

**From:** [REDACTED]  
**To:** [Hearings](#)  
**Cc:** [submissions@golder.co.nz](mailto:submissions@golder.co.nz)  
**Subject:** Notifications Consent Submission: Group 422  
**Date:** Wednesday, 5 June 2019 9:26:32 PM  
**Attachments:** [Quarry-Submission-R-Seddon-Smith.pdf](#)

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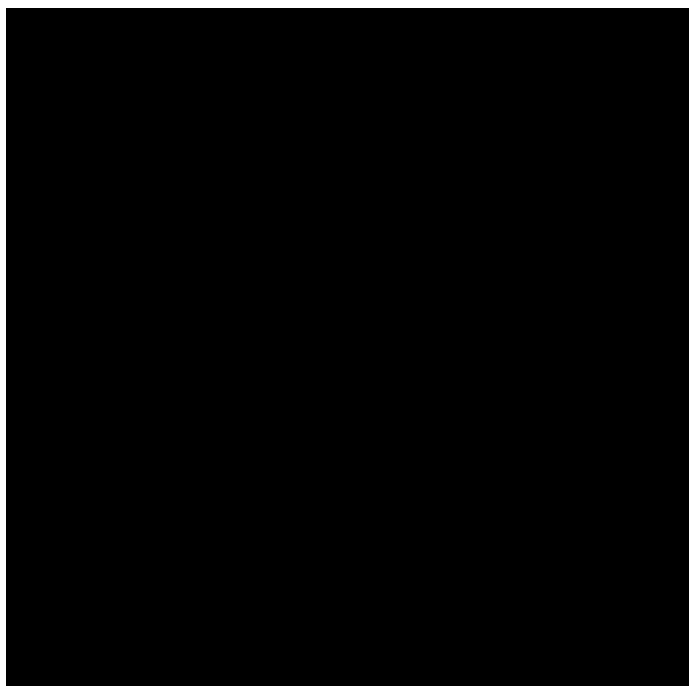
**Group ID: 422**

**Consent name:** Fulton Hogan - Roydon Quarry

**Consent number:** CRC192408, CRC192409, CRC192410, CRC192411, CRC192412, CRC192413, CRC192414, RC185627

**Name:** Robert Seddon-Smith

**Care of:**



**Contact by email:** Yes

**Is a trade competitor:** No

**Directly affected:** Yes

**Consent support/hearing details**

- CRC192408: oppose | WANT to be heard | WILL consider a joint hearing
  - CRC192409: oppose | WANT to be heard | WILL consider a joint hearing
  - CRC192410: oppose | WANT to be heard | WILL consider a joint hearing
  - CRC192411: oppose | WANT to be heard | WILL consider a joint hearing
  - CRC192412: oppose | WANT to be heard | WILL consider a joint hearing
  - CRC192413: oppose | WANT to be heard | WILL consider a joint hearing
  - CRC192414: oppose | WANT to be heard | WILL consider a joint hearing
  - RC185627: oppose | WANT to be heard | WILL consider a joint hearing
-

**Reasons comment:**

Please see attached document This application is for an activity that is inappropriate in its location and places both a nuisance burden and health risk burden on a large nearby population.

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**Consent comment:**

Please see attached document. I recommend that all parts of this application be rejected. I have suggested conditions in the supporting documentation in the event that the consent is approved.

Additional information supporting submission of

Dr. R. Seddon-Smith

Re ECAN applications:

CRC192408 Land use to excavate material  
CRC182409 Land use to deposit cleanfill  
CRC192410 Discharge contaminants into air  
CRC192411 Discharge contaminants into water from industrial processes  
CRC192412 Discharge stormwater into land  
CRC192413 Discharge contaminants into land associated with deposition of cleanfill  
CRC192414 Water permit

Re Selwyn Council Applications:

RC185627 Land use for gravel extraction and processes

Summary:

Objection to the application is based upon the following broad principles:

- This activity materially affects the potential utilisation of the site itself in the future and that of the surrounding land for a considerable period of time.
- This activity will have substantial negative effects on the environment, affecting the amenity of the surrounding area and in particular the existing residential neighbourhood of Templeton.
- This activity will result in the discharge of significant amounts of contaminants into the air and these may have adverse health effects on residents and their livestock in this semi-rural location. Dust discharges can be expected to have adverse effects on the residential amenity of Templeton, over and above that which already exists.
- The potential for contamination of the site through the deposition of cleanfill is highly significant as it would render the land useless after the activity ceases and would be impracticably expensive to correct.
- Water is already over-allocated in the area and the use for quarrying is not a sustainable or appropriate use of the resource. It is not legally appropriate or necessary to transfer the rights.
- There is ample land suited to quarrying located much further from residential concentrations.

Recommendations:

I recommend that this application should be rejected.

The applicant has not demonstrated that the quarry activity is necessary or appropriate, nor that it is consistent with the Resource Management Act. There are a large number of assumptions in the application that are not well evidenced and not supported by effective proposals for management. Experience of other consents in general shows that promises are easy to make, very hard to keep and even harder to enforce.

The applicant is effectively saying that as far as Templeton is concerned:

1. Dust will not be a problem.
2. Noise will not be a problem.
3. Traffic will not be a problem.
4. Water quality will not be a problem.

If the applicant could indeed quarry with this being the case then there would be little cause for objection.

It would be reasonable to impose restrictions on the activity that will ensure that the applicant is able to keep their promises.

Dust and noise levels should be monitored close to residences in Templeton and the surrounds and on the boundary of the property. This monitoring to be conducted to an approved standard by an independent monitoring organisation and overseen by local residents. Dust and noise monitoring should commence for at least 12 months prior to any development of the quarry. Once quarrying begins, noise should not exceed 3db above ambient on average and 5db above ambient for transients.

Dust levels should not rise above ambient levels at all.

Measurements should be made available freely and without restriction in real time online and measurement records should be available continuously free online throughout the activity. After the activity ceases, records should be archived and made available in summary and comprehensive form in the central public library in Christchurch. An annual report on levels should be produced and made available publicly and freely.

Measurement and reporting all to be at the applicant's expense.

In the event that noise levels exceed thresholds, a review should be undertaken at the expense of the applicant and if the noise is found to be coming from the quarry, then activity should be scaled back to a level that does not exceed the approved levels within 3 working days for a first breach and immediately for subsequent breaches in the same calendar year.

Should dust levels rise above ambient expectations for the given weather conditions, or by more than 10% above ambient regardless of the weather conditions then all quarrying activity should cease immediately and urgent additional damping of the site should begin. No greater exposure of the site than that which caused the first dust event should occur at any subsequent time throughout the working of the quarry. If there are repeated breaches then the exposed area should be reduced as soon as reasonably practicable allowing for it to be worked, and then subsequent exposure should be limited to levels less likely to cause dust breaches.

Water quality in the aquifer should be measured hourly. Should any increase in turbidity or contamination of the ground water be noted, all quarrying activity should cease until the cause is identified and remedied.

Water quality reporting should be on the same public and free basis as the noise and dust data.

The registration plates of all heavy vehicles entering and leaving the site should be recorded electronically and physically using video. Records of registrations should be kept indefinitely. Supporting video should be kept for not less than 3 months.

Cameras should record the registration plates of all heavy vehicles heading through Templeton and where this matches the registration plate of a vehicle arriving at or leaving the quarry and not delivering in Templeton, recognition of the breach of the policy should be notified to the Residents' Association and online.

A suitable incentive should be arranged to ensure compliance remains desirable. I recommend a payment of the value of not less than ten times the bulk quarry sale price of 40 tonnes of AP65 (or other agreed punitive measure) be made for every incorrectly routed truck. This money to be placed in a trust fund to support an agreed cause (I would suggest a broad remit of allowing this to be spent by the Community Board on environmental upgrades in Templeton but this is only a suggestion)

I feel that these conditions are reasonable as they are effectively stating what the applicant has stated, but from the perspective of protection of the environment into the future as opposed to assumptions of the effect of various measures. If the measures taken by the applicant have the desired effect then there will be no interference with their operations. If the measures are not effective then their operations will be necessarily curtailed.

These measures will only be effective if the applicant is appropriately incentivised to ensure that they are working. It is generally very difficult to enforce conditions on Resource Consents largely because the cost of gathering information and prosecution is prohibitive.

In order to ensure that the applicant keeps to their promises, I propose that as a condition of the consent, the applicant shall pay a bond to the relevant authority of not less than one million dollars (or if agreed, an appropriate larger sum) which is to be used to pay for matters including:

- The upkeep and monitoring of the noise and dust sensors and the publication of the data therefrom;
- The cost of frequent random site inspections to ensure compliant activity on site;
- The cost of frequent random site inspections to test and check the nature of any cleanfill being used;
- The cost of remediation of any damage caused by quarrying activity (dust excursion, road damage from trucks)
- The legal costs of the councils in enforcing the consent;
- The reasonable administrative costs of the councils in monitoring and enforcing the consent.
- The cost of final inspection of the site at the conclusion of quarrying activity, the legal costs of enforcing remediation, and any remediation required as a result of findings;
- The cost of research into the effects of the quarry activity on local people and the environment

Every year, the fund should be reviewed and adjusted according to quarrying activity. The level required should reflect the value of the amount of product being sold and should increase in proportion to this, thus a 10% increase in sales revenue over a year would require a 10% increase in the fund. The fund should never be reduced.

Should the fund become depleted below 75% of the agreed level, the authority should notify the applicant and require a payment to increase the fund to the agreed level. Should the payment not be made within 20 working days of request, all quarrying activity shall cease until the payment is made. The cost of any enforcement to be paid by the applicant.

Although complex in concept, the requirement of a bond is appropriate in this case. The applicant is seeking to discharge potentially carcinogenic dust and to generate a very large amount of traffic close to a well established residential development. This is not a quarry deep in the hinterland away from where people live. This is a hazardous and disruptive activity very close to the homes of over 4000 people. People who have the right to expect that their neighbours' activities will not affect them adversely.

Further comment:

**This activity materially affects the potential utilisation of the site itself in the future and that of the surrounding land for a considerable period of time.**

The location of this activity on prime building land on the outskirts of a major city will result in the surrounding area being blighted, thus precluding further residential development in an area better suited to it than most.

9000 or so years ago, the site in question was itself the bed of the Waimakiriri River. Since then though, there has been compaction of the soil and it has now developed into fertile if stony ground that is well suited to building due to high stability and earthquake resistance.

Although currently semi-rural, it is likely, even probable that without further quarrying, residential development for Christchurch and the nearby industrial developments would proceed following Main South Road. This has become even more appealing now with the high quality motorway upgrade promising easier access to the City.

A Quarry will blight the entire area for at least 1.5Km from the centre of the site, effectively precluding practicable residential development of the West of Christchurch for at least 40 years. This includes almost all of the unused land close to Main South Road between Christchurch and Rolleston.

The area most affected is almost all underdeveloped and in total, of similar size to the entire CBD of Christchurch. The only developed part is Templeton, which will itself be substantially affected, though this will be covered in other parts of this submission. Christchurch needs room to grow and this land is best used for residential and light industrial purposes. This was reflected in the Christchurch City Council District Plan which designated several Quarry zones closer to the Waimakariri on land deemed more suitable for quarrying.

The damage done to the land will persist even after the quarrying ceases. Although intended to be back-filled, the land will be less stable – it has after all not undergone 9000 years of consolidation and packing – and there is certain to be contamination in any 'cleanfill' used to complete the restoration work. Even once the quarry is gone the legacy of contamination and instability will persist.

I feel that this development is contrary to the Purpose of the Resource Management Act in that it is not compatible with sustainable development both of the site and the surrounding area.

**This activity will have substantial negative effects on the environment, affecting the amenity of the surrounding area and in particular the existing residential neighbourhood of Templeton.**

Templeton is a clean oasis of calm outside Christchurch. My family moved here two years ago seeking a rural environment close to neighbours. We have found Templeton to be exactly what we sought.

Templeton is not perfect. We are adversely affected by the Airport and by noise from Ruapuna as well as light pollution from Christchurch. Our air however is very clean, with almost no contamination and no smog at all.

This consent seeks to place a crushing plant with sound volume equivalent to a loud rock concert close to the homes of four thousand people. The noise is worse in many respects as unlike a rock concert, the majority of the noise is at very low frequencies which penetrate the walls of most homes readily. The noise from Ruapuna is much more readily blocked out though is heard loudly outdoors. Bass noise requires a concrete wall to block out as it will pass through most any other form of sound-proofing. We value our outdoor lifestyle and spend the majority of our time outdoors. When there is racing at Ruapuna though we generally choose indoor activities because of the noise.

The effects of chronic noise exposure can be quite significant, leading to distress and in some cases even long term mental health problems. Once a noise like a quarry has been noticed, even if it is quite faint, it will be perceived as louder than it actually is. This perception is not the fault of the perceiver – they cannot after all help being human. Bass rumble can be particularly disturbing, with some studies suggesting that infrasound rumble may be responsible for the perception of insecurity that leads to people seeing ‘ghosts’

It is a general principle of physics that a wave will not be disturbed by anything smaller than its wavelength. The Wavelength of sound at the lower end of perception (20Hz) is 17m so the pit would need to be deeper than 17m in order to contain this. It is reasonable to expect that the full volume of bass sound in frequencies under 33Hz will escape the proposed containment. 33Hz is perceptible as a note (C0) Infrasound is of lower frequency still and will not be disturbed by efforts to contain it. Resonance within the proposed working pit will provide a greater range of lower harmonic frequencies than might be expected from the core activity and may amplify sound unexpectedly.

The proposals look good on paper but neglect the fact that the most disturbing noise will not be contained effectively.

Transient noises from equipment and processes can also be highly irritating, especially if they are repeated and irregular in occurrence. A regular pounding is annoying, but an irregular and intermittent noise can be nerve-wracking. It is for this reason that barking dogs are so irritating. They stop and start barking without warning and the barking is irregular in occurrence so cannot be predicted and ‘filtered out’ by the mind.

The noise issue is further exacerbated by the use of a mobile plant which will not be protected by the deep pit for the fixed plant. It is to be anticipated that low frequency and transient noise from this machinery will be significant.

I contend that it is not acceptable for any person or company to permit any activity which persistently affects the quiet enjoyment of a neighbouring property. Ruapuna has quiet days to reflect this and is only operative at weekends. Aircraft are noisy but intermittent. Both were here before us and we purchased our property being aware of this. It is up to Fulton Hogan to keep the noise from their activity to a level which is not noticeably above the ambient noise in Templeton.

The nearest part of Templeton is 500m from the property boundary. These residents would have every reason to believe that they would be unable to hear their neighbours so far away. Noise from the quarry should be no louder at their boundary than noise from the main road. Transient noise should be no louder than the railway and aircraft overhead.

It is important to note that the noise perception will depend significantly on the wind. Higher winds and winds blowing away from Templeton will reduce the effects, still conditions and winds blowing towards Templeton will increase them. Quarrying activity will need to be very limited when the wind is still or blowing towards Templeton.

The Environment Court has recently ruled that cumulative environmental effects must be taken into consideration. An area already affected by noise from the Airport and Ruapuna should not be expected to accept noise from additional activities.

**This activity will result in the discharge of significant amounts of contaminants into the air and these may have adverse health effects on residents and their livestock in this semi-rural location. Dust discharges can be expected to have adverse effects on the residential amenity of Templeton, over and above that which already exists.**

Dust production is also a key concern.

The applicant has suggested a number of measures which may reduce dust egress from the site. Some of these, such as spraying roadways are effective but not adequately detailed in the plan and some such as fog cannon are discussed but not detailed at all. Their effectiveness is also highly questionable.

The wind roses provided show that almost all of the expected winds blow towards populated areas. The strongest most prevalent North-Easterly wind will carry soil towards Rolleston and there are a number of properties noted on the dust management plan close by.

The diagram is also a little misleading if interpreted just as an image as it downplays the fact that though the wind more often blows away from Templeton, when it blows towards us it is often stronger, hotter and dryer. This means that on the days when the wind is from the North-West to South-West sector, we are likely to see far more dust egress. The combination of strong wind and dry conditions will lead to dust being blown far more frequently than predicted.

The area of the quarry being worked at any time is proposed to be 29 to 36 Ha. A Fohn wind such as the Canterbury Nor-Wester is hot, dry and fast, requiring a lot of water to be applied in order to dampen ground effectively enough to reduce dust. This is compounded by the winds usually occurring in sunny periods when exposed gravel becomes very hot.

The water permit allows for 9.5L/s and no more than 6772 cubic metres in any 9 days. 30 Ha is 300,000 square metres. In hot, dry conditions such as are common in this area in Summer, it can take up to 4L of water per day to control dust effectively for every square metre or road or exposed gravel. This requires 1200 cubic metres of water to be used daily just to control dust on exposed workings, none of which can be recycled. This is no small amount of water to pump and it is quite unlikely that the applicant will be able to achieve this effectively.

The dust control plan also calls for the planting of tall trees to catch the dust. This might work if the tall trees were there already and did not have to take 20 years to grow. Growth is also likely to be limited due to dry conditions, the disturbed nature of the soil and the very dust that they are supposed to catch. This is itself an issue – in the dust control plan, the applicant says the trees will catch the dust that they are not supposed to be discharging. In such, the application is internally inconsistent, especially as there is insufficient water to control the dust from exposed ground let alone the workings themselves.



Dust leaving the site causes several potential problems:

1. A traffic hazard on the new Southern Motorway Extension.

This is particularly relevant given the wind forecasts that show the most frequent strong winds being north-easterly and blowing directly towards the new motorway. There is a significant risk that large clouds of dust will be blown from the workings onto the motorway.

2. A nuisance.

It is not acceptable for a neighbour to discharge significant amounts of dirt from their property. This is covered in detail in the prohibition of smoke from fires -

“...Smoke does not cause a nuisance beyond your property boundary; and Smoke is not blown towards a township...”

What then is the difference between smoke from a fire, and dust from a quarry. The dust is more harmful if anything, containing considerably more PM10 material than smoke from a fire and also fractions of PM2.5 and Crystalline Silica. Dust is abrasive and occlusive. It is also difficult to remove and causes damage to moving parts of machinery.

Dust discharges coat properties, plants, washing on lines and reduce the efficiency of solar panels. They make going outdoors unpleasant on days that they occur and require substantial cleanup after, especially as they usually occur during dry periods. Canterbury can wait up to 6 weeks between rainfalls during Summer and the dust would be present in the environment all this time.

3. A Health Hazard.

In this section, it is important to understand that I am a registered medical practitioner. My qualifications are MBChB FRNZCGP and my scope of practice includes the assessment and management of respiratory health. I do not claim expertise in respiratory health or silica exposure, but I am qualified to interpret data and make health judgements on the basis of these.

It is accepted that the dust from the quarry activities will contain respirable crystalline silica.

Ramon Pink's statement "Overall, the results show there is no serious public health risk to Yaldhurst residents from airborne dust" quoted in the dust control plan was based upon the study conclusions brought to him. The study was a very short period study of dust from the Yaldhurst quarries conducted during an unusually cool and damp period. There was also evidence of the sensors being tampered with (plastic bags over them) and data collection was at best patchy.

It is also important to note the word 'serious' here – Dr. Pink did not say that the dust did not pose a risk, just that the 'public health' risk was 'low.' There is a big difference between cases averaged over a large population and cases occurring to individuals, and low is not no.

A good example comes from my own practice. A recent study has shown that a common class of anti-hypertensive drug might cause lung cancer. The risk is up to 0.2% per 5 years. Our Cardiology specialists consider this risk to be insignificant, but individual patients almost always ask to change medication when the option is offered. People clearly consider even a tiny risk of lung cancer to be unacceptable.

Crystalline Silica has been identified as a known industrial and health hazard.

In the lungs, air movement as a result of breathing results in a light breeze in smaller bronchi and no physical air movement at all in the terminal bronchioles and alveoli, where gas exchange occurs. Particles of dust that are small enough to be suspended in the air will find their way into the alveoli by diffusion and Brownian motion, along with the essential oxygen. There is no air flow to disrupt them. Silicates are irritant and so when they are present on the surface of the alveolus they result in an inflammatory reaction.

Even small amounts of silica have been shown to cause visible granuloma formation in rats. Granulomas are long-term inflammatory reactions which form around foreign bodies in various tissues. They usually resolve if the irritant is removed. Dust is removed from alveoli by cilia which waft dust upwards in the bronchial tree. Granulomas lock the silica in place so it cannot be removed by the cilia, but as the body has no way to break silica down, the granuloma will effectively be permanent. Enough of these cause respiratory failure.

This has been demonstrated in humans exposed to occupational silica exposure and this is now recognised as a significant hazard in the workplace.

Silica is a possible carcinogen. An increase in lung cancer has been observed in exposed rats, but not mice or hamsters. The effects on longer-lived animal are uncertain.

There is dispute over whether quartz has carcinogenic properties, with some studies demonstrating that it might and others finding no sign of carcinogenic activity.

There have been no studies on children.

Studies have however shown at least reasonably consistently that there is a greater incidence of lung cancer in workers exposed to silica.

Silica has been shown to cause Chronic Obstructive Pulmonary Disease in humans

There is evidence of silicosis-like conditions in horses exposed to air in dusty environments other than those produced by quarrying.

Overall, there is a human health risk from exposure to crystalline silica. The risks are of inflammatory lung disease, silicosis and lung cancer.

The problem is compounded by the nature of silica. It is truly aerosolised and can remain suspended in the air for long periods of time. On hot calm days, it can rise on thermals and remain suspended in the air until dissipated. Unlike heavier particles, it will drift for much greater distances on light breezes and then may be deposited invisibly on surfaces. Simply trying to clear it away may result in significant exposure to the dust as it becomes re-aerosolised.

I contend that the acceptable level of crystalline silica discharge from the quarry boundary is zero at all times. The evidence is overwhelming that silica poses a risk and it is therefore unacceptable for there to be any in the air as a result of a neighbour's activity. It is not enough that there be a low risk of a child developing lung cancer later in life as the result of such exposure. The only acceptable risk to people of any age from a neighbour's activity is zero.

**The potential for contamination of the site through the deposition of cleanfill is highly significant as it would render the land useless after the activity ceases and would be impracticably expensive to correct.**

Cleanfill has to be inert. Sadly it is often sourced from demolition sites which are not always totally clean. Some has been reported to contain asbestos.

If any part of a site is found to be contaminated, it makes the entire site suspect, requiring expensive assessment. Remediation is seldom financially viable and poses as much if not more risk to local populations than the original activity.

It is necessary that the cleanfill is independently inspected sufficiently frequently to ensure that there is no contamination.

Excavation is intended to be within 1m of the aquifer from which local people obtain their drinking water. Any contaminants may leach into the water supply for Selwyn.

**Traffic movements will be significant.**

The application indicates that there should be no traffic through Templeton except for delivery to Templeton.

This is not readily enforceable. A code of practice only has any value if the applicant is able to ensure that it is adhered to rigorously.

The prediction of 1500 trucks per day is probably accurate. It is hard to imagine that drivers will be keen to wait for trains to pass or for access to Main South Road when it would be easy enough to go through Templeton.

The passage of 1500 heavy trucks per day will impose substantial wear on roading over and above that initially anticipated. Whether the roading upgrades proposed will be sufficient to the task should be considered.

**There is no actual need for further quarrying in the area and in particular this location is not ideal.**

Although close to Christchurch, the city is already well served with quarries in the Yaldhurst area.

The applicant's own maps demonstrate that there is ample land available for acquisition in the area, almost all of it far from significant residential development.

There is no need for a further quarry, and no need for there to be a quarry at this particular site.

**Water is already over-allocated in the area and the use for quarrying is not a sustainable or appropriate use of the resource.**

The applicant was well aware of the conditions of the use of water being strictly and explicitly limited to agricultural purposes on purchasing the site. Whilst existing use rights must be respected under the RMA, this is not an application for existing use, rather it is an application for a new and very different use and the existence of a permit for one use does not imply the requirement to grant a permit for another.

Where water is over-allocated as in this case, the only sustainable option available is to decline new use permits for large scale activities. There is simply not enough water to be used for this purpose. The only legally possible option in this case is to decline the transfer of consent – to do otherwise would be contrary to the purpose of the RMA.

It is vital to consider the precedent that this may set. As this is a new use consent, not a transfer of an existing use consent, granting this consent effectively ensures that all new uses must be fairly considered in the same light and this could have disastrous consequences on the aquifer and local water supply.

It is also important to note that a very large proportion of the water taken will evaporate. In agricultural use, water is applied in a way that is intended to replenish ground reserves and much of the water applied is held in organic material or returns to the aquifer. Quarrying is a very different activity, placing effectively between three and four times as much burden on the aquifer as agriculture would for the same water take.

As argued above, it is not possible for the request for transfer of water use to be granted.

In the event that a new consent is to be granted, and the commission feels that the legal precedent this would set is not highly dangerous, the commission should also consider that quarrying places a much higher burden on the aquifer than does agriculture, and the absolute maximum allocation considered should be one third of that already consented for agriculture. Although unwise, granting the reduced consent would at least mean that the effects on the environment from water take would be no greater than that already consented.

#### References:

The following may be of value to the applicant and the assessors:

<https://www.australianmining.com.au/features/wasting-water-on-dust-control/>

<https://www.who.int/ipcs/publications/cicad/en/cicad24.pdf>