

Beyond the Front Gate

Building Communities



Navigating Obstacles

It's a hot, wind-blown late November Christchurch day. Norm Dewes is carefully navigating potholes the size of hand basins and swerving to miss small mountains of accumulated waste. The route is through a ghost-like suburb - no houses, no fences, no flowers, no life. His goal is transformational. He wants this wasteland in eastern Christchurch, shattered by the 2011 earthquake, to become a specialist driver training course. Norm's desire to turn disaster into opportunity for troubled young people is inspirational. It's inspired Fulton Hogan. "It takes only five minutes with Norm to begin to share his vision," South Island General Manager Craig Stewart says. "One of the biggest hurdles to employment for many young people is a driver's licence, and creating a private roading network for driver training will make a big difference. We have the tools and the practical skills to help bring it to reality."

Norm is CEO of Te Rununga o Nga Maata Waka which has a five-year lease on the land at no cost. Fulton Hogan is undertaking road repairs, road-marking and adding signposts, also at no cost. Maata Waka means the 'confederation of all tribes, all nations, all people' and is an approved community services provider for Child Youth and Family, as well as being registered and accredited by NZQA under the

Education Act as a private training establishment. They deliver a range of services in health, education, justice, social services, creative arts, housing, business development, community development, cultural identity and competence, marae etiquette practice and customs. In addition to the many obstacles in front of him on the road, Norm's careful driving may also be explained by his front seat passenger. Caroline Elliott runs the Te Rununga o Nga Maata Waka driving course, where she leads a team of four full-time instructors. Currently training people on live roads, she can't wait for the training track to be ready to go. "I've been round roundabouts the wrong way one time too many and it's terrifying - this will be such an

asset," she says. Norm says the intention is for this to be an asset for the whole community.

"We're working very closely with the community, with the police, judiciary, justice department, Salvation Army, Red Cross, Crown agencies, correction agencies and refugees. There is such a huge identifiable need to give people a leg-up." He also says a drivers licence can be an important step in keeping young, vulnerable people off a path to criminality. "It's a real source of pride to have a drivers licence, and it's a real source of support to have Fulton Hogan stepping in to help young people achieve this. I'm always an optimist, but also realistic in knowing you can't get anywhere on your own - you need a whole community."



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**Fulton
Hogan
wishes
everyone
Happy
Holidays!
Be safe
out there.**

There has been much evidence provided by expert witnesses on the various matters pertaining to the Fulton Hogan consent application. Many of these experts, from both sides of the application have met and formed joint witness statements as to the way in which they have agreed on outcomes of their evidence. Noted here are some excerpts from these expert witness statements.

Evidence from Equine expert

**Dr Alec Jorgensen
BVSC, CERT EP, DIPL ABVP EQ**

With a background of residency training in equine sports medicine and lameness in the USA, and a Diplomate of the American Board of Veterinary Practitioners Equine Specialty; Alec joined Waikato Equine Veterinary Centre (A division of Hamilton Veterinary Services) in 2005. Since then he has had principle responsibility for Sales horses within the practice. With an emphasis on quality, consistency and integrity; few veterinarians in Australasia would annually take, review and report on, as many weanling and yearling radiographs as Alec.

Inflammatory Airway Disease

I agree that Inflammatory Airway Disease (IAD) is a major concern for the health and performance of horses. This is a common condition in the general horse population with similarities to asthma in people. It is my opinion that, airborne silicate particles are potentially inflammatory to the lower airway of horses.

My comprehension of the detailed evidence regarding air quality is that the proposed quarry is not going to fundamentally change the exposure of local horses to silicates, beyond the normal fluctuations and variations encountered in the natural environment. It is my opinion that, horses are constantly exposed to dust and particulates containing silica in the natural environment and in the domesticated equestrian environment. It is also my opinion that, many of our normal practices of husbandry and training elevate this potential exposure.

It is my opinion that, in many instances, if there is a desire to decrease the exposure of

horses to particulate matter containing silica, **the most effective control measure would commence with the changing of practices within the property.**

It is my opinion that the causative agents of IAD are many and varied in the environment and there may be individual genetic predispositions. If exposure to silicates plays any role in the development of IAD, it is likely to be minor and dose dependent. Given that extensive research into IAD has been performed it would be expected that there would be literature and recommendations specifically related to the exposure of horses to silicates. I accept that particulate size alters the potential penetration of particles to deeper in the lung. However, focusing on such minutia of scientific detail risks ignoring the broader, practical perspective which is that silica is one of the most abundant elements on the planet. Horses inhale particulate silicates constantly in the environment. These will be of a widely varied size.

In my opinion the question is not; can silicates of a particular size penetrate deep into the lung and cause inflammation under experimental conditions? Rather the question is; given that horses are constantly exposed to silicate particles in the natural environment and given that despite this, silicates are not recognised as a major contributor to IAD; is the proposed quarry going to increase the risk of the horses in the vicinity developing IAD? In my opinion, it will not.

Pulmonary Silicosis

Pulmonary silicosis is a specific condition of the horse caused by inhalation of silicates from environmental exposure. It is a different condition to IAD. Pulmonary silicosis is extremely rare. Despite constant environmental exposure of horses to silica at varying levels, pulmonary silicosis is only reported in a localised geographical area of California. Pulmonary silicosis, as a disease process, has been linked to an increase risk of stress fractures in horses. In my evidence I disagreed with its relevance in this case. It was agreed by both experts in the JWS that "the risk of the occurrence of silicosis is likely so small as to not be relevant."

The risk of an increase in stress fractures is

linked to the development of silicosis. In my evidence I disagreed with its relevance to the Fulton Hogan proposal. **It was agreed by both experts in the JWS that - as there is no significant risk of the development of silicosis (point 6.) - there is therefore unlikely to be any increase in stress fractures.**



**Evidence from Toxicology expert
Audrey Wagenaar, Senior Environmental Toxicologist from Golder Associates, Canada.**

Audrey has over 25 years of experience in human health and ecological risk assessment (HHERA), human health toxicology, and environmental chemistry. Her technical skills include specialized human health toxicology assessment, human health exposure and risk modelling, development and modification of toxicity reference values, quantitative fate and transport modelling, development of air quality standards, development of environmental health and safety guidelines, and provision of expert advice/peer review and expert witness testimony. Audrey has completed a number of public health risk assessments on US Superfund sites for the Agency of Toxic Substances and Disease Registry, and the US National Oceanic and Atmospheric Agency. She has significant experience conducting detailed quantitative human and terrestrial wildlife health risk assessments to support

environmental impact assessments for mining and other development projects. She also has considerable experience managing complex multi-stakeholder processes involving industrial clients, government regulatory agencies, medical officers of health, and the public. She is also experienced in human health risk communication. Ms Wagenaar is a Diplomate of the American Board of Toxicology (a board certified toxicologist). She was also appointed to the British Columbia Roster of Contaminated Sites Approved Professionals for Risk Assessment and is a Project Management expert. In her expert witness statement presented to the Commissioners she noted that:

Air quality criteria

Based on my review of the health-based air quality criteria and in considering the hierarchy recommended by the Ministry of Environment (2016) (for selection of air quality criteria in the absence of a New Zealand air quality standard or guideline), the criteria which I consider most relevant to the Proposal for assessing discharges of PM10, PM2.5 and RCS, is set out in Table 1 (paragraph 35) of my primary evidence.

Existing health studies for other New Zealand quarries

A discussion on the existing health studies that I have reviewed for other quarries in New Zealand is set out in paragraphs 36 to 49 of my evidence in chief. The Yaldhurst Air Quality Report dated 19 June 2018 prepared by Mote Measurement Networks (Mote 2018) relates to a study on RCS for Environment Canterbury. I have specifically reviewed the 24-hour and annual maximum and average PM2.5 and PM10 concentrations, and the annual maximum and average values for RCS measures between December 2017 and April 2018, with respect to the views Mr Cudmore reaches in his evidence statement. Having reviewed the Mote (2018) study in conjunction with Mr Cudmore's expert opinion that the Yaldhurst gravel quarry RCS concentrations are likely to be higher than those measured off-site in the vicinity of the proposed quarry, I expect that there will be extremely low to negligible effects on human

health associated with potential exposure to RCS, as a result of the Proposal. Mr Cudmore's assessment concludes exposure to particulate matter in the immediate off-site vicinity of the proposed quarry is expected to be within applicable air quality standards and guidelines. In my view, the health risks associated with the proposal are acceptable because ambient air quality concentrations are expected to be below the health-based air quality guidelines for particulate matter. The guideline values for particulate matter are concentrations that correspond to a tolerable level of risk, rather than a completely negligible risk, as discussed in paragraph 48 of my evidence statement.

Rebuttal evidence

In my supplementary rebuttal evidence, I address the human health issues raised in the evidence of 1) Dr Fitch on behalf of N and A McGrath and of 2) Louise Wickham on behalf of the Canterbury District Health Board. My supplementary rebuttal evidence (30 October 2019) with respect to Dr Fitch's evidence is complimentary to Dr Jorgensen's rebuttal evidence and focuses on the applicability of human health air quality criteria for the protection of equine health. I support Dr Jorgensen's suggestion that the human health air quality criteria would be sufficiently robust to also protect equine health, if as indicated by Dr Fitch, that the equine model is potential model for the human syndrome. The key focus of my 5 November 2019

supplementary rebuttal evidence is addressing Ms Wickham's concerns with the recommendations in Section 4.6 of the MFE (2016) Good Practice Guide for Assessing and Managing Dust (MFE Guidelines), on the use of the Texan Commission on Environmental Quality (TCEQ) air quality criteria. I note that the use of the TCEQ criteria for screening needs to be evaluated on a chemical-specific basis in terms of whether suitable documentation is available. It is my opinion that sufficient documentation is available to use the 1-hour TCEQ value for RCS. Through demonstrating this analysis in my evidence (dated 5 November) and based on my understanding of Ms Wickham's proposed approach to worker exposure limits (paragraph 13), I am satisfied with the utilization of TCEQ criteria.

Conclusions of my evidence in chief and rebuttal evidence

Based on my review of the applicable ambient air quality data, the data available in Mote (2018) and the expert evidence of Mr Cudmore, I conclude the potential health risks of the Proposal associated with off-site exposure are expected to be:

- a. extremely low to negligible for respirable crystalline silica; and,
- a. acceptable (low to negligible depending the concentrations off-Site) and not dissimilar to background concentrations in other areas of New Zealand for PM2.5 and PM10.



Internationally, people are becoming more creative in how they adapt and re-use quarries at the end of their useful life.

Carrieres des Lumieres in Southern France, for example, has become a world leading multi-media gallery. With burial space at an increasing premium, Associate Professor of Sociology at Canterbury University, Ruth McManus, believes she may have another re-use option for old quarries.

As useful land becomes scarcer, people become more environmentally aware and new technologies appear, opportunities are emerging for unconventional places to become wonderful final resting places. One of the more compelling options is to use old quarries as they have Iguualada in Spain. An old quarry, Iguualada has been transformed into a beautiful cemetery. It's not unrealistic for us to do the same – to make a former quarry a place of great

beauty and peace for the diverse people whose remains are there, and for the diversity of people who visit to remember, and enjoy to the environment.

Quarries are a valuable community asset during their life - the source of the material we drive on and build with. There's an opportunity to create something from them that meets a permanent need and allows people to 'give back' to the environment in



innovative ways.

Quarries' long life spans – many operate for up to 40 years – means there's an opportunity to take a 100-year-plus view of their future use. If we have the best minds at the table – people who can see old quarries from various and fresh perspectives – culturally, sustainably, environmentally, physically and socially – new and exciting options will emerge.

Professor McManus is an acknowledged expert on death. She is also the co-editor of 'Death Down Under', a series of research papers into significant issues associated with death and dying, disposal, bereavement and memorialisation in New Zealand and Australia. 'Death Down Under' is released in December.

Image left: Iguualada Cemetery in Barcelona

It's a wrap for another section of the Coastal Pathway

A year of work has come to an end with the recent completion of a new Coastal Pathway section, with overwhelmingly positive feedback from the public and passers-by. Fulton Hogan constructed a 780-metre shared pathway for Christchurch City Council, which provides a new seaside thoroughfare for shared path users such as cyclists and pedestrians between the Sumner Esplanade and Shag Rock. It was officially opened at the end of November. Fulton Hogan Project Manager Kieran Davis said this project was different to most other projects, as public feedback right from the start was consistently positive. One resident said the contractors were pleasant to passers-by and responsive to questions, while another said they smiled every time they saw people using the pathway. Davis said it was really nice for the guys on the ground getting that good feedback and getting appreciation for their work. "Almost daily we'd get some sort of feedback whether it was people walking by or people

walking on the beach, giving positive encouragement or just wanting to stop and chat." At the opening, Christchurch Coastal Pathway Group Chairman Scott Babington said he was delighted the section was open. "It's about connecting the people to the sea and that's what it does," he said. Davis said it was a pleasure to work in Sumner and thanked the community for being so welcoming – his crew showed their appreciation with a barbeque and Mr Whippy van on opening day. "Collectively we've built a top quality job which will hopefully serve the community and everyone else for years to come," said Davis. Most challenging to the project was the construction of the 30,000 tonne rock retaining wall as working hours were limited to a window of three hours either side of low tide. Rocks used were recycled from Sumner Road following their removal after the 2010-11 earthquakes or brought in from a local Oxford quarry. Final touches to the project involved the

completion of the car park near the Sumner Surf Life Saving Club and the planting of 15,000 native plants.

Thanks everyone for your support!

