has to be questioned as to whether this site is suitable for quarrying.

http://www.guardianonline.co.nz/news/water-project-shows-big-wins/

https://www.stuff.co.nz/business/farming/102026908/project-gives-mother-nature-a-hand-to-recharge-canterbury-aquifer

Folder 3 - other material used ("final report of pilot scheme")

**18)** The CPWS has already been considered at a prior consent hearing. One that Fulton Hogan were part of. If consent had been granted, a buffer zone of 3m would have been applied - not 1m which has become the accepted norm. At this hearing, (which is from 2016) Emma Chapman was acting as Planner for the Christchurch City Council.

**19)** She emphasised the large areas of uncertainty and lack of understanding of potential effects. And suggested to partially address the uncertainties, in one instance, a recommended depth of

3m. This comprising of 1m reflecting actual HRGWL, 1m for a buffer and 1m for the predicted effects of the Central Plains Water Scheme. In her opinion, this would mitigate against the inundation of lower quality 'shallow fill'. This recommendation of 3m was endorsed by the Commissioners overseeing the consent hearing of which you Commissioner McGarry, were Chair.

Please see: Folder 3 - ("CAPG Hearing outcome 2016.pdf - points 208 - 212")

Point 99 of the s42 report from Lisa Scott on this application states:

*"Within the limits of uncertainty of our projections, most of the time there should be more than 3 metres of undisturbed material above the groundwater".*

**20)** I support the concerns raised at the hearing, and also endorse the application of a minimum 3m buffer zone. I would suggest even Mr. Bligh would have to agree with that based on his own comments regarding the rises occurring due to the CPWS. A clear case where the Precautionary Principle should most definitely be considered - and applied.

**21)** Before continuing with this point, I wish to highlight the raised issue of lower quality "shallow fill". This activity is one that could lead to seriously adverse effects which only become apparent after quarrying has finished, or in the event of rises in aquifer levels. It is also an activity that can be kept covert, due to the fact it relies on honest record keeping by the applicant, and once material has been used as infill and covered? It is not likely to be part of any inspection.

This is classed as acceptable clean fill from page 15 of the draft clean fill management plan:

- *Untreated wood comprising less than one percent of any load by volume.*
- *Vegetative material comprising less than three percent of any load by volume.*

**22)** These photographs were taken of a truck and trailer entering the applicant's Pound Road site on the 6th June 2019. It clearly does not fulfil this criteria. If similar were to be used as clean fill at the Templeton site? It will pose unacceptable risks accordingly. Can serious consideration be given to this concern - we know there is very little by way of buffer to the aquifer at this site. There cannot be any risks taken.

I have since managed to find the consent conditions for this site, and saw that this material is acceptable at this site, but with a clear proviso of remaining above ground level. However, I am concerned that this cannot be assured due to the fact there is reliance on self monitoring in the absence of any regular site inspection. Is there a risk of being used below ground level due to limited access to quality clean fill? We just do not know.

**23)** This is supported from point 3 of the s42 report of Lisa Scott:

*"Management of fill quality is the most important mitigation measure for the long term protection of ground water quality. Decision makers need to be confident that compliance with the proposed cleanfill management plan is achievable and enforceable".*

This practise is hugely reliant on self monitoring and honest record keeping. I suggest this is not anywhere near enough to prove or give assurance this activity can be enforceable.

**24)** Continuing with the issue of depths of excavation, this is where we have to seriously consider the integrity of this application. The hearing referenced is where Fulton Hogan was asking to quarry below 1 metre above HRGWL. The Commissioners, including you Commissioner McGarry refused consent. Yet here we have FH looking to not only go lower than the 1m buffer, but to also go into the aquifer by some considerable margin. And are attempting to do so by stealth. Because it is clear if they had been open and transparent in their intent, consent in all likelihood would be denied. S42 report states:

*"Working and filling directly in groundwater poses the highest risk of contaminating groundwater because there is no attenuation above the water table".*

**25)** SQL were granted consent by SDC prior to that 2016 hearing. Following the CAPG application being denied, SQL appealed the decision. This ended up before the Environment Court. The Environment Court declined to grant consent in September 2019, and their comments showed agreement with the original decision. I believe this alone is reason to decline consent. In addition 8 statutory points were shown to be breached.

https://www.environmentcourt.govt.nz/assets/Documents/Publications/2018-NZEnvC-139-Selwyn-Quarries-Ltd-v-Canterbury-Regional-Council-.pdf

https://www.environmentcourt.govt.nz/assets/Documents/Publications/2019-NZEnvC-153-Selwyn-Quarries-Limited-v-Canterbury-Regional-Council.pdf

(both Environment Court decisions found in folder 3 - "SQL appeal CAPG decision")

**26)** Perceiving that the applicant has been less than honest in their application, I would also have serious concerns if they are allowed to self monitor and be responsible for their own readings, and any other activities they would be permitted to self regulate. Where there are profits to be made, self regulation is open to abuse - something I believe has to be seriously considered at this hearing. To alleviate concerns, readings should be taken by an independent source.

**27)** If it were consented whereby Fulton Hogan were allowed to excavate to their requested depths (and below water levels) it would set a very dangerous precedence. Many residents in this area rely on a well as their water source. Many domestic bores are close to the site, some down gradient. So the applicant is fully aware that their actions could have very serious consequences. The evidence I have provided undermines Mr. Bligh's statement from page 52 of his report:

*"In conclusion, any adverse effects on groundwater quality from the extraction activities themselves are considered to be less than minor given the nature of the proposed quarry operation, ..... and proposed mitigation measures".*

**28)** On the 13th March, 2019, further documentation was provided by the applicant, in response to a series of questions raised by the Councils, and before the application was notified.

All these documents are found in folder 12a.

**29)** It would be at this stage the applicant could 'come clean' regarding the true water levels for the site and declare there are readings available from the site bore. They have not done so.

Their stance is concerning, and it is it clear - instead of relaying true data, they have chosen to double down on the figure of 9.9m as a quarry depth. There are numerous references throughout the 54 page main document, which are all evidence in their own right that this application is based on misinformation, misrepresented facts, and withheld data.

**30)** As soon as you read the terms 'seasonal high water' it should be clear to everyone. This is not just inappropriate but an attempt to misdirect away from the true levels of the water table for this site. I reiterate: There is no reference to readings from the site bore, taken under THEIR ownership where the final reading shown on the CRC database was 9.39m to water levels. (Sept 2017)

**31)** With regards the CPWS the full extent of rises in levels through this scheme may take a while to manifest, with stage 2 being initiated in September 2018. With regards the pilot scheme, those findings mentioned were published a year into the trial. Principal Hydrologist Bob Bower said he expected gains to compound over the next four years of the trial, thus indicating changes would continue to manifest for at least the first 5 years after the scheme being implemented. With regards the CPWS? There is enough information to suggest it WILL have an effect, with final levels not being established for several years.

**32)** *"Should the groundwater water level increase so that the separation is less than 1 metre between that level and the quarried ground level, the consent holder shall apply aggregate to re-establish the 1 m separation. This requirement shall not apply to already rehabilitated areas".*

**33)** This I believe would be negligent. We know from the initial application, rehabilitation for much of the site is to comprise of 1m unexcavated ground, and 300mm of topsoil and grass. Any rises in water levels will reduce the buffer zone. Significant rises could lead to water being exposed in the future. As well as make the land unusable for future use. So why commit to filling the open area to ensure the 1m is maintained, but then ignore the fact there could be significantly less than 1m on the rehabilitated land? This alone should be cause to consider a minimum 3m buffer should consent be granted.

**34)** Another quote to summarise the serious concerns raised in this section:

***"****The Reeftide response concludes that based on.... the limits to the depth of excavation, management of hazardous substances, stormwater management, ..... and mitigation proposed,* ***it is considered that the any adverse effects on groundwater from removal of large areas of topsoil***

***and up to 9.9 m of unsaturated zone above groundwater will be less than minor***. I really do not need to say anything here. Other than effects will be far from less than minor.

**35)** To claim water level records are not available is unacceptable. It is my belief that you as commissioners, us as interested parties, and everyone involved in / affected by this application have been misled. I do not need to explain how serious this would have been if the applicant had been giving this information as evidence in legal proceedings.

**Further issues of concern from reports subsequent to application**

***section 42 report: Lisa Scott***

**36)** Having read the section 42 reports, I believe there are serious concerns regarding the integrity of those pertaining to water. Lisa Scott is the groundwater specialist for ECAN, and has made no reference to the readings log for M36/0257, and has made no reference to the HRGWL for the site. This omission is unacceptable, and for someone specialising in this field with access to all the data I have shown - is inexcusable. Such an omission could have a significant bearing on the outcome of this hearing and in my opinion is highly prejudicial.

**37)** Ms. Scott has recommended the removing of acidity and nitrate nitrogen from the list of monitoring parameters, on the basis nitrate is already elevated in the ground water and if concentrations were to change, it would most likely be coming from sources outside the quarry. This should not be allowed for two reasons:
1) Dairy cattle may be on the site during operations and
2) All opportunities for nitrate level recording in this region should be used. Current levels in this region are unacceptably high, and selectively excluding readings from any monitoring programe could be deemed as unethical. The level for this land has already shown 8.4. Therefore it is VITAL nitrate levels continue to be measured.

There are indications of a correlation between high nitrate levels and bowel cancer. This region has already evidenced unacceptably high levels due to intensive dairy farming.

Dr Humphrey has asked for studies to be undertaken in this respect, and was quoted in the media on the 13th June 2019:

*"Nitrates are getting down into shallow groundwater...a lot [is being found] in private bores ... and to some extent it is getting into deeper groundwater.....let's not put our community at risk by exposing them to nitrates in their drinking water".*

**38)** The applicant has indicated through their newsletter that there will be dairy cattle on site before quarrying, and I can evidence their presence through photographs. When attempting a head count, I estimated there to be between 100 - 120 cattle present on the land. This will be

discussed in a further section, but I have cause to believe they will also be present during quarrying. With regards to ground water, there is indication in this report of e coli risks due to animal effluent and farming. If they are indeed to be present to take advantage of grazing, on land adjacent to a quarry pit barely 1m above water? All risks have to be fully accounted for.

**39)** Another aspect of concern is the fact Ms. Scott says there should not be changes to flow patterns if there is no quarrying below water levels. The applicant may quarry below water levels, so it is clear - there is a real risk of changes to flow patterns. What will the effect of flow patterns be for well users, and other land users in this area, should there be quarrying into the aquifer?
**40)** I am concerned that there is an indication well users will experience a change in a) colour b) taste and c) hardness of their water. Yet this is only classed as 'aesthetic'. The dictionary definition of the word 'aesthetic' relates to the appreciation of beauty. I would suggest that those well owners who find the taste unpalatable, or find that the hardness / colour are causing issues will not class this as purely 'aesthetic'.
Particularly as Ms. Scott indicates even with strict clean fill management, will take a few hundred metres to dissipate.

***section 42 report: Rowan Freeman (CRC)***

Mr. Freeman is Principal Science Advisor for contaminated land:

**41)** In point 18 of his report, he states CRC well data indicates that groundwater may be as shallow as 10 metres below ground level (m bgl). He then describes the gravel composition for the site, based on available bore log data.

**42**) If all bore logs were analysed, including M36/0257 he would be fully aware of the water levels for the site. It is clearly indicated in so many ways. Yet there is no mention of this in his report. Again, this is a serious omission that in my belief is prejudicial with the potential to influence the outcome of this hearing.

***expert evidence report: Mr. Mthamo - Reeftide Environmental and Projects Limited***

***43)*** *Quote point 70:*
*"During quarrying there will be little or no sources of nitrates as the existing land use (animal grazing) will be discontinued within the working quarry area, which means there will be no nitrate fertiliser applications or nitrogen fixation"*

I note the careful use of the term 'working area', which indicates to me they will still be on the site and close to / adjacent to the working area. I also assume nitrate fertiliser will continue to be used accordingly. Such wording leads me to raise this as a genuine concern in further references in this submission.

Another reason to give cause to believe cattle will be on the land are references to the water races providing stock water. This is mentioned for example, in point 29 of Mr. Van Nieukerk's report.

Mr. Mthamo provided no evidence that there will be no leaching of effluent or nitrates from their location to the quarried floor, only 1m above water levels.

***Expert evidence report from Mr. Van Nieuwkerk - Water quality and water use***

**44)** This report is the first time since the application was made, we see any indication of readings from the bores installed in 2018, or M36/0257.
With regards this chart, I wish to raise the below concerns:

1) Readings are not recorded as to ground level, which is the standard reference through this application. With regards the installed site bores, there is no indication on the CRC well database of their Measuring Point Elevation. Nor is this figure shown clearly for each of the bores in any of the documentation. Therefore it is not possible from this chart, to actually calculate readings according to ground level.

2) Although readings are indicated for M36/0257, they only start in August 2018. Key readings from 2017 described are not present, which we know would be more representative of high levels.

3) There is a gap in the recording of levels for the site bores which correspond to high rainfall in June 2019. We are led to believe there is continuous recording, so this omission of data is questionable.

Later in this report we see two images from the CRC well database which were shown earlier in my presentation. Both clearly indicate HRGWL, yet there is no mention of them or reference to them in the report! In addition, it reaffirms the concerns I have regarding the integrity of this application. The applicant had indicated there was no readings log for the bore. Their own expert has indicated otherwise.

4) From Point 100 and 102 of this report. Mr. Van Nieuwkerk is recommending no references to depths are made. Yet is it clear it is depths that have formed the basis of this application. Yet he has also said that quarrying will be undertaken to a depth of under 10m. (I note the careful reference to <u>under</u> 10m, which could cover any depth up to that level). He has NOT indicated the cited depths of 9.9m are invalid in any way, or will cause serious risk to the aquifer. He just asks that references are not made to this depth.

The applicant has asked for depths to 9.9m. There has been no data provided by the applicant nor subsequent reports, that categorically states what the HRGWL is. Therefore reliance on the site bores as recommended in this report, <u>will</u> lead to quarrying below HRGWL. And by default, to the depths requested by the applicant. Due to the fact Mr. Van Nieukerk has incorporated two images

that indicate HRWGL, I believe he does know the true level for this site, has full knowledge of implications, and by failing to disclose this in his reporting, is misleading the proceedings.

I therefore ask that any claims in his report be treated with due caution, and would go as far as to ask that any claims, calculations, etc are disregarded.

Please do not be manipulated by this change of wording that has been proposed. In effect it allows the applicant to 'cover all bets' so as to ensure consent is granted.

***Expert evidence report - Mr. Kevin Bligh***

From point 44 of his report:
*"The LWRP (and proposed Plan Change 7) provide for quarrying to a metre above the seasonal high groundwater table as a permitted activity, where quarrying is <u>not within 50</u> <u>metres of water races</u>"*

It is clear - there is to be no quarrying within 50 metres of them. Due to their location, this would mean **50 metres either side** would not be able to be quarried. A significant tract of land.
There are two water races that still occur on this land, as shown by this image, (Taken from Canterbury maps showing water races 11/10/19) All references through all stages of this application indicate they will remain, and have cited uses. (Stock, irrigation and for supplementing consented water). There is NO intent shown of them being closed or diverted. I have enhanced the blue line making it thicker, so as to give clarity as to where they are currently situated. The thinner lines show where they have been closed or blocked. This is then overlayed with the latest image of staging provided by the applicant.

Yet here we see one race running through where the plant will be. And no indication of how this is to be mitigated. At all. It would not be appropriate to move the central plant area nearer to Dawsons Road for obvious reasons. I therefore question Mr. Van Nieuwkerk's belief these can remain in situ for 10 years or longer.

It is alarming that the applicant has not stated how quarrying is to occur around the water races. In lieu of this clause highlighted by Mr. Bligh, I would expect to see on relevant images, a clear gap of 50m either side where no quarrying is to occur, with details as to how this area is to be marked off at the site. (Note, not to scale). There isn't, nor has there been one mentioned in any of the documentation. Yet we know these races will remain, with the intention of being utilised.

Suffice to say, it is unacceptable for there to be such blatant disregard to consequences, not withstanding the intent to quarry below HRGWL.
In addition I believe SDC staff involved in reporting have questions to answer. Why have none of the council reports highlighted these very real concerns? They are responsible for these races and should be aware of the regulations regarding their use.

**** Post printing provision ****

Please see appendix A for:

a) Information regarding Canterbury Mudfish, their habitat, location and status. b) Concern regarding the fact there has been no analysis or investigation of fauna in the water races at this site. c) Request for DOC to be involved to establish presence / non-presence of any endangered species and recommendations.

**CONCERNS REGARDING USE OF SITE (areas of application I wish to challenge / suitability of site / current use / prior use)**

**45)** I now move on to implications regarding tenants at the proposed site, and the lack of transparency regarding their presence. Prior to making the application in November 2018, Fulton Hogan were in the early processes of leasing part of their land (Roydon Lodge) to the Husky Rescue organisation - a charitable Trust organisation involved in the rescue, rehabilitation and re-homing of Huskies.

They took up tenancy at the end of 2018, and have a 5 year lease with the right of renewal. (Indicated in an email between SDC staff). Included in the tenancy are lawns, existing onsite buildings (mentioned in the application) and 10 acres of paddock. I have had confirmation from the centre that they hope to be at this site for 20 - 40 years.

Please see folder 18 - references to husky centre "email confirming tenancy of huskies"

**46)** The images I now show you are where they are, and importantly - how close they are to the central plant. The next images show the work that has been undertaken in these old buildings. They are being set up for educational purposes and visitors. (Bookshop, cafe, gallery & facility for buses to visit).

In summary there are / will be up to 60 dogs.

There will be numerous staff on site, volunteers assisting, with the rescue owner living on the site. So, how have Fulton Hogan gone about informing us of this tenancy?

Suffice to say they - there are serious concerns. I knew of this tenancy as of January when I visited the Antarctic Centre, having previously seen it mentioned through an OIA request.

The first opportunity would have been in the initial application, (November) but I appreciate at that stage, it may have been too late to incorporate into their application.

**47)** We then have their newsletter where they state they are supporting the centre. (January 2019). There is NO mention of them being given a lease on the site of the proposed quarry. No indication at all that they will be there. This I believe showed even at this stage, the applicant did not want full information available as it would potentially cause complications with the application.

We then have further application information provided in March 2019. This is most definitely a 2nd opportunity to be forthcoming regarding the fact a) tenants are at the site and b) the fact they are located almost centre to the site. Again, there was no mention of the rescue centre - at all.

**48**) We now move to May 15th and a 3rd opportunity. This is where I attended one of the drop-in sessions with Jo McMaster. There was an image which I now show you. The site of the rescue centre is shown as Fulton Hogan site offices. With the site of the rescue centre as being close to

the boundary with Jones Road (the image was too large and too high up for me to photograph the label, but that is the case and was confirmed by FH staff at this session). The staff member said that is where they would be "depending on the consent".

**49)** There is a 4th opportunity to be totally forthcoming. We have a video release on Fulton Hogan's website on the 23rd May, where there is mention of the Rescue centre being on the remaining 77% of the site - with no mention where. This screen shot shows the site but notice there is NO building shown near the boundary which was visible on the previous slide. Why has this been removed from the video footage? It is clear - the applicant has not wanted to show where the Rescue Centre is, and has gone to great lengths to 'hide' that fact.

**50)** The 5th opportunity to be forthcoming occurred when the applicant supplied information in August as a response to further questions from Councils. Again there is no indication of the centre being long term tenants on the land. Nor is there any information forthcoming from the expert witness reports submitted in September. There has also been no transparency with regards the dairy cattle being on the land during operations. This has to be classed as a serious omission and one that is potentially misleading of these proceedings and of you as Commissioners.

**51)** I also believe council staff responsible for compiling the s42 reports should be held to account for failing to mention the fact there are long term tenants using the land, and subsequent implications. Omissions of such magnitude are inexcusable. The leasing of the land by the Husky centre was discussed in emails involving SDC staff who were key in administering the application. Such an omission could have a significant bearing on the outcome of this application, and I perceive it to be prejudicial. This will be covered in my closing statement.

**52)** Having now shown you where the husky centre is situated, it now raises serious considerations.

** Is this land now suitable for quarrying, bearing in mind the length of the lease being held?

** Is the applicant still intent on beginning operations in 2020 or has that date now changed?

** Can Fulton Hogan give 100% assurance they will fully honour all terms of the lease regardless of the outcome of this hearing?

The organisation are spending up to $200,000 on getting the land, fencing, buildings etc up to the required standard for use. In addition the owner has put in $50,000 of her own money into the venture. It would be unethical to terminate the lease should they be granted consent, or evict them from those buildings without providing a suitable alternative.

** Has a FIDOL analysis been conducted with regards to all issues that require mitigation? If so, will the applicant present evidence to you of this analysis? Bearing in mind there may be no bunding or shelter belt protection.

** Does their presence now negate any claims in the acoustic report regarding noise impacts on sensitive locations? This property is on their land and will be closer than any previously cited in the report.

** How close does the applicant intend quarrying to their leased land? I have shown you where they are. It is where the applicant indicates as being 'offices'. Am I now in the bizaare situation of requesting a 500m setback encircling their own buildings, near the centre of the site?

** Can the applicant please provide you with evidence of all agreements made in regards to quarry operations and effects on this leasing party. Should there be a signed consent by the tenants, can the applicant please provide evidence as to why it would be appropriate to quarry so close to premises that will also have visitors present, who are not party to the lease conditions signed. Who will be very close to high levels of dust from operations and noise.

**Can the applicant please explain why this was not raised in any documentation, whereby demonstrating full transparency of what is proposed for the site.

** If there have been renovations on buildings which may contain asbestos (mentioned in the application) by the new tenants, can the applicant show they have exercised due diligence in informing the tenants of this? What tests were done during these renovations? And if asbestos has been found to be present, the details of removal and disposal?

** The site bore and domestic use bore is close to the central plant and the site of the Husky rescue centre, and is likely to provide water for both animals and humans from the centre. The water will be vulnerable to contamination, being the closest to operations. Can the applicant please provide evidence that a) this has been taken into account, and b) details of proposed mitigation to you, to show what they will do to ensure the water from this bore will NOT be contaminated. (Other than assurances not to go within the buffer zone / set depth by you as Commissioners).

** High levels of alkalinity in water can be dangerous to dogs. Lisa Scott has indicated there will be raises in alkaline levels to water from the quarrying, but has not indicated by how much. What assurances can be given through expert testimony that changes occurring to the water will not adversely effect the dogs or humans exposed to significant changes to the quality of water - most notably from the site well.

NOTE: a healthy dog will have a urine output of pH 6 - 6.5 (slightly acidic).

https://www.whole-dog-journal.com/health/urine-trouble/

This article shows a potential risk of health issues arising when dogs are given water with a high alkaline level.

https://healthypets.mercola.com/sites/healthypets/archive/2018/07/15/is-alkaline-water-good-for-pets.aspx

** With regards the new proposal for both heavy trucks and small vehicles to use the same shared access way in Jones Road, what analysis has been done by the applicant to show the impact this will have on users, employees and visitors to the Husky Centre. Who currently use that road.

(See page 109 of Aug s92 response where imagery and titling shows light vehicle entrance as being the current entrance to the Husky Rescue Centre).

(See Page 43 of the applicant witness report - Traffic effects)

** What will the experience be at night for the staff living on the site, with 30 trucks an hour coming and going from the site.
NOTE: Noise level measurements have accounted for sensitive locations 250m from the site entrance for heavy vehicles. This is inadequate due to the location of the Rescue centre in relation to Jones Road and access road for vehicles. This centre should be classed as a sensitive location, with all effects considered - and mitigated.

** The DSI / PSI report has not accounted for contaminants resulting from dogs (faeces / urine) or effluent run off or ponding from cattle.

**53)** We have seen there is a change with regards to the staging of operations, whereby Stage 1 is now to the bottom right of the site, with staging moving anti-clockwise. I believe the reason has been made clear. It is to avoid quarrying close to the ex-Roydon Lodge buildings and the tenants until later into the consent. The initial staging proposed would have had quarrying close to the buildings between stages 1 and 2.

**54)** The huskies at the site will be vulnerable, and will not have been party to any signed agreement. The applicant has not produced any evidence from an independent vet or the SPCA to show what the health risks are to these animals as a result of dust and noise producing activities within metres of their home. These are outdoor dogs by nature that enjoy running, and will always be close to the central plant. A key dust producing activity. I strongly suggest this reason alone is one that should lead to consent being refused.

Should you wish to get more on this centre, the owner may feel a little conflicted. I suggest instead you go to the Antarctic Centre and speak to Joe their handler who has serious concerns regarding this being consented. He is there Saturday - Wednesday, but avoid 12.30 - 1.30 where he is off with the dogs having a lunch break.

**55)** I now move on to other aspects around the issue of mitigation, whereby references and calculations based on a quarry depth of 9.9m are likely to be invalid. This will be detailed in a further section, but using the acoustic report as a prime example...

**56)** It was anticipated by the applicant, they would be quarrying to a depth of nearly 10m. With my findings in the opening section of this submission? I anticipate that will not be happening. A key criteria in reaching conclusions, was a quarry depth of approximately 10m. If consented, activities are likely to be much closer to the surface than accounted for. In lieu of this significant change in height, it now shows that the claims made in the acoustics report are now no longer viable - and noise will not be mitigated.

In addition the applicant indicated potential use of more than one fixed plant. I do not believe the acoustic report adequately accounted for noise should there be more than one plant.

## Final consideration regarding prior use

With regards to prior use of the site, this is the burial site of horses of some standing. Jo McMaster's submission has described their importance. As have other submittors. There have been requests that their remains be treated with respect and reburied. The applicant has failed to acknowledge this in subsequent documentation to submissions. This could be perceived as disrespectful. Can they please explain what they will do with remains as excavations occur. I appreciate this does not fall under terms covered by the RMA regarding artefacts etc, but they have not provided any answer to this concern.

The applicant would be aware of the horse cemetery. It was mentioned in the PSI / DIS report, as well as a s42 report. And was also in written submissions.

**CONCERNS REGARDING WATER AVAILABLE FOR MITIGATION (use of water for mitigation)**

**57)** In this section I will be going into detail regarding water available for mitigation and highlighting the limitations each will have for dust mitigation. The applicant has made it clear they will not be transferring water consents to the site from elsewhere.

It is important that all scenarios are accounted for including:

a) Fully detailed usage where no restrictions apply and all aspects requiring mitigation are detailed. Using the worse case scenario of hot and dry consecutive days.

b) How operations are conducted and dust mitigated when access to consented water is limited to 501 cubic metres and below, using the same scenario. With calculated water usage cited accordingly.

c) How operations are conducted and dust mitigated when consented water is not accessible - at all.
The reporting has only covered scenario a) above in detail. Scenario b) is likely to occur and will be explained.
The applicant has given lip service to scenario c) which is of huge concern, and will be refuted.

**58)** In this section I will be describing concerns regarding:

1) Water consented from M36/0257

2) Restrictions to draw rates from this well.

3) Water race access.

4) Requirement to share water with tenants during operations.

5) Changes and inconsistencies between documentation.

**59)** Page 29 / 30 of the supplementary Golder report submitted in March 2019, has the first reference we have to the amount of water predicted as being required for mitigation. It specifically relates to the scenario where the take of ground water is ceased, and there would be a reliance on water stored at the site and dust suppressants:

**60)** *".... Under such a scenario, Fulton Hogan would also likely cease parts of site operations such as mobile processing and acceptance of cleanfill, and focus on core site operations around extraction and the central processing area. It is estimated that to manage dust from such areas, together with unsealed haul roads would require average usage in the order of 100 to 200 m3 per day."*

So, going by this response, should there be no access to water from the bore:
** Trucks leaving the site will not be mitigated with dust control.
** Stockpiles will not be mitigated with dust control.
** Other key dust producing areas will not be mitigated with dust control.

**Out of hours dust mitigation will not be conducted.
** Bunds will not be watered to maintain grass cover / control dust.
** A potential 5 hectare sized site being rehabilitated - will not be controlled.
In other words - barely any mitigation will occur. Under these circumstances, all operations should clearly cease, yet the applicant will continue operating. Can this reckless approach be classed as 'best' or 'good practice'?

**61)** At this stage, I believe it is relevant to query the 100 -200 cubic metre figure cited by the applicant, applying in the case of scaled down operations. Firstly, there is no explanation as to how this figure has been established or reached. 2ndly, it is clearly a very broad range and raises the question of being nothing more than a guess.

By way of comparison, another application has calculated that 27 cubic metres of water would be needed per hour to mitigate against dust during peak dry conditions - on a site of 2 hectares. Using this figure, an Air Quality Scientist from ECAN has calculated for an 11 hour day, where dust is mitigated for the entire day? Approximately 300 cubic metres of water would be required - each day these conditions apply. So it is beyond belief the applicant believes they can get away with 100 - 200 cubic metres on a site size 13 times larger. This claim has no credibility.

(Please see folder 16 - "Air Quality Scientist analysis - application 2019")

**62)** Mr Van Nieuwkerk's report reduces the area requiring dust mitigation to 6 hectares, but we see there is a further hectare added where irrigation is required.
His report then gives some indication of other aspects requiring mitigation, leading to a figure of 1,482 cubic metres per day.

**63)** I believe this is somewhat conservative, as I do not believe all aspects requiring mitigation have adequately been accounted for.
The fact there is no aggregate washing is a serious concern, and is my belief indicates the applicant knows there is not enough water for mitigation. Sealed roads will also need water for mitigation as they are a key source of dust being taken out of quarries by vehicles. Something I will be evidencing with photographs in a further section.

(page 10 s92 response August 2019)

There is the mention of truck washing, but wheel washing is also required.
If conveyor belts are to be adequately mitigated, this would require different sprays being used continually to both prevent dust release, and suppress airborne dust.

In lieu of the fact I believe the figure of 1,482 cubic metres per day is under representative for the reasons outlined, I have calculated usage for an area of 26 hectares, as originally proposed by the applicant.

**64)** I have done my own calculations as follows.....

From Page 57 of the Good Practice Guide for Assessing and Managing Dust:

*"Wet suppression of unpaved areas should be applied during dry windy periods, using a water cart and/or fixed sprinklers. As a very general rule of thumb, the typical water requirements for most parts of New Zealand are up to 1 litre per square metre per hour".*
We need to take into account what is consented, if averaged per day, and a yearly allocation.

1) Unrestricted use from M36/0257 for the site would be averaged at **752 cubic metres per day.**
2) If restrictions do apply, use from M36/0257 would be averaged at **501 cubic metres per day.**
3) The applicant has indicated it will not use more than **112,375 cubic metres per year** proposed in new conditions (Bligh Sept 2019). If accounting for working days based on a 6 day working week, averages at **359 cubic metres per day**.

Calculations as follows: (based on a 13 hour day of operating 7am - 8pm)

Using this criteria of 1 litre per hour per square metre, and applied to 26 hectares, the applicant would require 3,380 cubic metres.

*26 hectares = 260,000 square metres.*
*260,000 litres x 13 = 3380000 litres.*
*Converted to cubic metres = **3,380 cubic metres.***

Using these figures, 2,500 cubic metres stored on site would not even be enough for one day of full mitigation.

**65**) Usage would be increased further when out of hours mitigation is to occur, or the applicant is operating for 24 hours.

I also believe the use of water for irrigation should not be downplayed.

For example, this is from page 8 of the Landscape Management Plan submitted in March 2019: (found in folder 12a)

*"During installation and establishment, the Consent Holder shall ensure that soil in all planting areas and to a depth of at least 200 mm, is moist enough to maintain active plant growth throughout the growing season (September — May). The Consent Holder is to establish a temporary irrigation system for planted areas. The system must be maintained for a <u>minimum</u> of two years following planting".*

I see that Abigail Smith has recommended this period of irrigation is increased from 2 years to 5 years. In lieu of the absence of assurances that plant growth is to be maintained, I concur with this. I also agree that the bunds have to be watered consistently so as to ensure plant growth is maintained at all times.
And to add for perspective: I measured 25m inside the boundary on google maps to account for shelter belt etc, and it showed there will be 5km of bunds around the site! When measuring the surface area of bunds which will need to be watered to maintain grass growth? This adds up to 8.6 hectares, which is a considerable area.

So not only is there the issue of not having enough water, which will be clear by the end of this section, we have to look at the practicality here. Keeping these bunds watered will be akin to painting the Sydney Harbour Bridge. And I would suggest in reality - it is not going to happen.
**66)** Mr. Bligh has indicated in his report chemical suppressants will be used in the case of water access being insufficient or unavailable. Based on what I have presented, this is going to be the case, to the extent usage is likely to be substantial. Yet we have not been given any indication as to a) the composition of the chemical suppressants or b) the effects these may have on water at the site or on water of downstream users. With no evidence provided of their suitability, their use should not be permitted. Particularly as they are prohibited from entering water races without Council approval.

**67)** I now move onto the draw rate consented both now, and with proposed changes by the applicant. Both now and with an amended consent, the draw rate is to be a maximum of 9.5 litres per second.
**This equates to 34,200 litres per hour / 34.2 cubic metres per hour.**

Using the M of E guideline of 1 litre per hour per square metre?
This falls significantly short of the 260,000 litres required per hour for a site of 26 hectares.

**68)** So we have some key figures to consider:

1) 752 cubic metres available as a daily average consented whereby restrictions have not been applied. (Consented amount being cited over a 9 day period).

2) 501 cubic metres available as a daily average consented should restrictions apply. This is to be discussed further in this section. (Consented amount being cited over a 9 day period).

3) The most that can be drawn in a 13 hour working day at a rate of 9.5 litres is 444.6 cubic metres. The most that can be drawn in any one day at a rate of 9.5 litres is 752 cubic metres, and this takes 22 hours.

3) When applying the M of E guideline for mitigation on a site of 26 hectares, 3,380 cubic metres of water is required per day.

4) Mr. Van Nieuwkerk is advising 1,482 cubic metres of water is required for a site of 7 hectares per day.

**Just looking at these figures it is clear this site has an inadequate supply of water - and by a considerable margin.**

**69)** The application has made it clear - all water used at the site is to come from the site bore, yet it is not possible for it provide sufficient water for the site. Usage outstrips supply rate. There is most definitely a need to use vast storage capacity, with the need for this to be replenished when no use is occurring. Therefore these have by default become the primary supply of water.

I think the best thing to do is look at this in a practical way to get an idea of repercussions.
This table below is looking at a scenario where we have a period of 21 consecutive days in summer where full water usage is needed.

**Opening assumptions:**
** **<u>There is capacity</u>** at site to hold 2,500 cubic metres.
** **<u>There is</u>** 2,500 stored at the start of day 1.
** The draw rate of 9.5 litres **<u>is achievable</u>**.
** The draw rate of 9.5 litres is achievable at **<u>all times</u>** (on 21 consecutive days for the full 22 hours each day with no drop in that rate).
** There is a requirement for non working days to have dust control.

| | | | | | |
|---|---|---|---|---|---|
| **Day 1** | Stored capacity = 2,500 | Amount used = 1,482 | Storage replenished by 752 | Storage total b/f = 1,770 | Full mitigation possible. |
| **Day 2** | Stored capacity = 1,770 | Amount used = 1,482 | Storage replenished by 752 | Storage total b/f = 1,040 | Full mitigation possible. |
| **Day 3** | Storage capacity = 1,040 | Amount used = 1,040 | Storage replenished by 752 | Storage total b/f = 752 | **Limited mitigation possible**. |
| **Day 4** | Storage capacity = 752 | Amount used = 752 | Storage replenished by 752 | Storage b/f = 752 | **Severely limited mitigation possible.** |

For days 4 - 21 in this scenario, there is no replenishment of storage possible. Usage will be off setting the daily limit that can be drawn of 752 cubic metres. **In this 21 consecutive day example, full mitigation is only possible for the first 2 days.**

**70)** I have already shown in my previous submission, the mitigation measures proposed are already inadequate, whereby dust is going to be an issue. This table shows even basic mitigation will just not be viable. With regards the issue of limited mitigation, Mr. Van Nieuwkerk has also shown what should be prioritised depending on water access. In other words, what will happen from day 4 onwards.

*"If there is insufficient water to supply water for dust suppression no water will be supplied to the other demands and the total available water will be supplied to dust suppression".*

Yet there is not even enough to undertake adequate dust suppression from days 4 onwards - by a considerable margin!

It is clear the correct course of action in such circumstances should be the cessation of activities until such time all aspects can be mitigated, whilst ongoing dust mitigation is undertaken. This will not be the case. It is incredulous that the central plant (which is a huge creator of dust) will continue to operate - with no water mitigation at all. It is not given a top priority ranking. Trucks will not be mitigated, which means dust beyond the confines of the quarry will be an issue. I again say what has previously been said. The applicant cannot stand by claims of operating to 'good' or 'best practice'.
When taking into account the fact there will be no aggregate washing, we have a real scenario where aggregate extracted could be processed and then transported out of the quarry - without being in contact with as much as one drop of water. This is beyond unacceptable.

**The site bore cannot possibly be the primary provider of water for this site, even if full access is possible. When water access is restricted or not possible, it is clear there operations will continue with no mitigation. This I believe is reason to refuse consent.**

**71)** One final point with regards the draw / flow rate. I have not been able to find any clear reference in the application to the installation of a meter that measures the flow rate of water taken from M36/0257. A report in the media as of 17/10/19 indicated that of wells with 5-10l/s takes, 349 of 666 are still unmetered. (Compliance date was November 2016).

If the applicant does not provide you with evidence that this bore is metred, with it suitability being independently verified, please consider this reason to refuse consent. They have had adequate time to have one installed. In addition, we have no indication from the CRC database that the applicant can actually draw 9.5 litres per second. There is no maximum yield test result. The applicant needs to prove that the equipment to be used on this site is capable of drawing 9.5 litres per second, and that the well can maintain this level for 22 hours per day - on successive days. 9.5 litres per second is already shown to be inadequate. A lower draw rate would be unviable. In lieu of the fact the applicant is now conducting their right of reply after the hearing, I ask that they provide this evidence before the end of this week's hearing session.

** (Verification being covered by Regulation 7 of the Resource Management (Measurement and Reporting of Water take Regulations 2010. *Note:* to provide an optional resource for regional councils to decide who is 'suitably qualified', and to encourage national consistency, nation-wide certification and accreditation programs have been developed for verification providers (see 'Water Measurement and Reporting Quality Assurance Program')

**72) We also have another huge consideration, that being tenants at the site.**

They will also have rights to the water provided by the bore. The cattle will require a considerable volume of water for irrigation and also for drinking. (NZ Code of Welfare cites 14 litres for drinking per cow per hour).

The Husky Rescue centre have a domestic use bore, but will also have 10 acres of paddock requiring grass maintenance through irrigation.

These legal tenants have to be safeguarded, whereby they are not left in a position of having no access to water. It cannot be permitted the applicant will use **all** the consented water, leaving none for living beings on the land. Yet how can this be achieved? Is there to be provision in the consent, whereby a certain amount of the daily allocation has to be ring fenced for tenants? If so, this leaves the applicant with even less for mitigation, assuming there is full access to begin with! I will be moving onto the issue of limited access shortly. One thing is obvious - living beings needing water for sustenance should be prioritised. And this alone indicates quarrying at this site is just not viable. Particularly when we consider the applicant is proposing to change the terms of the consent whereby water use is specified for **quarrying related activities only**. It cannot be right to preclude use by tenants who have a right to access water.

**73)** The newsletter you have been shown indicates farming in some form will continue. If that farming is to be in the form of dairy cattle grazing (which I believe is the case) there are serious implications. And very real need with regards animal welfare.

Should it transpire the land will only be used for crop production during operations? There will still be a requirement for that tenant to be able to irrigate the land accordingly.

**74)** I now refer to an email from Matthew Harrison who is I believe, a consents planner at ECAN. This email is dated 26th January 2018, and specifically relates to the water rate that can be drawn if consented. I also want to have noted, that he too has raised significant concerns.

Firstly, we need to be aware of the draw rate and criteria / restrictions applied as outlined in the consent. Well M36/0257 is the well they will be consented to draw water from, but the rate is partially dependent on levels at a well in the vicinity - M36/0217. I have referred to these figures in my calculations.

**75)** In normal circumstances withdrawal from M36/0257 is to not exceed 9.5 litres per second, with a volume not exceeding 6,772 cubic metres in any period of 9 consecutive days.

Mr Harrison quotes: *"I am not certain exactly how much water would be required for dust suppression methods however, for example another quarry which covers an area of 37.5 hectares has up to 50 litres per second, with a volume not exceeding 2,160 cubic metres in any one day, and 11,800 cubic metres in any period of seven consecutive days..."*

Mr. Harrison finishes this paragraph by stating that further investigation would be required to see if the consent Fulton Hogan has will be enough to meet dust suppression requirements.

**76)** Mr. Harrison then goes further with the next criteria relating to water usage.

*"The volume of water taken in terms of this permit shall not exceed 4,515 cubic metres in any nine consecutive day period whenever the standing water level in bore M36/217 is lower than 20 metres below ground level"*

(* an average of 501 cubic metres per day *).

There are further restrictions should levels be lower than 21.8 metres below ground level.

He adds further: *"The water source is not certain and they could potentially have no water to use for dust suppression during the driest times of the year when dust suppression is needed the most".*

**77)** I now turn to well M36/0217 and the likelihood of restricted draw rates being triggered. This likelihood cannot be overlooked, as any restriction is going to make dust mitigation at the site unviable. This scenario has not been given any regard by the applicant in any of the documentation. And is a serious omission.

On 15th February 2019, I downloaded full details for this well. At that time there had been a total of 481 readings. The spreadsheet is not shown on a slide but is available in the folder, but I have taken the main details pertinent to evidence my concerns. I can show the readings here as they appear on the line graphs.

**78)** As can be seen, there have been occasions where the levels have dropped below the 20 metres. (The measuring point is 25cm above ground level, so I have only highlighted those readings that show depths of lower than 20.25 metres, as readings shown are taken to the measuring point).

The most recent restrictions applied to a period of 15 consecutive months between 4th February 2016 to 27th April 2017.

Please see folder 16 - water usage criteria ("Line graph and full record m36 0217")

**79)** I have shown that the applicant has not adequately proved they can mitigate dust at all times with full access to the water they have consented. When restrictions are triggered? This is a clear indicator - there would be serious implications. And again can be shown with a table using the same scenario of 21 consecutive dry days in summer:

**Opening assumptions:**
** There **is capacity** at site to hold 2,500 cubic metres.
** There **is** 2,500 stored at the start of day 1.
** The draw rate of 9.5 litres **is achievable**.
** The draw rate of 9.5 litres is achievable at **all times** (on several consecutive days for the full 22 hours each day with no drop in that rate).
** There is a requirement for non working days to have dust control.

| | | | | | |
|---|---|---|---|---|---|
| **Day 1** | Stored capacity = 2,500 | Amount used = 1,482 | Storage replenished by 501 | Storage total b/f = 1,519 | Full mitigation possible. |
| **Day 2** | Stored capacity = 1,519 | Amount used = 1,482 | Storage replenished by 501 | Storage total b/f = 538 | Full mitigation possible. |

| | | | | | |
|---|---|---|---|---|---|
| **Day 3** | Storage capacity = 538 | Amount used = 538 | Storage replenished by 501 | Storage total b/f = 501 | **Severely limited mitigation possible.** |
| **Day 4** | Storage capacity = 501 | Amount used = 501 | Storage replenished by 501 | Storage b/f = 501 | **Severely limited mitigation possible.** |
| For days 3 - 21 in this scenario, there is no replenishment of storage possible. Usage will be off setting the daily limit that can be drawn of 501 cubic metres. **In this 21 consecutive day example, full mitigation is only possible for the first 2 days.** | | | | | |

**80)** In addition to the site bore, the applicant has made mention of using water from the races that terminate on their land.

This from page 42 of the Golder report:

*"The water is to be supplied from an existing water permit currently held by Fulton Hogan to take and use groundwater at the site ... and from water permitted to be abstracted from SDC water races which end within the site".*

Further references in later documentation refer to the water races as being a source for dry land farming or stock water.

**81)** According to emails I have seen between the applicant and SDC, access to water for this site from the water races is permitted through the Paparua Irrigation scheme. If successful in applying through this scheme, the consent holder is placed on a roster. Only those on the roster can access the water accordingly. (Commercial users).

Usage from a water race on any given day is dependent on the criteria set. It is the responsibility of the consent holder to check this DAILY to confirm if they have been allocated water for that day. It is certainly not a given.

**82)** By way of example, I can show you the situation early March, 2019. You will see for this 7 day consecutive period, the criteria was between 41.0 and 47.3 - and for a further 4 day period the following week.

(Please see folder 16 - "Paparua water race restricted use")
(Please see folder 16 - "Paparua water race roster" - several images)

This first image shows usage permitted to anyone on the scheme, under the various criteria bands. When this criteria of 44.1 has been set, users have access to the water race on **one stipulated day of the week only**. As you can see, Fulton Hogan are already shown as having access to water races 3 & 4 under this scheme.
When it reaches the next band of 47.3, there are **two stipulated days** of the week where use is permitted. If the restrictions apply outside of those stipulated days? No water can be accessed.

A scenario that is no use on a quarry that is to be operating 6 days of a week.

**83)** If levels are to fall lower - to below 41.0, **NO** water can be accessed by anyone on this scheme. This was the case for several of the days in this 7 day example. And I can show you the whole week of readings. These examples are from Autumn, not Summer.

**84)** I now move on to concerns supporting the fact there will be insufficient water supply, taken from subsequent documentation. This is taken from expert witness report (September 2019) by Mr. Van Nieuwkerk:

*"evapotranspiration is likely to rise in the region of 15 - 30% in the future".*

The site could be operating in excess of 40 years. If there is insufficient water for mitigation now, I would suggest it will become even more of an issue during the lifetime of the quarry.

**85)** Mr Van Nieuwkerk recommends the storage of 2,500 cubic metres on site due to the limited supply from the site bore. There is no indication of water being brought in from outside sources, but references to the site bore as being the sole supplier of water.

2,500 cubic metres is the amount held by an Olympic sized swimming pool! I have shown even if this storage capacity were to be doubled, using 1,482 cubic metres per day? This would only provide for water for 5 consecutive days of mitigation. I think we can all assume we will have periods of dry and warm conditions in summer in excess of 5 consecutive days. This also takes into account full access. Should restrictions apply? Not even 5 days is possible.

So, if the applicant during proceedings indicates water indeed will be brought to the site, can consideration be given to any implications, most notably where it will come from, and how this will impact the number of truck movements proposed. We do see bowsers being filled at Jones Road on a regular basis, and I asked how much they hold. They hold between 9 - 10 cubic metres. So on that basis, to fill a short fall of 750 cubic metres? That would require in excess of 75 visits to the site - per day. An unrealistic scenario.

**86)** With regards to changes to the consent to draw from the site bore, I ask that any new consent granted maintains reference to draw rates should restrictions apply. These occurring should trigger events occur at M36/0217. This is part of the current consent, and MUST be transferred over with NO change made.
Although mentioned in places in the application, the applicant has not included this in their new proposed consent conditions. In addition, the restricted draw rate has not been given adequate attention in the S42 reports. It would be unacceptable for this criteria to be omitted from any newly granted consent.

**87)** The applicant has proposed to have an annual draw of 112,375 cubic metres between 1st July - 30th June. This only averages out at 359 cubic metres as described. Yet we know the applicant is

expected to used 1,482 cubic metres per day for much of the year. It is therefore equally as likely they will run out of water by the end of this 12 month period - or will be rationing themselves whilst still undergoing full operations. If the applicant is assuming those months of April - June are going to be sufficiently wet and free of wind to not require water for mitigation, or they will have enough stored on site for every day remaining? That is going to be a huge and potentially negligent assumption.

**88)** I now summarise my concerns raised in this section.

** Access to water from well M36/2743, also on the site is not permitted for anything other than domestic supply. Horse stables had been cited as part of that supply, but they are no longer in use as stables. Therefore it cannot be used as another providing source for use by Fulton Hogan as part of irrigation or dust suppression.

** Access to the water race no way a certainty, particularly in hot dry conditions and through Summer or early Autumn. Therefore this cannot be given credibility as a means of mitigating dust, or providing water to tenants using the land.
(Please see Appendix A - Clarification of Water race use).

** The site bore has restrictions with regards to draw rates, which will be limited further when levels drop at M36/0217.

** The applicant must share access to the water from the site with tenants that will have rights accordingly - thus restricting access even further.

** The draw rate of 9.5 litres per second (yet to be proved as achievable) has to be possible at all times, with no drop off occurring.

**When access to water is restricted, there is no scaling back of operations - only a scaling back of dust mitigation.

By way of final consideration: Fulton Hogan will be self regulating and will be relied on to be honest with regards record keeping. There is huge potential for there to be more water taken than is consented, unless procedures are in place to actively prevent this from happening, which they cannot control. (I.e cut off being triggered to the pump when the allocated amount has been reached). If such a provision is not possible, I do not believe consent should be granted.
If it is, and there is evidence the applicant has ignored this consent and drawn more than is allocated, this has to considered a serious breach. One that should lead to consent to operate being withdrawn. We cannot have a compliance authority turn a blind eye, or at most - issue a cease and desist.
If local well owners have to pay a significant amount to deepen their well due to the actions of Fulton Hogan, there should be appropriate recourse and sanctions.

**THE APPLICANT HAS NOT PROVIDED EVIDENCE THAT DUST CAN BE MITIGATED AT ALL TIMES DUE TO A LIMITED ACCESS TO WATER. I THEREFORE REQUEST THIS BE CONSIDERED AS GROUNDS FOR REFUSING CONSENT.**

**** Post printing provision ****

Mr. Cudmore has this quote in his November rebuttal of Ms Wickham's report:

*"The quarry surface moisture levels decrease rapidly with the absence of rain (typically drying out within ½ a day), whereas soil systems have a much slower decay with changing ambient conditions"*

Therefore within half a day of rain, the applicant will need to be using water to mitigate dust issues. Even if the previous day had experienced heavy rain? Mr. Cudmore is indicating the quarry surface will be dry. Therefore there will not be many days where dust mitigation is not required. I have already shown an image from the US handbook on dust mitigation, indicating it is more likely the surface will be dry after just 4 hours. Not 12 hours. Thus adding to our very real concerns that overnight and out of hours dust mitigation is no existent, and certainly not conducted every 4 - 6 hours.

**CONCERNS REGARDING DUST**

**89)** Dust has caused very real health concerns for those living in the vicinity of quarries, and has sadly been the case for some of those in the Yaldhurst area. Therefore this from the applicant's website (October 2018) should be of concern. The applicant clearly does not take the risks caused by PM10 seriously, which I believe is reflected in the inadequate mitigation proposed, and is dismissive of the risks:

***"There were 12 nuisance triggers of PM10 (nuisance dust). Hence the occurrence of dust is an environmental issue not a health one"***

The reason the applicant is being so dismissive can be correlated to comments ECAN have posted on their website, which are linked to comments made by Dr. Pink:

*"Overall, the results show there is no serious public health risk to Yaldhurst residents from airborne dust. Nuisance dust levels will not cause long-term health effects, but we know it can cause irritation and symptoms of concern in some people"*

Dr. Pink has indicated he was wrong in saying PM10 was nuisance dust, but is yet to retract publicly. His admission of being mistaken were recorded by Annell McDonagh, when he and personnel from ECAN visited her address in July 2018. The recording was made with his knowledge and consent. I have written permission from Annell McDonagh to include that small section in my submission. A transcript is also provided in the relevant folder.

**90**) I find it somewhat offensive that only "serious" health risks are deemed relevant for consideration in his statement. Any other health risks seem to be dismissed and very much downplayed, thus giving the impression affects less than "serious" are acceptable or minor. They are neither acceptable - nor minor. Regular nosebleeds, persistent coughs/sore throats and repeated chest infection? I would suggest there is nobody in this room who would classify them as being mere "irritations".

**92)** Dr Humphrey, from the Health Board has for many years been the accepted expert regarding dust issues. He was on sabbatical for part of 2018, during which time Dr. Pink stood in. It was during that time he made the statement that we now know to be incorrect - which he is yet to retract. I have spoken to Dr. Humphrey and he confirms - he does not concur with those comments. Yet they are now cited by the applicant as being credible, and are still disseminated by ECAN. He also indicated the comment was incorrect in his submission to you.

**93)** Dr. Pink was preparing to hand back over to Dr. Humphrey on his return from sabbatical, but has been asked by Nadeine Dommisse at ECAN to continue as their liaison on the grounds of *"....enable continuity and credibility of the health messages we have communicated. Any change*

*of spokesperson I believe opens matters up for confusion by the community and potentially undermining credibility of the messages"*

This is shown in the email correspondence I have provided in the relevant folder. I am concerned that ECAN are choosing which health messages to impart. I do not believe they are qualified to do so. This email was sent only days after she was present at Annell's house with Dr. Pink - where he had admitted he was wrong. I am therefore left wondering why a senior employee of ECAN would propagate factually incorrect statements, knowing they are inaccurate. Something that could have serious consequences for residents if cited at consent hearings - and accepted.

**94)** I would strongly suggest that the change of spokesperson from Dr. Humphrey to Dr. Pink has most definitely undermined any credibility of health messages - messages that have been voiced by Dr. Humphrey at a previous hearing, and in reports / interviews and which are credible.

**95)** With regards the monitoring progamme which has been given significant weight with regards this application, Dr. Humphrey had concerns regarding its scope and subsequent validity. His comments from a press release of January 2018 clearly show he does <u>not</u> view dust as just being a nuisance. And believes the focus on trying to establish causal links to silicosis should not have been the main focus of the monitoring programme. Symptoms associated with quarry dust other than silicosis should be taken seriously. Especially if they are likely to be experienced by those in proximity to operations over several years. Cumulative effects and long term effects from ongoing exposure will have an adverse effect on a quality of life. Again, Dr. Humphrey raised these concerns in his submission to you.

Please see folder 15 - ("Dr Humphrey concerns re dust monitoring (1) & (2)")

**96)** Dr. Humphrey has supported setbacks of <u>500m from property boundaries</u> - not dwellings. And importantly, if this setback cannot be applied, believes consent should not be granted. I will not discuss in detail as it is not relevant, but his input from a quarry hearing of January 2018 is shown in the relevant folder and is proof of his recommendation based on concerns regarding dust. It was also the opinion of Dr. Matt Willoughby who authored the report, which was peer reviewed and concurred with in its entirety by Dr. Humphrey. It is clear their concerns are generic, and not specific to ay one application, as evidenced by these statements contained in the documentation:

***97)*** *CDHB is quite clear in its submission that at least a 500m setback distance is the only acceptable solution to the dust problem, and that this is in accordance with national and international best practice guidelines..... If the 500m setback cannot be achieved, then the view of the Canterbury District health board is that it should be declined.*

*The CDHB request that the setback distances be amended to;*

*- 500m from the boundary of residential properties. If the applicant is not willing to do this, the CDHB request that the application be declined.*

**98)** ECAN were provided with the CDHB statements but did not enter them into the proceedings. However, a resident did have access and they are now on public record accordingly.

I agree with these recommendations, and ask that you give them serious consideration. Dr. Humphrey is held in high esteem with regards this issue, and his recommendations are more appropriate than the comments made by Dr. Pink. To offer certainty at all times, a fixed point should be considered. The quarry boundary is a fixed point and I ask that this point is the one to be used when establishing the 500m setback. It will be defined at all times, whereas the use of the mobile plant will not be.

** Please see Folder 15 - Health board involvement ("Dr Pink - 20th July-2018.wma" / transcript Dr. Pink retraction")

** Please see Folder 15 - Health Board Involvement ("Written authorisation from A.McDonagh")

** Please see folder 15 - Health board Involvement - ("Email from N.Dommisse, page 7")

** Please see folder 15 - Health board Involvement ("Dr Willoughby Submission & Dr Humphrey submission")

** Please see folder 15 - ("Media releases Dr. Humphrey")

**99)** The level of silica found in greywacke is high. Winstone's datasheet shows it as being >40%. The health risks from inhaling the dust from this product are accepted. Bleeding noses, constant coughs, sore throats and respiratory issues should not be downplayed. With regards the inhalation of RCS, and the likelihood of developing silicosis - something that does fall under the category of a serious health risk? Those effects may not present for many years.

**100)** If the applicant does not utilise appropriate water mitigation and dust collection systems at all times, residents will be vulnerable. Owing to the high winds we regularly experience, PM 10 can and will disperse well beyond the confines of the quarry. This is a further reason to consider the implementation of a relevant set back distance. Louise Wickham has discussed and evidenced the issue of dust outside of working hours. It is clear there is no mitigation with the reliance on someone making a phone call.

**101)** Dust mitigation conditions require 3 factors being applied if the conditions are to be successful:

a) It has to be a genuine, achievable and robust mitigating condition. If not? It is inadequate and cannot be genuinely cited as best practice. And will be evidence that the applicant is not prepared to undertake the necessary investment to provide robust mitigating measures.

b) It requires Fulton Hogan to adhere to that condition 100% of the time.

I believe one of the reasons there is a regular non-compliance is because of c) below.

c) The overseeing compliance authority must be willing to monitor and investigate complaints. In addition, there should be recourse where appropriate, with robust sanctions in the case of condition breaches. If none of this happens (which I have evidenced is very much the case in the submission you have seen prior to this hearing) it will again lead to potential harm occurring to those who suffer the effects of the dust on their properties. Folder 14 shows complaints received by ECAN, quarry by quarry in this region between 2008 and 2018. It is of concern that site visits are rarely undertaken, and complaints are routinely signed off as not substantiated. Unfortunately, there is no recourse for residents who endure this lack of action. ECAN are not accountable to anyone and there is no authority to raise concerns with.

**102)** I have had cause to make 2 complaints regarding dust leaving the boundaries of a Fulton Hogan quarry. (2018). Being an ex-policewoman, I submitted incredibly well evidenced data through a statement and photographs. I will not go into detail here, as I know it will not be appropriate, but on both occasions Mr Chittock was the person contacted in relation to my complaint. Both occasions, there were 'alternative' explanations given (contrary to the evidence and photographs provided) and there was no site visit. No investigation was undertaken in any respect. I assume Mr. Chittock will continue to be the contact point for complaints made or consent breaches reported, and using personal experience and evidence from their own database? It is unlikely dust leaving the quarry will be dealt with by ECAN. Such consent breaches are likely to be unsanctioned.

**103)** For your reference only, the details of the complaints and evidence provided are in the appropriate folders, (folder 10 & Folder 11) including my statements and photographs. With your permission I can show the photographs to evidence how dust manifests when visible beyond quarry boundaries. They also evidence my previous submission as to why even sealed roads have to utilise water for suppression. There were further photographs taken on the 6th June 2019 (closing date for submissions) which are shown in folder 11a. These too are from the applicant's Pound road quarry. Again, clear indicators of a) a Fulton Hogan truck leaving the site with no water mitigation and b) evidence through the tyre marks in the road that dust **is** bought out by trucks, which then becomes airborne when picked up by vehicles using the road.

**104)** In lieu of the fact dust does and will continue to leave quarry boundaries there is only one mitigating factor that will be sufficient - a realistic set back / separation distance from residential properties. Legislation, regulations, guidelines and our Health Board officials endorse this. Regardless of dust mitigation proposed by the applicant. The precautionary principle is applicable in this instance.

**Concerns arising from subsequent documentation**

**From section 92 report Deborah Ryan:**

***105)*** *"As discussed above, the monitoring for PM10 at the background Royden Quarry monitoring site, as part of the Yaldhurst study, measured a maximum PM10 of 45 µg/m3 as a 24-hour average compared with the NESAQ of 50 µg/m3.*
*I therefore disagree with Golder's conclusion that ambient off-site concentrations are not expected to approach or exceed health based standards, because PM10 concentrations measured at Royden have already been shown to approach the NESAQ based on the background measurement".*

It is for you to decide as to the validity of these findings. We have had a previous submittor raise the issue that these smaller particles will be quite high in the atmosphere so low level monitors may not accurately measure the concentration levels accordingly.
If higher placed monitors were used, would readings have been higher?

If you give credibility to the Yaldhurst monitoring, the next comment has relevance. If you do not? It still has relevance but in a different way , because the lack of certainty regarding the level of PM10 release has a bearing.
One thing is clear:
It was wholly inappropriate to place a key monitor on the site owned by a quarry operator who has access to the monitor. It cannot be acceptable practise in what should have been an impartial monitoring programme.

With already high background levels registered for the site, it is acknowledged minimal increases of contaminant Pm10 will result in M of E thresholds being easily reached. If there is no certainty as to how much levels will be raised by, this application should not be granted. It cannot be acceptable to rely on the repeated mantra of "with proposed measures, effects will be less than minor". A statement that is not adequately evidenced or quantified. Using this same level of uncertainty, it cannot be known how much particulate will accordingly be released into the already polluted airshed. However, based on the fact the mitigation measures are poor, and the fact access to water is nowhere near enough? I confidently suggest it will be high.

**From point 142 expert witness report, Mr. Cudmore:**

*"Given this and the relatively minor change in concentrations compared to existing background levels, I do not consider that the Proposal is likely to have even negligible effects on animal health".*

**106)** Reporting has indicated it is not possible to predict what increases there will be with regards to contaminant concentrations, yet we have another report now saying they will be relatively low. There is also the issue of going beyond his bounds of expertise. Unless he can produce veterinary reports to say even low increases in levels will not have any impact on animal health, this should be disregarded. Particularly as dogs will be on site, that may be vulnerable. Including new born pups. (A litter of 10 was born at the site in September 2019).

https://www.pca.state.mn.us/featured/does-air-pollution-affect-our-furry-friends

**Concern arising from report submitted to councils August 2019**

**107)** The applicant has now indicated that there will be no washing of aggregate at the site, but has not indicated why.
I suggest this will lead to dust being released which has the potential to become a hazard. I would also suggest by cutting back on dust mitigation in this way, there is an acknowledgement that water available for mitigation is limited.

We also read proposed actions should dust be on perimeter roads due to being carried out on vehicles, as well as occasions where dust plumes are visible within 30 metres outside the quarry. There should be NO dust beyond the quarry, and by proposing these measures we have the applicant now acknowledging it will occur.

**Section 42 report - Mr. Firth:**

**108)** In lieu of the retraction by Dr Pink, I ask that the s42 report supplied by Mr. Firth be disregarded as invalid. There will also be cause to question the integrity of the monitoring requirements, this being discussed in a further section of this submission.

**CONCERNS REGARDING MONITORING**

**109)** Dust from quarries is to be measured through boundary monitors. The applicant will be using such monitors. Their use has to be above reproach, with a stringent policy that is to be adhered to fully. My research of how this policy is being implemented has shown serious shortcomings which I now present. It will give an indication as to why the Templeton community has serious concerns regarding the issue of dust. I have also referenced aspects/claims from the application.

**110)** ECAN have stated: Quarries are to have boundary monitors in place should there be sensitive locations within 500 metres. Should dust levels get close to the threshold level, an alarm would be triggered. The operators would then be expected to take action including:

a) stopping work b) adding more water carts to ensure the dust does not breach the M of E's 1-hour nuisance dust guideline level. If this guideline is breached, the quarry will need to cease operations until dust levels have been managed to acceptable levels.

According to the website: *"If a quarry breaches the trigger level, we'll investigate to find out what action they took to stop dust leaving the quarry before deciding what further action we need to take".*

There were no provisos indicated in this policy. Nothing about wind speeds/directions etc. Just a clear cut definition of properties within 500m.

Therefore the applicant's claim to have monitors installed within 250m of sensitive locations is below the acceptable criteria they should be following. This was cited in the initial application with regards the mobile plant. There has to be absolute certainty that monitors will be located where there is a sensitive location within 500m. I would suggest there has not been clarity shown in this regard through the application documentation.

(https://www.ecan.govt.nz/get-involved/news-and-events/2018/no-serious-public-health-risk-from-quarries/)

**111)** In March, 2019 I made an OIA request regarding this policy. I wanted to provide detailed evidence to this hearing, that the policy was stringent, enforceable, and transparent. The residents of Templeton need to know they can rely on action being taken should there be any exceedance, or activation. I can now talk you through the response I received. It will give an indication to you, as Commissioners what we can expect should consent be granted. In lieu of what I am about to present, I believe this policy has no credibility.

Please see folder 8 - ("Initial response to OIA request - boundary monitors")

Please see folder 8 - ("Follow up information regarding boundary monitors")

In a nutshell the questions and responses are as follows:

**112)** 2 quarries do not have monitors due to the fact they are deemed not to require them based on *"individual site-specific situations and the fact both have comprehensive dust mitigation measures in place"*

It is immediately apparent there is no consistency, whereby exemptions are considered and granted - even though there may be sensitive locations within the 500m.

I therefore ask that there be no exemptions considered with regards this application, and that consent conditions clearly stipulate where the monitors are to be located in relation to properties within 500m of the quarry boundary.

**113)** Another response indicated that monitors are sourced, installed and maintained by the quarry operators. This is an indication that there has been no independent involvement - at all. Therefore this is seriously akin to putting a fox in charge of a hen house. And further undermines the entire programme. We see in the initial application references to using portable monitors that are run on solar power. Solar powered monitors were used in the Yaldhurst monitoring, and there were times when they were not operable due power issues.

**114)** My next question related to the activation of alarms from the monitors, or exceedance indicated and ensuing steps, should this happen. Having been operational for some time, I was hoping to receive confirmation that activations are responded to quickly, with follow up action undertaken as necessary.

Again, the response was highly concerning.

With regards to notifying ECAN, there is an expectation the quarry operator will <u>send an email within 48 hours.</u>

This I believe is unacceptable. Any exceedance or trigger should be reported <u>immediately</u>, and a compliance officer from ECAN should attend - immediately. This will allow a) verification that additional mitigation or closure of operations have been initiated or b) in the case of dust leaving the boundary, all investigative steps are undertaken. Reporting this 48 hours later via e-mail, which may not be picked up immediately? No site visit will be made, because there will be no point. Nor will it be possible to verify that the quarry operator had addressed the issue at the time of occurrence.

**115)** The request had one final sentence by way of response:

*"To date we have not received any alarm activations from the sensitive boundary monitoring devices"*

Having seen how inadequate this policy is, this should not be a surprise to anyone. There will be several reasons why they have not received information accordingly, and they will be apparent to us all.

To reiterate - ECAN have stated that they have had no reports since the policy was initiated. Yet this graph from Fulton Hogan (Feb 2019 publication) shows that the M of E's hourly advisory limit was breached between 4.19pm and 4.48pm on the 23rd January 2019. This in their own words:

*"To date, except for the 23/1, average hourly PM10 levels at the site boundary have been an order of magnitude below the Ministry for the Environment Guideline"*

So there is a clear indication that this level was exceeded. I will leave it with you as Commissioners to compare this recording to the response ECAN gave regarding activations from the sensitive monitors. There is a very clear mismatch.

I also add - this is the 2nd image shown from this application, where there is missing data where a 'spike' has been evidenced.

**116)** In lieu of the fact this policy is highly flawed, I ask that you as Commissioners please question its credibility accordingly.

This entire policy is reliant on self regulation by the quarry companies and as such, is close to being a pointless exercise. Having seen the image produced by the applicant relating to the exceedance at one of their sites I have concerns that there is the possibility of being selective in the information shared from the monitors. (The PM 10 level is not shown for the remainder of the day in question). There is also the possibility that exceedances or triggers will not be reported as per the policy. Thus the importance of real time reporting of data.

The applicant initially proposed the following trigger levels, which were later changed. The initial proposal indicated:

** 60 micrograms as a 1 hour average for taking immediate actions to investigate and reduce site dust emissions.
** 70 micrograms as an hour average for ceasing all quarry activities (other than dust suppression activities) and taking immediate actions to investigate and reduce site dust emissions.

**117)** This does sound stringent, but how is this verified? We do not have eyes and ears inside the quarry to evidence activities have ceased, and being outlined below - there may not be real time PM10 readings available whereby this could be partially confirmed.

The next section in relation to the trigger alarm thresholds is going to be their get out for adhering to this:

*"The above trigger alarm thresholds are preliminary values and may need to be adjusted depending on the monitor type, experience with the operation of the monitors, and any subsequent feedback from neighbours".*

This criteria has been changed and will be discussed shortly.

**118)** The applicant was asked if they would consider real time reporting of PM10 levels. This is an important requirement, as it would allow those in the vicinity to check what activities are occurring at the site at the time an exceedance is shown on the data.

This is of vital importance, as the applicant would be expected to CEASE operations in the case of the M of E limit being reached or exceeded. It would need to be shown that activities have in fact ceased, with no trucks being allowed to leave the site under these conditions. This is the reply from the applicant in relation to this issue: (page 15 of the supplementary Golders report, folder 12a)

*"Fulton Hogan have considered this in detail. However, at this stage, publicly reporting real time PM10 is not proposed as this does not allow for data to undergo adequate QA analysis and validation. Following these procedures, the validated PM10 monitoring results would be able to be made available online for the Council and community - The necessary delay between measurement and reporting, so to allow for data verification, is still to be assessed and agreed".*

**119)** Data shown days later is of no use at all to those who may be affected in real time who then have no recourse. In addition, should there be dust beyond the quarry boundary, the activity measured on the monitors may be corroboration of its source of origin. It will all be of value should it be required as evidence of any potential condition breach. Or could even show that Fulton Hogan are indeed being good neighbours and abiding by all terms of operation. Their use could be of benefit to all parties. With regards the data, there is a question that needs to be addressed - that being, who is responsible for verifying the data?

**120)** I now present a serious concern - that of covers or 'netting' being permitted by ECAN on boundary monitors. This should be of concern to all of us, and needs to be highlighted at this hearing. If consent is granted, I ask that you do not allow them to be used on any site monitor proposed by the applicant. It cannot be permitted that the applicant compromises any sensors or monitors in this way. ECAN confirmed through my OIA request that "some may use netting to ensure insects do not disturb the devices.' The excuse of an insect problem is one that is accepted by ECAN - but is not accepted by the community in the vicinity. I would strongly suggest no reasonable person would view this as an acceptable practise.

**121)** I have photographs of one of these 'netted' monitors on a quarry boundary. It has been covered in this way for well over a year, and I have authorisation from the photographer to show them to you. I will re-iterate - this is not one of the applicant's monitors but we cannot have this considered by them, on the basis ECAN are okay with it.

**122)** Stuart Keer-Keer from K2 was shown the photographs of the netted monitor I have access to, and was asked why would someone put a gauze cover over a dust monitor. Mr. Keer-Keer is now Managing Director at K2, and his qualifications and expertise to comment are not in question. He has given authorisation for me to reference these emails. His response?

*"If they want to get lower results".* He then went on to add:

*"My guess is that the system is being overloaded with larger size particles. They are trying to minimise the amount of dust being captured. They will work on the theory that the small stuff will still get through. It will but the material will be a barrier to being sampled and give lower results"*

Please refer to folder 8 - (for all photographs, authorisations and emails regarding monitors).

**123) Summary of concerns:**

** The applicant must give an undertaking to have monitors within 500m of every sensitive location, as per the policy set by ECAN. I do not believe this has been clearly or consistently referenced through all documentation.

** They are sourcing, installing and maintaining their own monitors, of which no detail is provided to allow any verification of their suitability. (Manufacturer, type, sensitivity etc).

Can I please ask that this not be left to ECAN to ascertain. It was clear from their response to me they do not keep records of the monitors, including where they are sited at current quarries.

** The community will not be given access to real time PM10 readings.

** With regards to the recording of PM10 in real time, it appears this is only going to be undertaken in one location as a definite. Why has the applicant not demonstrated total transparency by offering a visual representation of where each monitor is to be situated? What they measure? What real time data can be viewable, and how it can be viewable? This could be shown for each stage of operations. That way it would be obvious to all if they are indeed within 500m of all sensitive locations.

** With the possibility of exceedances not being reported to ECAN, or reports not being followed through, we are left with the issue of self monitoring by the applicant as being only scenario for this site. A scenario that is unacceptable to the community.

**124)** All concerns from this section endorse my belief the application of a setback is absolutely vital as the only means of offering some protection to the residents of Templeton.

**Further concerns from subsequent documentation - response to Councils August 2019**

This report has indicated the "mobile monitor" to be placed within 500m of sensitive location does not have to meet the standards for NES monitoring but will be suitable for dust management. I believe this is unacceptable on the grounds that any data may not be deemed as valid as it does not meet the required standard, thus making it unlikely it will be usable in any investigations should they apply.

**125)** In later documentation, we see the applicant has changed the trigger levels for taking action, from 60 / 70 micrograms to 150 micrograms. This change included a criteria of only considering further action should there be a recording of 150 micrograms in a rolling 10 minute period.

This is a significant change to what has previously been entered by the applicant, where the threshold of 60 micrograms would lead to increased mitigation and the threshold of 70 would lead to the same and cessation of operations. Submittors would have seen this as a positive, but are now unable to address this concerning change made, due to it occurring after submissions had closed. I believe this is unethical of the applicant, and therefore ask that it be given due regard when making your decision. Taking proactive action at lower thresholds would be evidence of 'best practice'. Waiting until the M of E limit is reached or breached before considering action, is not.

**126)** This has again changed, and we now see a PM10 concentration of 150 micrograms (1 hour average) is reached, additional dust measures shall be implemented. The rolling 10 minute criteria is no longer applicable. The ceasing of activities will depend on wind direction, and whether sensitive locations are within 250m. Why is 250m being adopted, and not 500m as per the policy set by CRC?

It is concerning to see that there is the proviso of wind speeds reaching 7m/s AND a period of 12 hours or more of there being no rain at the site. In lieu of Mr. Cudmore's comments, and the evidence I provided of how quickly surfaces dry, this should be reduced to 4 hours. In addition, the consent condition does not make it clear that the gates will be closed in such circumstances, whereby there is to be no truck movement to or from the site. This has to be considered, as trucks are responsible for bringing dust out of the quarry. If activities are to cease? This should relate to all activities.

In addition, if the site personnel or enforcement personnel are of the opinion the visible dust is not causing an impact, or there is no dust nuisance effects, there is no requirement to cease operations.
It is unacceptable only visible dust is being considered in this judgement call, when it is known PM10 and smaller is invisible. Secondly, I suspect we can all guess which way that judgement call would go. I do not believe for one minute the site manager will be undertaking door knocking to establish if the dust is indeed causing a nuisance. Will the absence of a complaint be deemed as confirmation there is no issue? If the occupant is away, they will certainly know they have been a victim of such a dust impact when they next go to mow their lawn or wash their windows!

We now see visible dust blowing beyond the quarry will lead to ceasing of all dust generating activities. It may also include the immediate watering of both active and inactive exposed surfaces, even if dust generating activities have ceased. 3 days into a dry and warm spell? It is unlikely there will be enough water available to undertake this task. Bearing in mind water will need to be applied regularly whilst these conditions exist. Dust control just cannot be guaranteed. I also find it concerning that the applicant has not taken into account what action will be implemented when there is clear evidence of dust build up outside the quarry due to vehicles bringing it out. It cannot be acceptable such dust is not dealt with as promptly. I have shown how it is both offensive and a nuisance.

**127)** Mr. Bligh has indicated in his Sept 2019 report the 60 and 70 micrograms limits for triggering action should never have been previously included. He is the consultant for this application. Those triggers were part of the original application and supplied by Golder. I find it hard to believe therefore, he is asking for them to be disregarded, and my perception is this is a classic case of 'bait and switch'.

**POTENTIALLY COMPROMISED REPORTS**

**SECTION 42 REPORT ANDREW HENDERSON - relating to Samadhi Buddhist submissions**

From Mr. Henderson's report:

**128)** "*The primary activity undertaken on the site falls within the definition of a Spiritual Activity, defined in the Selwyn District Plan as:*
*land and/or buildings used for the public and/or private assembly of people primarily for worship, meditation, spiritual deliberation and ancillary community facilities of a non-commercial nature.*

*I understand that a range of activities occurs on the site throughout any given week, and that the scale of the activities undertaken on the site exceeds the permitted thresholds for a spiritual activity in the Selwyn District Plan. Legal advice provided by the Council's legal advisor therefore is that as the temple is operating in the absence of any consents, any adverse effects on it are to be disregarded".*

**129)** I ask that all submissions made be considered as it appears Mr. Henderson has been incorrectly advised.
I contacted SDC to gain clarity on the issue, and have the email response in the folder.

This property is covered by the rural volume, not the townships volume.
This definition of a 'spiritual activity' is cited within the township volume and it was made clear - it is not included in the rural volume and does not apply to this site.
This temple would be subject to the activities rules set out in rule 9.4. However a spiritual activity is not included in the definition of a rural or residential activity. The activity on this site would exceed the permitted area covered by building(s), loading, storage and waste areas used for any other activity.

(Please see folder 3 - email from SDC re Buddhist temple)

Therefore the two reasons cited for disregarding the submissions are non- applicable. All of the submissions should therefore be considered. I also understand, as of the 5th of September, consents have been applied for.

**130)** There are numerous documents which have formed part of this application that contain references to quarry depths of 9.9m, or water levels being in the region of 11m. Too many to list here.

They either:

Utilise that figure in their calculations and / or analysis.

Use that figure to substantiate claims that effects of certain activities will be 'less than minor'.

In lieu of what I have presented in my opening section, my belief is that these reports are compromised.

Such figures should be regarded as unrepresentative, misleading, or misinformed as for the reasons explained. Therefore there should be sufficient doubt regarding the credibility of anything else contained in the report rendering any findings, conclusions, recommendations or opinions as potentially being unreliable. My belief is that the entire report should be disregarded.

**Subsequent reports that have concerns regarding accuracy, reliability or credibility**

**EXPERT WITNESS REPORT ACOUSTICS - JON FARREN:**

**131)** From point 19: "*The entire site perimeter will have a three-metre-high noise control bund which, in conjunction with an approximately nine metre deep pit, will mean that many of the noise sources used during gravel extraction will be mitigated to a significant degree*"

Already raised as a concern. Therefore we assume with shallower depths to quarry floor, noise will not be mitigated sufficiently, and certainly not to a significant degree.

**EXPERT WITNESS REPORT HUMAN HEALTH - AUDREY WAGENAAR**

**132)** It is clear that Ms. Wagenaar is in Canada and by her own admission has little involvement in this proposal, relying on discussions with Mr. Bligh and Mr. Cudmore. She has made no site visit or visited other quarry operations in this area. In her report, she acknowledges there is a lack of a health threshold (i.e., a concentration below which there are no health risks) for particulate matter.
Therefore she would not be able to say with certainty what the cumulative effects will be on the health of those within 250m and 500m after 10 years, 20 years or 40 years.
Many of these residents work on their land. I would therefore suggest they would come under the criteria of receiving occupational exposure.

**EXPERT WITNESS REPORT - AIR QUALITY - ROGER CUDMORE**

**133)** There is a reference to 9 hectares at a time needing dust suppression in one of the reports. Yet in the dust management report by Mr. Cudmore, there is indication of 6 hectares of area requires dust suppression. Can it be noted, there does not appear to be consistency on this from the original application, through the section 92 reports / expert reports, nor has there been consistency on how much water is required accordingly. (This latter concern described in detail). You have been presented with so many contradictory figures.

**134)** In addition can any references, from any report, citing the use of land for 'dry farming' be disregarded where it is cited to occur during operations. Dairy cattle grazing is not something that is classed as 'dry farming' with such references being therefore misleading.

**Further issue arising from statement from Mr Cudmore - 6th November 2019**

I would firstly like to address the reluctance to conduct "onerous monitoring". A term I find somewhat offensive taking into account what is at stake for the community. Many live within 250m and 500m of this site, who have the right to know what levels of RCS they are being exposed to, considering they will be exposed to this for over 40 years. With the particulate remaining in the lung once present.

I also want to add that there is not just likelihood of RCS exposure from quarrying, we also have a potential increase from the fact reject aggregate, containing up to 40% crystalline silica is also proposed for the site, which will be ground by heavy trucks passing over it daily. We have no data to show how much additional RCS is released due to such use.

All monitoring proposed should be considered. It should not be refused on the grounds it requires a great deal of effort or is causing more work for the applicant. If the applicant intends for this to be a quarry for the future, it would be their responsibility to ensure they play their part in providing data for any quarry of the future. Of all emissions. There is no such data available in NZ, and nor will there be if no quarry is willing to undergo monitoring where that data can be collated. I would suggest there is a very good reason the applicant is reluctant to do this. It would be clear dust, particulate and RCS emissions are higher than claimed, and travel considerable distances, with that data then becoming relevant when consideration is given to future consent applications. This would be a detriment to operators, who would not want to have parts of their site inaccessible due to appropriate setbacks being applied. Less aggregate available impacts on profits. This proposed monitoring is not 'onerous'. It is necessary.

I have already shown the mitigation measures proposed are wholly inadequate by comparing with what is available as shown in a 314 page handbook from the USA. This book as of March 2019 is updated, and is now 406 pages in length. It is like comparing night and day. Mr Cudmore has not indicated otherwise, so I would assume his estimates of the amount of emissions are based on what he perceives as 'good practice' mitigation. He provided figures in Appendix B, with all figures being significantly lower than those proposed by Ms. Wickham.
I believe Ms. Wickham's figures are more likely to be representative.

We know how much water is available for the site. We know it is not enough. And we know from other reports, it will be prioritised with regards use, whilst full operations are still being undertaken. Therefore we know, in such circumstances, the plant, stockpiles, vehicles etc **<u>are not</u>** going to be controlled / mitigated. We also know full dust suppression is not going to be possible due to the fact there will not be enough water for this top priority. (1,334 cubic metres per day required, with a maximum 752 available). There will be no aggregate washing.
With this in mind, I believe all figures supplied by Mr. Cudmore in this report are underrepresented, unproven, and have no validity. I therefore request they are disregarded.

Mr. Cudmore claims this proposal presents negligible health issues for the residents of Templeton, and makes it clear he is not just incorporating the township in this comment.

In lieu of the fact there is going to be barely any dust control? This comes across as flippant, dismissive - and inappropriate. I ask that this report be considered with due caution.

**Compromised reports - level of screening at site.**

Mr. Cudmore's report of 6th November has made more than one reference to the fact there will be 3 screens operating at this site. I have re-read the documents which relate to noise, and noted this is the first reference we have to the fact there will be that many operating. Previous reports have estimated noise levels likely to be experienced by those in the vicinity. However, there is a clear indication that the calculations have not accounted for the fact three will be operating.

Therefore it is likely noise impacts for those in the vicinity will be higher than cited.

E.g.:- the original acoustic report had accounted for **a screen** at the fixed plant (111db) and screen at the mobile plant. This only accounts for two.

It is somewhat concerning that this information has only come to light, less than 2 weeks from the commencement of the hearing. There is now cause to doubt the accuracy of any findings in any of the acoustic reports provided by the applicant. I also wonder if this is a true indication of how many plants will be operating. Three will create more dust and noise than one fixed / one mobile plant that seemed to be implied through the application.

# CLOSING STATEMENT

I believe there are several serious concerns arising from this application.
At this stage I need to remind everyone - the water levels have not just been overlooked for this site. The application specifically states the water level record for the key bore I have described in detail, was not available. And there was no correction to this issue in subsequent submissions or reporting.

It is also noticeable in subsequent documentation to the initial application, there has been a move away from mentioning quarry depths, instead giving repeated assurances to stay above either Seasonal High Levels or HRGWL. (Both terms continue to be inter-switched, even though the levels will be significantly different). Yet there is no mention of what the HRGWL is. Why is this? I believe if it is now specified, it would rightly give cause to question claims in the initial application and S92 response. Yet how can you as Commissioners be assured the applicant will stay above that level, if that level has never been specified? This change occurred in documentation submitted after April, which is when an OIA request was made to ECAN (by persons unknown) requesting water level data for M36/0257. If the applicant or anyone on their behalf then had knowledge that someone was now acutely aware there were readings available - contrary to what had been claimed in the application? Consideration has to given to the possibility that this change of approach is potentially an attempt to now 'cover their tracks'. I really do not need to elaborate further, but I believe this is manipulative on two accounts:

1) In effect it allows the applicant to 'cover all bets' whereby it increases the chances of being granted consent and,

2) Creates the opportunity of a potential 'defence' should this eventuate in Environment Court, whereby the citing of staying above HRGWL could be classed as an over ride to the initial request to quarry depths of 9.9m.

If the applicant comes back to you with a counter / amended request, (particularly with regards to quarrying depths) can I please ask that it be dismissed. If there has not been transparency in their initial application, and subsequent submissions, it would set a very dangerous precedence should they have a back up request given consideration. A precedence that allows any applicant to be make inaccurate claims in their initial application in the hope they can get away with it, with a backup plan accepted should they be caught out. In no way, in these circumstances should consent even be given a passing consideration. It would most certainly make a mockery of the entire RMA process. They have had several sizeable bites of the proverbial cherry, and have not earned the right to have another.

The Precautionary Principle is an important consideration and one that should be utilised by **any** decision maker where the RMA is being applied - at any stage of the process. This will include council staff receiving applications, and does not solely apply to Commissioners or decision makers overseeing final hearings.

Folder 19 of reference material contains a several page summary of key points relating to the Precautionary Principle, as well as the full 190 page thesis submitted to Wellington University in 2016. New Zealand has recognised and adopted the principles. It is therefore highly relevant to any application through the Resource Management Act.

It is very clear - if there is limited information available, (and I would suggest application documentation is likely to be selective and therefore limited) - the principle should be applied. If resultant harm is considered to be more than negligible, or there is the **potential** for effects to be minor or more than minor? This principle should be applied.

With regards precedence, the High Court decision mentioned in this submission has made a clear reference to the application of caution, as it was used by the Environment Court in the case involving Harewood Gravels and the Yaldhurst Quarries Joint Action Group. This is from point 317 of the High Court decision:

***"The Court in my view correctly took a precautionary approach when identifying many relevant elements of effect where the evidence fell short, either because it was not provided, not adequately provided, or simply did not persuade the Court. This was entirely for the Court".***

I ask that you apply the same approach, and seriously consider not just claims made in the application, but whether the applicant has provided credible proof that effects from all activities will 'less than minor'.

This application has shown, there cannot be any assumption an applicant has shown full integrity in all aspects of claims made in their application. Nor can it be assumed comprehensive auditing has been undertaken by Councils. All aspects of any future applications should be open to scrutiny and fact checking, with that opportunity being afforded to all affected parties.

This is too late for those in the Yaldhurst area who have seen applications signed off as non-notified with regards to land use. However, in lieu of what I have highlighted in this submission, I respectfully ask that you as Commissioners, recommend the instigating of a full and independent review / investigation into the processes leading to the consent of any quarry in this area in the past 8 years. I feel this should be considered as a matter of urgency. With particular reference to:

** The auditing and fact checking of the application by the receiving Councils.

** In the case of aspects signed off non-notified, evidence of the application of the Precautionary Principle, and any justification for applying the criteria of "less than minor".

** How depths of quarrying have been established, with evidence that the figures cited by the applicant have been verified.

I now summaries concerns regarding the role of Councils. This application should indicate it is no longer acceptable for Councils to sign off any consent aspect as non-notified. I ask that you as Commissioners take this back for consideration by anyone overseeing a consent hearing relating

to quarrying activities. I have highlighted how serious the consequences can be if questionable or erroneous claims made are accepted - and consented without any notification. All applications in my opinion should be fully notified.

If consents are signed non-notified, whereby there is highly pertinent data / information on Council systems or databases, that has not been included in submitted reports? Or has been made unavailable for viewing during the application process to the detriment of those with a right to access the information? They should expect to be held to account, or have policies /procedures questioned.

The attitude of ECAN, as the main body responsible for ensuring consent conditions are adhered to, is hugely concerning.
The documents (public record) relating to the appeal against the original CAPG decision, clearly show that ECAN were happy for quarrying to those depths to occur. Despite the concerns and reasons supplied from the original hearing.

They were one of the parties who lodged a "Consent memorandum" requesting that the amended application be approved! The court were concerned regarding the reports submitted by CRC. Who, when requested by the court - actively declined to provide an amplified risk assessment. A stance that was of concern to the Environment Court, and rightly so. Prior to the decision being passed by the Environment Court to refuse consent, ECAN took the Environment Court to High Court over the wording contained in one of the Court Minutes - and were not successful. Such a stance by ECAN does not instil any confidence that the protection of our water is a high priority for them. If it were, they would have gone above and beyond to ensure the Court had adequate evidence to support the declining of a consent to go below HRGWL. This along with the concerns I have raised gives me cause to believe, should the applicant indeed go below HRGWL and into the aquifer there will be no follow up from ECAN. Once water is compromised the Environment court rightly raised the issue - how do you remediate such damage?

With regards to quarry companies, there needs to be a significant change in attitude with regards to quarry practices and applications. That change of attitude from quarries needs to start right here and right now with Fulton Hogan. You have been presented with lots of promises by them.

Quarry operators give 100% assurance at every consent hearing that dust will not be an issue. None have been able to stand by promises - including Fulton Hogan. As little as possible is invested in genuine comprehensive mitigation. I have read nothing in any of their literature to convince me they have found a panacea to prevent dust leaving the quarry. What you have been presented with is nothing previous IC's at previous hearings have not heard. And it is fair to say, residents in this part of Canterbury are sick and tired of continued and repetitive spin from quarry operators.

**APPENDIX A - CLARIFICATION OF WATER RACE USE**

## Potential presence of endangered species in water races

Mr. Van Nieuwkerk has indicated there has been no analysis of water in the races.

I have not been able to find anything through the application documentation to show there has been any evaluation of effects of the operations on the wildlife living within the races. Or a detailed breakdown of what can be found.

Another application currently being processed in this region had an 18 page report submitted dedicated to the effects on races as part of the application.

Therefore we have to take into account an endangered species native to this region - the Canterbury mudfish. Department of Conversation cite water races as being a habitat for them, as do many of the sources I have provided links to.

For example, this reference to them being found in water races: (media release of 29/5/18)

*"In the past, with much of Canterbury made up of wetlands and the braided river beds being much wider, mudfish would have been widespread. Now, with major land use change throughout the area, about 30 per cent lived in water races"*

With their habitat extending from north of Christchurch down as far as the Waitaki river, we have to consider there may potentially be Canterbury mudfish present. Especially as there are numerous references to them now being mainly found on privately owned land.

This species is classified by DOC as **Threatened: Nationally Critical**, and is cited as the most threatened of New Zealand's mudfish species. In 2014 the International Union of Nature and Natural resources rated the Canterbury mudfish as **Critically Endangered**.

There is a huge drive to protect them, and prevent them from becoming extinct.

Contributory issues leading to their decline:

Water abstraction.

Intensification of agriculture.

Changes in irrigation systems.

Land clearage.

Siltation.

From DOC website:

*Protecting and restoring wetlands, drains, water-races and swampy streams where mudfish are present will help to ensure the right environmental conditions and food resources are available, increasing the mudfish population.*

I have already highlighted concerns linked to the races. We have two running through the site - one directly in line with the central processing area, which will be a high producer of contaminant and dust. If this eventuates in the races, should these mudfish be present?
There could be serious implications. In lieu of the fact there has been no analysis by an independent source (and I would suggest Department of Conservation would be deemed an appropriate source to conduct such investigations) can the Precautionary Principle be applied. We just do not know if they are present. And if they are, priority should be given to ensuring their habitat and survival are not impacted. Due to the location of the races, and the nature of quarrying, I do not see how this can be assured.

If it is likely consent is going to be granted? I request the Department of Conservation be permitted to undertake a full analysis of the races so as to establish a) presence or not of the mudfish and b) impacts of quarrying on their habitat should they be present. There has to be certainty on this matter.

If they are found on that land?

I ask that concerns and recommendations made by DOC be considered and applied to this application.

I respectfully request any approach to DoC in this regard be made by you as an independent body. Fulton Hogan have a working partnership with DoC and an approach from yourselves would get around the issue of any potential conflicts of interest.

**REFERENCE SOURCES:**

*Folder 20 - Mudfish documentation*

https://www.doc.govt.nz/nature/native-animals/freshwater-fish/mudfish/

https://rarespecies.nzfoa.org.nz/species/canterbury-mudfish/

https://en.wikipedia.org/wiki/Canterbury_mudfish

https://niwa.co.nz/freshwater-and-estuaries/nzffd/NIWA-fish-atlas/fish-species/canterbury_mudfish

https://www.stuff.co.nz/the-press/news/north-canterbury/103826484/the-hidden-life-of-the-canterbury-mudfish

https://www.nzherald.co.nz/the-country/news/article.cfm?c_id=16&objectid=12106180

**APPENDIX A - CLARIFICATION REGARDING WATER RACE USE**

Section 228 of the Local Government Act 2002 covers issues regarding the races. Their primary use is to provide stock water. Uses other than provision of stock water require consent - including irrigation.

Due to the risk of bird strike, we now know there will be no ponds on site, so drinking water for the cattle cannot be from race fed ponds.

However...

This section has a specific offence of allowing livestock to trespass onto the water race. This means they will not be able to just go up to the race and drink directly from it. This makes it more likely the site bore is going to be required as a source for providing drinking water, as well as use for irrigation.

**Pollution of water races**

With regards to any pollution, there is no requirement that any pollution occurring has to be of impact to other users.

This is shown in subsection h:

*Every person commits an offence and is liable on conviction to the penalty specified in section 242(1) who directly or indirectly pollutes or causes to be polluted the water in a water race or in a watercourse used for supplying water to a water race in a manner that—*

***(i)*** *is offensive;* ***or***

***(ii)*** *makes the water a danger to human health.*

If the release of contaminants into the water is deemed offensive, the applicant would be in breach of this act - regardless of any perception that no harm is resulting. It is not for the applicant to decide if it is offensive or not.

**PENALTY UNDER SECTION 228 IS A FINE NOT EXCEEDING $20,000**

**Key provisions regarding SDC policy (https://www.selwyn.govt.nz/__data/assets/pdf_file/0013/13261/Policy-Manual-2019.pdf)**

1) The water shall be conveyed to the applicable properties via reticulation and other structures to the approval of the Group Manager Infrastructure. (Applicable regarding irrigation)

2) The maintenance of all other races not defined as designated main and lateral water races are the responsibility of the surrounding or adjacent property owner/s. Cleaning and other maintenance must be completed to the Council's required Level of Service.

3) Water tank storage is applicable for garden and shelter belt use, and is not cited regarding commercial / irrigation use. No direct pumping from the race for garden or shelter belt use.

**APPENDIX C - further information regarding misrepresented water data.**

**Further to the issue of using bores within 1 - 2.5km in calculations - reference to M36/0202 positioned in Jones Road opposite Globe Bay Park.**

I have viewed the bore log data for this well, which has comprehensive readings data available. The applicant has stated that they incorporated figures over a 10 year period 2008 - 2018 in which they calculated the quarry depths for the site.

Nowhere have they cited the HRGWL for this bore which occurred in June 2010, where it was 8.87m to ground level. Nor is it represented in any of their graphs.
This image is taken from the initial Golder report forming part of the application. As you can see, the blue line representing this well does not indicate that level - at all. The red dot is what I have included to represent where the graph **should** have shown the HRGWL.

This is misleading and misrepresentative.

I now turn your attention to the witness expert report of Mr. Van Nieuwkerk:

*The closest and CRC monitoring well is M36/0202. The highest groundwater level in M36/0202 was recorded on 30 September 1992, which was 30.46 m RL. Although this is strictly-speaking beyond the Seasonal High Water Table timeframe, I consider it appropriate to use this date as the highest annual groundwater level can occur beyond the June to August period.*

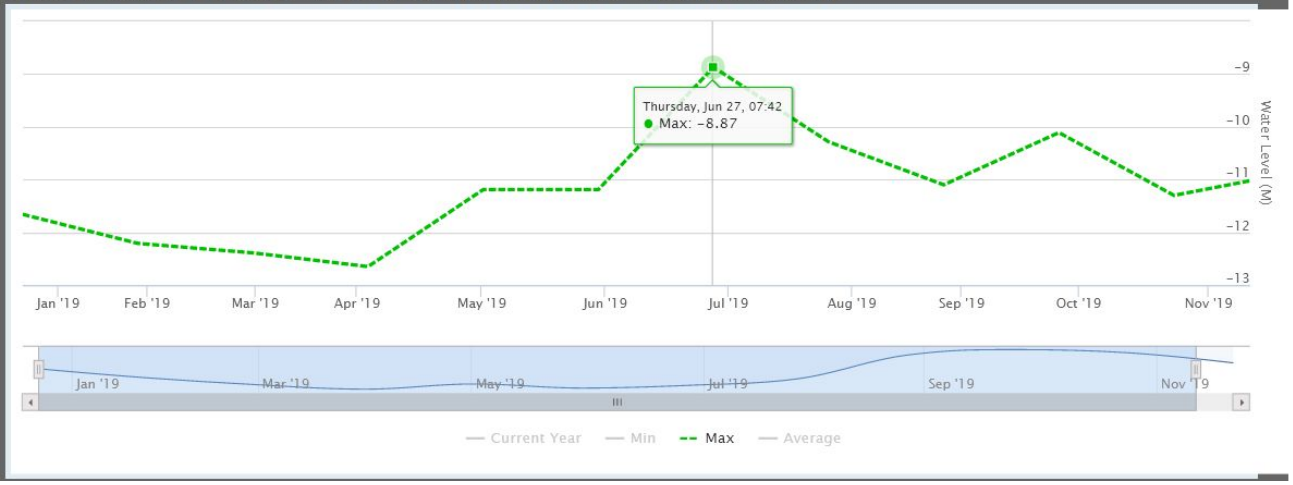
Using a different measuring criteria of RL is a misdirection, and is discussed later in this section. I have looked up the reading for that date and it was 10.71m to the measuring point! The measuring point is 60cm above ground level, so the actual level to ground was 10.11cm. A significant difference to the ACTUAL highest level recorded in 2010.

There is no credibility to any of the calculations provided by the applicant. It is beyond belief the applicant and anyone reporting on their behalf is willing to mislead proceedings, and potentially put our water at risk. They have underestimated the fact we as a community are not stupid, and know how to view publicly available data.

HRGWL RECORDED JUNE 2010

SUMMARY | WATER LEVEL GRAPHS | BORE LOG | AQUIFER TESTS | WATER QUALITY | LOCATION MAP

## Water Level Plot for M36/0202 (Relative to Ground Level)




## Details

Printable Well Summary

| | | | |
|---|---|---|---|
| **Well Number** | M36/0202 | **File Number** | |
| **Owner** | CANTERBURY REGIONAL COUNCIL | **Well Status** | Active (exist, present) |
| **Street/Road** | MAIN SOUTH RD | **NZTM Grid Reference** | BX23:57006-77198 |
| **Locality** | TEMPLETON | **NZTM X and Y** | 1557006 - 5177198 |
| **Location Description** | | **Location Accuracy** | 2 - 15m |
| **CWMS Zone** | Selwyn - Waihora | **Use** | Water Level Observation, |
| **Groundwater Allocation Zone** | Selwyn-Waimakariri | **Water Level Monitoring** | M |
| **Depth** | 18.30m | **Water Level Count** | 400 |
| **Diameter** | 76mm | **Initial Water Level** | 13.02m below MP |
| **Measuring Point Description** | Top of PVC pipe | **Highest Water Level** | 9.47m below MP |
| **Measuring Point Elevation** | 41.17m above MSL (Lyttelton 1937) | **Lowest Water Level** | 15.79m below MP |
| **Elevation Accuracy** | < 0.1 m | **First reading** | 30 Jul 1986 |
| **Ground Level** | 0.60m below MP | **Last reading** | 21 Nov 2019 |
| **Strata Layers** | 7 | **Calc Min 95%** | 14.88m below MP |
| **Aquifer Name** | Riccarton Gravel | **Aquifer Tests** | 0 |
| **Aquifer Type** | Unknown | **Yield Drawdown Tests** | 0 |
| **Drill Date** | 17 Jan 1975 | **Max Tested Yield** | |
| **Driller** | Briggs Bros | **Drawdown at Max Tested Yield** | |
| **Drilling Method** | Unknown | **Specific Capacity** | |
| **Casing Material** | PVC | **Last Updated** | 06 Apr 2017 |
| **Pump Type** | Unknown | **Last Field Check** | 21 Nov 2019 |
| **Water Use Data** | No | | |

READING FOR SEPTEMBER 30TH 1992