

Rocktec Innovation Award Report for 2010

(8 -17 August 2011, Gavin Hartley)

A number of telephone calls and emails had lead to this day, with the journey beginning at last years QuarryNZ conference in Napier where I was the recipient of the Rocktec Innovation Award. Rocktec had filled the void in the IOQ Awards vacated by Komatsu. The Rocktec Innovation Award allowed the recipient to travel, to further their knowledge in the quarrying industry to a very generous sum of \$5000.00. Rick Johnson CEO Rocktec wanted to acknowledge and foster innovation in the quarrying industry. The same innovation that lead to the development of one of the first VSI crushers 'the barmac' by Jim Macdonald and Bryan Bartley.

My first flight of many, departed Dunedin 15 minutes late but arrived on time in Auckland, I was hoping this was a good sign for my remaining journey. The study tour, I had arranged in collaboration with Rocktec comprised a tour of quarries in Victoria, South Australia and Tasmania. The tour included various operations with various owners including Fulton Hogan, Hansen, Boral, Southern Quarries and Hazellbros, another example of being a member of the Institute of Quarrying opening doors or in this case opening doors through the Institute of Quarrying Australia.

I am often asked why should I be a member of the IOQ NZ Inc, being the current president, I should immediately reply with a pre rehearsed speech, on the numerous benefits we offer our members. Although typically my response is to highlight the opportunities our members have to network and meet like minded people, be it at branch level, our annual conference, or more commonly in your site office or quarry face. Membership is often a personal choice and like life in general the more you put into it the greater are the rewards. The deals that have been done or the secrets that have been shared, some times at the bar between IOQ members are legendary. A price can not be put on this type of fellowship but in my eyes it is worth every penny of the subscription.

The Auckland to Melbourne flight left 20 minutes late but arrived 10 minutes early, although we didn't get off the plane for another 20 minutes as they had a faulty air bridge. Customs was a breeze, no gecko's or duck tongues in this traveller's bag. I had a rental car booked from Hertz, so you would think the pick up process would be easy. No it wasn't, I now believe rental car people are worse than car sales men.

Normally I like driving, but not in a strange location or in the dark or especially when it is raining, yes you guessed it, by the time I hit the road, it was my first time in Melbourne at night and raining. No problem I had a GPS it will direct me the 3 km journey to the Ciloms Airport Hotel (a very clean hotel with all you need, at reasonable price), boy was I mistaken, twenty minutes later I arrived at the hotel. Once booked in I was about to find my room when I was bounced upon by a jumped up madam telling me I had to fill out a census form, yes I had arrived on Australian census night, oh joy. Now I'm not a fan of the big brother scenario, even in NZ let alone when I'm visiting a foreign country for 8 days.

My tour of hard rock quarries began the next morning.

Tylden Quarry (Victoria)– Fulton Hogan

Tour by Todd Frith, Quarry Manager and Josh Blain, Quarry Supervisor (ex Pound Road Quarry)

The plant configuration was - LT105 Jaw, LT1213 Impactor, LT300HP Cone and 7150 VSI, with various screens. Mobile plant included - two WA470 wheeled loaders, Hyundai 770 wheeled loader, ZX470 Hitachi excavator and 771 dump truck. The plant has the capacity to produce 400 000 tonnes per year.



The quarry is a basalt rock that is formed in four distinct flows and is one of the oldest quarries in the area operating for the last 83 years by a family, prior to FH taking ownership.

The quarry has a great location in an area of no other quarries with the down side being it has a ring of quarries around it about 80 km away. Like quarryman generally do we have to realign a creek around our quarries as the best rock is always in the middle of a creek bed and Tylden is no different. Their environmental issues are no different from other quarrying operations and include negotiations with neighbours and the indigenous people.

Carisbrook Quarry (Victoria) - Hanson

Tour guide Dave Walker, Quarry Manager

Dave is one of the good buggers of the industry, old school knows his quarry inside out and gets the best out of his plant and people. The quarry works a single bench of basalt rock



covered by 3-4 meters of overburden and underlain by second class lava flow, with a high water table.

Rock is loaded on to Cat 773 dumpers using a WA600 Wheeled loader feeding a Pegson jaw crusher the plant has a Jaques secondary gyratory and Kawazaki KFS1000 tertiary with associated screens. Some products are dropped in bins while others are stockpiled on the ground. The plant has a capacity of around 250 000 t per year.

Dunnstown Quarry (Victoria) - Boral

Tour guide Peter McComb H & S officer

The plant has just been commissioned about a month ago having been built by Rocktec, they are currently ironing out the bugs of a very modern well laid out plant. The Basalt rock is blasted and fed into a mobile C125 jaw with a Cat excavator the primary crushed rock is discharged on to a field conveyor system, using a combination of Metso and Rocktec products, what surprised me was how quiet the field conveyors were you had to look hard to know if it



was actually going. Boral are currently working to a LEAN process, a system to identify the best way to carry out their operations to a high quality, safely, at the lowest cost. The plant has a capacity of around 650 000 tonnes per year. Boral's spending did not stop on a new crushing plant but also included a budget for environmental work and rehabilitation of worked out areas. One of the innovations that had been incorporated in the plant was the use of hydraulics to move screen chutes out of the way for screen changes.

One of the interesting observations I made was in NZ we have our hard rock quarries located on prominent hills well in the view of the public, of the three quarries I visited today unless you were looking for them you wouldn't have known they were there as they were basically excavated into a flat paddock. All appeared to have issues with the water table, being just below the current quarry floor and as a result the quarries have large foot prints. All three were still dealing with water from record rain fall and flooding that occurred in January 2011. The day was interesting, the weather didn't play its part with a temperature of 10 degrees, overcast and drizzle at times, my trusty GPS only let me down once, unknown to me there are two Yendon Roads in the area of Moorbool, Victoria and my luck I went to the wrong one first.

I stayed in Ballarat that night before driving to Adelaide the next day, the weather slowly came right the closer I got to Adelaide getting to 16 degrees. I slightly regretted the decision to drive to Adelaide as one of the most exiting things on the drive was the change in sealing chip colour from basalt to granite a light brown colour and glisten in the sun along the way. Being a quarry man I didn't stop at points of historic significance, I stopped at road side stockpile areas to have a look at these chips, as they don't wash them they are very 'dirty' compared to NZ.

They also have issues with aggregate being contaminated with seeds like in NZ. I also stopped at a road construction site where I seen the site foreman bouncing a wooden stick on the newly compacted aggregate sub base he swore by this method that had never failed him, the stick showed him if the sub base was compacted correctly it was a combination of bounce and sound???

I really enjoyed the city of Adelaide all the footpaths were all made of pavers, some more level than others no good for those of you that wear stilettos. The economy must be good as there were a number of tower cranes working in the CBD building new multi storey buildings. While in Adelaide I stayed at the Franklin Central Apartments, a great central location, clean tidy and at a reasonable price as I got a deal that included breakfasts.

Sellicks Hill Quarry (Adelaide)- Southern Quarries.

Tour guide Brett Brown, CEO and Trevor Smith, Quarry Manager Rocktec had carried out some work on the new plant at Sellicks Hill Quarry for Brett and they had formed a great business relationship. Brett is the type of bloke where nothings a problem he went out of his way to look after me while in Adelaide. The quarry has a number of rock types present. The main two currently quarried are a shale and limestone. When the quarry expands it will start excavating yet another high grade limestone it has a amazing 150 years plus of reserves at around 450 000 tonnes per year. Primary crushing is by a C140 jaw to a large surge pile.

Secondary crushing is carried out by HP400 and two HP300 cones while tertiary crushing is done with a Barmac. Rocktec built the tertiary plant and helped with the secondary. The quarry works to a number of environmental conditions one is to meet a visual criteria from four locations down on the lower area in front of the quarry. The quarry has made a huge effort to screen the operation with a large earth bund formed with imported material as there is no stripping material on the site, the rock starts at ground level with no weathering of rock near the surface.



An interesting innovation in the sand plant is the use of an air separator basically a large fan inside a large cyclone minus 5mm is added to the top of the cyclone the fan sets up a flow in the tank and the 75um is separated out as a agg lime and the remaining sand is used for concrete aggregate. The fan speed can be controlled to give the required end product, feed material can have up to 5% moisture. In Australia they don't wash any chips or manufactured sand because of the lack of water in most locations and their customers are accepting of the end products.

White Rock Quarry (Adelaide) - Hanson Mike Harvey, South Australia Quarry Manager. The quarry is a quartzite rock located within a national park, has a creek running through the centre and some time lost walkers and rock fossickers, wandering around the quarry, so they have an interesting time. The quarry also has to meet visual criteria from the city of Adelaide and close neighbours. Rock is drilled and blasted by quarry staff and loaded onto truck with WA600 Wheeled Loader. The quarry has been worked for about 70 years and has approximately 15 years reserves left, it can produce around 450 000 t per year. This is quite an achievement with an ageing plant perched on a side of the hill. The screen house is new as the old one burnt down some years ago the new shed was built over the existing product bins. Again from a distance the quarry can be seen but once you get close the quarry is well screened by the natural topography.



When leaving the Franklin Central Apartments in Adelaide at 5am on Sunday Morning I must have still been half asleep as I left all my travel documents in the hotel room, I only realised just before boarding the plane to Hobart, via Sydney for some reason. This made life interesting as I knew I had a car booked but all other info was still sitting in my room in Adelaide. Thanks to the staff at the Franklin Central Apartments they gave me all I needed to know over the phone, phew.

Hobart has three hard rock quarries within 25 km of the CBD they are owned by three different operators. The reserves of all three quarries is beyond 100 years these resources are huge. The population is approximately 230 000, with a market size of around 2 million tonnes per year the only problem is permits for quarrying are only issued for a maximum of 30 years.

Lindisfarne Quarry (Hobart) –Hanson

Lindisfarne Quarry is a Dolerite, dolerite is not commonly quarried in the world as it has limited outcrops. Due to the rock being quarried from a pit this was the only quarry that used an excavator to load trucks a PC 600-8 loaded Cat 773 dumpers. In the near future the quarry will expand back into the hill, an innovation in method will be the use of a down hill conveyor, now this maybe not that unusual but the quarry is going to use the conveyor to produce electricity to power part of the crushing plant. Current production is 200 000 tonnes through a 42 x 30 jaw, Jacques C50 and canica for fines and shape. The quarry has an older plant but one of the best set up control rooms I have seen with excellent views of all



crushers, screens and conveyors. They have a concrete plant on site along with an asphalt plant run by Downer EDI. The plant produced very little fugitive dust unlike many of the other plants I visited. (Most would not survive in NZ, as regional councils would be obliged to shut them down) Again the quarry originally had a creek running through the middle. Aggregate is loaded out with a WA420. Frank Carpenter, Hanson Quarry Manager and Tassie IQA Chairman coordinated my trip in Hobart, I would like to thank him and his team Mick and Brian for there great hospitality.

Bridgewater Quarry (Hobart) -Boral
Mike Pilcher – Area Manager South Tasmania. This quarry reminded me of Blackhead Quarry with the rock in the quarry almost exactly the same. There is a concrete and asphalt plant on site. Rock is blasted and loaded with wheeled loader on to trucks feeding a 30 x 42 jaw, secondary and tertiary cones and an Auspactor (similar to barmac, canica) with open rotor. Like many operations they have a pug mill for road base their pug mill had a stacker conveyor that meant they had great flexibility for customers needs they just moved the conveyor changed recipe and could have a ‘to Spec’ product in a stockpile within an half an hour. The control room is the only one I have been in that has shagpile carpet on the walls very retro, obviously built in the 1970’s



Hobart Blue Stone Industries (Hobart) - Hazellbros

John Serburd – Business Manager, was my tour guide a very motivated passionate man. Hazelbros is a local family owned company, based in Tassie but also operates in Victoria. HBI also quarries a Dolerite rock a great quality rock with very little stripping and minimal weathering profile. The plant is about two years old with PLC automation. Blasting was carried out by contractor, rock was loaded with WA 600 on to 35 t Komatsu dumpers. The quarry is located 15 km from the CBD. Although they have a massive rock reserve, Hazellbros also carried out recycling of construction waste, they have also started crushing glass to minus 4mm as an additive to basecourse and sand substitute, like NZ they have limits on percentage of crushed glass into aggregate, so they will probably end up with a mountain of glass like many sites in NZ.



In Hobart I stayed at the Fountainside Hotel, if you didn't mind a bit of traffic noise from the roundabout outside the window it is another great hotel, at a fair price, clean and tidy, with one of the cheapest meal and mini bar prices I have come across. Full cooked breakfast \$10.80 and three course diner for \$19.80 the food was good as well.

I would like to thank a number of people that made the trip an experience of a life time, Diane for allowing me to go away and holding the fort while I was away, it's not that easy when you have a young family, deciding you want to go on a study tour in Aussie. To Blackhead Quarries Ltd for their support for the study tour and my role as IOQ President. The IOQ for making the awards available to it's members, a special thanks to Rick and Rocktec for providing the Innovation Award of \$5000, this is a significant sum of money that comes straight off their bottom line. Lastly to the many quarryman who took time out of their busy life's to show a kiwi how they crush rocks.