



Beyond the Front Gate

Building Communities



Fulton Hogan conquers a new frontier

Due to the age of McMurdo Station in Antarctica (Est. 1950) and the current importance of undertaking science on the southern continent in an effort to fight climate change, the US Government has decided to invest \$600M USD into McMurdo Station over the next 10 years. This project is focussed on upgrading the infrastructure of the station in order to better service the needs of the scientists and science agencies that regularly work there. This project is called AIMS (Antarctic Infrastructure Modernisation for Science). One of the major components of the project is the demolition of a large number of small buildings on the base and then the construction of some larger (more heat efficient) buildings. The first step in the construction process is to build up a level of Basecourse material. In April 2019 Fulton Hogan Quarries were approached by Golder Associates to offer advice about crushing rock into construction basecourse material at the base. This advice was to be for the United States Antarctic Programme (USAP). Following conversations about how this might work, the USAP (via their subcontractors) formally invited Fulton Hogan to quote supplying labour to McMurdo Station to run a material crushing operation. At the same time they also invited Fulton Hogan to be subject matter experts as quarrying and crushing

consultants. As part of the investigative process, and as part of providing consultancy to the USAP Fulton Hogan sent two quarry managers down to McMurdo Station to view the proposed extraction site and to report back. In October 2019 Fulton Hogan sent Mike Earnshaw, Quarry Manager, Miners Road, Canterbury, and Gavin Hartley, Quarry Manager, Blackhead Quarry, Dunedin to McMurdo. Mike and Gavin spent six days on 'The Ice' getting to know everything about not only the crushing site, but all the support teams and services provided in McMurdo along with life at the Station. The experience helped to paint a picture for Fulton Hogan management of what to expect

should Fulton Hogan need to send further employees to McMurdo. The feedback from the station and the operations undertaken was very positive, with both Mike and Gavin confident that any future work can be very satisfactorily completed. It was from this information, and months of planning behind the scenes that has led the Fulton Hogan board to sign off on the project and open the pathway to moving forward with the project. Fulton Hogan is in the throes of planning the first crushing labour deployment to Antarctica and are excited to see where this projects leads.



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Aggregates are fundamental to the lives of New Zealanders. Roading, building and agriculture rely on the continuous supply of suitable quality aggregates from a quarry source close to the area of demand. New Zealand has one of the highest rates of aggregate consumption per capita in the world, at around 8-10 tonnes per person per annum.

Ensuring sources of aggregate supply are located close to the end user ensures they are cheaper and cleaner to deliver to the customer. Ideally, a quarry is located in an area of high-quality rock, close to transportation infrastructure and the end users that it serves. The realisation of the importance of aggregates, combined with the negative effects of reverse sensitivity have led many authorities to protect potential future aggregate sources from conflicting land uses.

Forecast local demand for aggregate

Forecasting looks at historic trends for aggregate consumption in Christchurch and concluded that the most reasonable average consumption per capita going forward was 9.6 tonnes per annum per person. This was based on the average consumption between 2000 and 2017. Christchurch's "Our Space" document was used for the forecasted growth of 150,000 people in Greater Christchurch between 2018 and 2048. This growth was then matched with the aggregate consumption per person, giving aggregate demand of a low of 5.1 million tonnes per annum (Mtpa) in 2021 up to 6.3Mtpa in 2048. The area of land required to provide for this aggregate consumption, noting that Christchurch's land-based gravel extraction is shallow (average 8m depth) to protect

the underlying water table. To 2048, almost 1000ha is required at the predicted rate of 9.6t per person (roughly twice the size of the Christchurch CBD). Roydon quarry's proposed 150-170ha if consented would only add 5-6 years to the aggregate supply for Greater Christchurch. While this may seem like a short duration on its own, it increases the current 25-year supply duration by 22% and provides additional time for new resources to be found, consented and developed.

How that demand could be met

Four quarries have been fully consented since Mr Bill English's work in 2015 when he calculated 130Mt of aggregate resource remaining. These four new consents have added a total of 17Mt to the consented gravel volume in the Greater Christchurch area. If no further quarries are consented in Greater Christchurch and aggregate demand continues as forecast, the total supply of aggregate is likely to run out around 2044. However, this does not highlight the imbalance of resources. As quarries with shorter lives are exhausted, the sites with larger reserves are put under pressure as demand on them increases. For example, the last two quarries supplying greater Christchurch would have the highest sales volumes in New Zealand. Ironically, the area of Christchurch with the least proximate aggregate reserves is its south-west (Halswell, Prebbleton, Lincoln and Templeton) which coincides with strong housing demand. If a 30Mt resource like Roydon were consented in say 2020, the predicted exhaustion of aggregate supply is around 2049. A site located similarly to Roydon in the southwest of Christchurch also helps to address the imbalance of consented

aggregate resources. River extraction is likely to continue to provide only a small portion of Greater Christchurch's aggregate needs. River extraction is less reliable than land-based extraction due to flooding and bird nesting. Recycled aggregate is unable to provide a large proportion of aggregate demand due to lack of input materials. Even during the post-earthquake demolition and reconstruction, Mr English found only about 25% of quarries' output was coming back as fill. Other options to provide for Greater Christchurch's future aggregate needs are to consent other more-remote resources or even bring in aggregates from outside the area. This is much less desirable as it decreases cartage efficiency, contributes greater air pollution and leads to higher costs to consumers.

Assessment of the benefits of the Proposal in meeting that demand

The Roydon quarry proposal not only extends Greater Christchurch's aggregate reserves, it meets several other criteria making it highly desirable as the location for a quarry:

- a. It is close to the concentrations of end users, i.e. Templeton, Prebbleton, Christchurch City;
- b. It is close to highway transport and power infrastructure;
- c. The resource is of suitable quality;
- d. The parcels of land are large enough to warrant the large investments involved;
- e. There are limited neighbours within close proximity to the site; and
- f. There are no significant heritage, cultural or ecological overlays or values pertaining to the site.

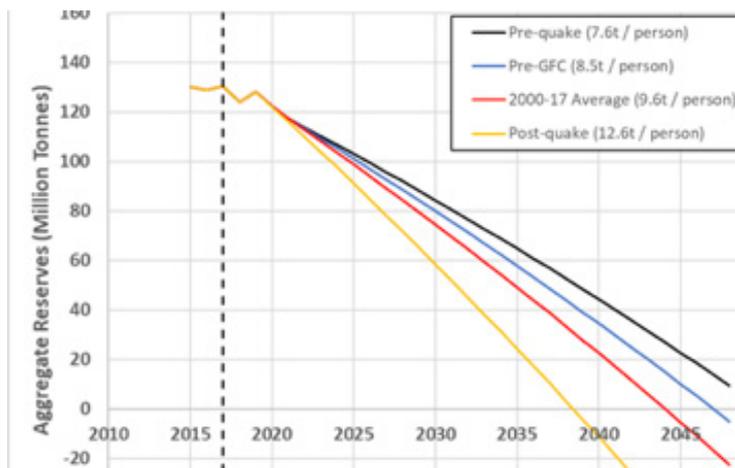


Image left: Forecast aggregate reserve depletion

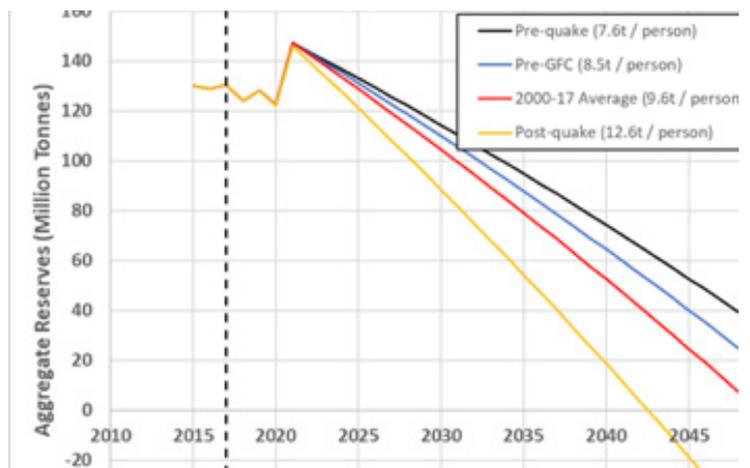


Image right: Effect of consenting a 30Mt resource in 2020

Staff Interview: Quinn McNab



Our editor sat down with Canterbury Quarries Development Manager Quinn McNab to have a conversation with him about how he came to be working at the quarry and what interests him.

Quinn where did you grow up and how did you become interested in quarries?

I grew up on a farm in Mayfield, which is about 20 minutes north of Geraldine. There was a lot of heavy machinery on the farm and I had a keen interest in driving the machinery, starting with the silage trucks and progressing to anything that was on the farm in the way of heavy machinery. I managed to obtain all the necessary licenses that were needed for these vehicles. After finishing high school I went to Canterbury University to study, where I graduated with a BSc, majoring in geology. In the university holidays I secured a job at Fulton Hogan driving diggers and loaders, I was lucky to fulfill every boys dream to have these big "toys" available to use every day. I was working mostly at the Pound Road Quarry and I spent the last two years of the university holidays at the quarry and also working on the portable plant.

It was during this time that I met Jared Johnston who was the Quarries Divisional Manager. Jared seemed to take a shine to me and suggested that I look further into a potential future working in the quarry industry. After I graduated in 2015 I did small projects around the quarry and some of that project work included decommissioning of the crushing plant in Greymouth, financials and physical work building bunds and so on.

How important do you think it was to have a mentor like Jared?

It is very important to be mentored, especially by Jared as he has a really good eye over the whole business. Jared has a double degree in law and commerce and he has a very broad understanding of business, he could see the potential in me. We had a lot of discussions around career potential, it was hugely formative, and I am indebted to him for where I am today. It has been great to have someone within the business, who has a lot of foresight, to see how my personal goals and ambitions could fit within the business need, and who

could also guide me onto that career path. It gives you a huge amount of confidence in yourself when you have someone like that advocating for you, but also confidence in the business that they do value you and want what's best for you.

How did you go from starting off doing various projects around the plant to moving through the ranks so to speak?

I was first involved in the quarries retail operation as the department manager looking after three sites, post the earthquakes. A big part of this role was to decommission and rehabilitate a number of sites that had been set up for the earthquakes, I did this for about eight months. I then moved into portable crushing operations, where we operated five portable plants and up to three supporting plants. Portables were a big part of the operation after the Kaikoura earthquake, Fulton Hogan had a really big footprint there with the portable crushing operations. We undertook a strategic planning analysis around the portable plants and what the operation would look like in 15 to 16 months time, my role was rationalising this part of the business. In April 2019 I was appointed Quarries Development Manager. The main part of my role is to support the Quarries Divisional Manager and to work closely alongside the various quarries and portables as to what the potential is in their day-to-day operation.

For someone so young, it seems like you've been on a pretty stellar career trajectory at Fulton Hogan.

Yes I'm really grateful for the career prospects that have unfolded in front of me. I would like to do a masters degree in the future and fortunately Fulton Hogan have an opportunity to have a career break, so that's something I will think about as I move forward in my career.

What's it like working with a bunch of people from very different paths in terms of how a quarry operates.



The thing I really enjoy about working in quarries is that in your day-to-day you interact with people from all walks of life who are experts in their chosen area, and are passionate about where they work and what they do. From driving loaders, driving trucks, working at the crushing plant, planning for maintenance and rehabilitation, operating the highly technical computers for the crushers, it's a real cross-section of people. My workmates have become really important to me, they are really open and honest people, in fact brutally so at times. But ultimately this has made me a better person, as you have to be confident to make decisions based on a strong mind-set. The team will always challenge you, and I hope that they feel like they always can, because that's what I think makes us such a strong team.

Judging by your comments it sounds like you're really enjoy your day to day job and you see quite a long future with Fulton Hogan.

Yes very much so, I'm really happy, I love what I do. I love coming to work every day seeing my mates, working closely with them. Working at Fulton Hogan can be a "sink or swim" situation, you can't just cruise around on low revs, you have to aim to do great things every day.

Riccarton roadworks paused in the lead up to Christmas

Fulton Hogan made the decision to pack up their road cones from Riccarton Road to allow for a roadworks-free December.

Work to upgrade the road between Harakeke and Matipo Streets stopped from the 2nd of December. Crews started back just after the New Year with pipe renewal at two major intersections – Straven/Clarence and Riccarton/Matipo – and reconstruction of part of the road from Division Street to east of Matipo Street.

Approximately 70 percent of the project is complete so far. The project's expected completion date has been brought forward four months to August 2020, following the four-metre-deep sewer and water pipe replacement tracking well ahead of schedule.

About 90 percent of the sewer and water pipes have been replaced and half of the roading remains to be completed. Streetscaping such as

the tree-lined centre median, landscaping and a final asphalt layer will take place following this.

A number of temporary car parks were introduced along Riccarton Road for the Christmas break, they are unrestricted so will not be monitored by parking enforcement. Temporary footpaths have also been laid opposite Rimu Street to preserve the area. This footpath will be removed and replaced with pavers, trees and street furniture over the next few months.

The 2019 year for the team ended with a collective effort to wash down several of the local businesses' windows along the Fulton Hogan work site – we want to say a big thank you to every one for their continued patience and support over the last ten months.

We hope that you have had a safe and enjoyable holiday period!

