The power of three

Winstone Aggregates operates three complementary sites within the Wellington region.
General Manager’s Comment

As calendar year 2010 nears an end we can reflect on a successful year where we have managed to hold our performance under very tight market constraints whilst delivering on key projects throughout the country. We reflect on the tragic events at Pike River with disbelief but are mindful that the efforts we put into safety are for a very real reason.

The outlook for the next 18 months is still very uncertain and it won’t be until well into 2011 before we get a handle on whether our core markets have started recovering or whether we are into a sustained lull in activity. Regardless of market conditions the pressure will remain on as we feel increased cost pressures in varying areas, none the least in our consent compliance costs. In 2010 we have maintained over 200 consents with some 3000 consent conditions which all require processing and reporting on.

The highlight for me this year was recognition from Fletcher Building at the Annual Safety Awards on Sustained Health and Safety Performance. This is great recognition along our path to Zero Harm and reinforces our actions to date. We still have a long way to go but I am happy that the disciplines we stick to and the rigor with which we look at our options and assess risk will ensure we will ultimately reach our target.

A major part of our being able to maintain performance has been our commitment to diversifying our business activities throughout the downturn. It has been a great year for extending our bulk cartage capabilities across into other parallel businesses to provide competitive proposals in the areas of cement, fertiliser and recycled materials cartage. We will continue to expand along these lines in the years to come as Winstone Aggregates picks up more of what used to be core business.

It has been a great year for recognition of environmental performance with excellent recognition of our efforts by the Aggregate and Quarry Association and more recently by the Greater Wellington Regional Council/Department of Conservation — Encore Awards. On the ground we have carried out significant works at a number of our sites with the planting of approximately 50,000 trees and with pest control resulting in significant benefits for our rehabilitation work.

Our continued activities in biosolids management, steel slag recovery and more recently our new Commercial, Construction, Industrial and Demolition Resource Recovery (CIDRR) operation at Kumeu have been a great continuation of our resource recovery strategy. The CIDRR plant is in its commissioning stage with an official opening due in February next year. This impressive facility is the only one in New Zealand and will be processing up to 150,000 tonnes per annum of waste to recover up to 75% for reuse.

A cornerstone of Winstone’s strategy is excellent customer focus and quality management.

We commenced a review of how we deliver customer service throughout the latter part of 2010 and I am looking forward to implementing new processes in 2011 to service our customers to an even greater level.

Throughout 2010 I have had the personal privilege of being involved in Leadership New Zealand, which is a 10 month course focused on creating opportunities for conversation with some of the country’s greatest leaders. This forum is structured to get to the core of the real issues and opportunities facing our “Lucky Country”. It has been a great eye opener into many facets of New Zealand society that I would not normally be exposed to. My major takeout has been the compelling need for all to get involved with their communities and take responsibility for having the debates required to get this country focused on what is important to it — A Vision, and how we are going to get there — A Long Term Sustainable Strategy. If we don’t, we are destined to continue our gentle slide into a greater state of misguided comfort where more and more decisions will be made for us offshore by those who see our future differently to us.

I would like to thank you for your commitment to Winstone Aggregates over 2010 and wish you all a safe and enjoyable Christmas and New Year.

BERNIE CHOTE, General Manager
Puketutu Island Cleanfill is using X-Ray technology to detect the presence of heavy metals in incoming material.

X-Ray Fluorescence technology (XRF) has been in use at Winstone Aggregates’ Puketutu Island Cleanfill site since early 2008. The equipment was initially used for site pre-acceptance investigation purposes — to ensure incoming material was compliant with acceptance limits.

But since a Puketutu Island Fill Management Plan change in March 2009, the equipment has been used in a full-time capacity. The XRF is now used to test acceptance of the first load coming in to Puketutu Island Cleanfill from any unapproved site with material quantities of less than 200m³.

The technology uses X-Ray detection to identify the presence of heavy metal concentrations in soil samples. Typical metals detected include Arsenic, Chromium, Mercury, Nickel, Lead, Vanadium and Zinc.

The machine does not detect hydrocarbons or pesticide content. Rather, the site uses the XRF machine as a pre-acceptance screening tool, a mechanism that site manager Tony Carpenter says, “greatly helps us to meet environmental compliance measures when accepting material on site from smaller operations.”

Winstone Aggregates’ Auckland Laboratory also has an XRF machine, typically used for on-site acceptance.

Due to the radiation exposure hazards involved with X-Ray Fluorescence technology, all operators go through an intensive training course to ensure they’re well equipped to deal with the hazards involved before they are approved as XRF operators.

Supporting Research

Winstone Aggregates has been supporting engineering students from Auckland University with their research.

The studies investigate the enhancement of zinc removal from stormwater using permeable pavement systems.

Greywacke basecourse and crushed concrete sub-base systems have been assessed with both studies concluding that the addition of natural perlite and raw zeolite appears to enhance the removal efficiency of both systems.

CTB case study on DVD

Hot on the heels of the SH20-1 project completion, Winstone Aggregates has produced a DVD case study based around the project’s use of Cement Treated Basecourse.

If you’d like a copy of the DVD, please let us know by calling 09-525 9307 or emailing info@winstoneaggregates.co.nz.

Waikato’s Waka Ama river-base now open

The Waka Ama project, sponsored by Winstone Aggregates is a community focused project based on initiatives and educational programmes that will improve and enhance the health and wellbeing of the Waikato River.

The programme endeavours to provide opportunities for Maori and the wider community to learn and understand aspects of river culture and collective responsibilities as guardians of the river environment.

Situated at the old Winstone Aggregates landing near the Tuakau Bridge, the Waka Ama river-side base was officially opened in October.
Leighton Works

Makes the connection

Forming the southern section of the Western Ring Route, a new 4.5 kilometre motorway replaces Wiri Station Road as the main link from Manukau city centre to the Southwestern Motorway. Construction began in June 2006 and is almost completed with the motorway opening progressively since August 2010.

The NZTA motorway project has been constructed by Leighton Works, a joint venture between Leighton Contractors and Downer EDI Works. Valued at an estimated $210 million, the new motorway link is made up of two lanes in each direction. The design also allows for a third lane to be added to each side in the future, giving six lanes in total.

Within this section of motorway, two interchanges at Cavendish Drive and Lambie Drive are included — as well as motorway-to-motorway connections to SH60 and SH1 at Manukau City. The work includes five motorway crossings over local roads and streams, as well as the main North Island rail line.

The project also includes preparatory work towards the construction of a rail link to the Manukau city centre from the main North Island rail line. A Manukau City Council and KiwiRail funded project, it will form a 1.8 kilometre connection between the existing main trunk line at Wiri and a new station at Manukau city centre.

Looking west towards the Auckland International Airport, October 2009
The SH20-1 project saw the largest plant mixed, cement treated basecourse (CTB) application in New Zealand’s infrastructure history. While often used in Australian projects, plant mixed CTB is a relatively new concept in New Zealand.

Developed by Australian engineers Golder Associates, and based on the specification published by VicRoads Section 815 Cementitiously Treated Crushed Rock for Subbase Pavement, the CTB pavement design utilised a GAP20, typically more common in Australian road design. A GAP20 product from Hunua Quarry was specified with a 3% cement blend. Optimum moisture content (OMC) was targeted with a tolerance of ±1%, tested using a nuclear density meter (NDM) at each load.

A high level of quality assurance for the project encompassed a comprehensive management plan, developed by Winstone Aggregates, to document the production, testing, reporting and delivery procedures. In total, more than 55,000m³ of CTB has been placed in the project.

The numbers:
- Over 220,000 square metres of road pavement
- 344 super T beams
- 12 bridges
- 7 sediment ponds to collect and treat storm water
- 16.8km of drainage
- Over 1,000,000 cubic metres of material moved
- Over 110,000m³ of GAP65
- Almost 240,000m² of brown rock

“Cement treated basecourse was all new for us” says Pavements Foreman Andre Wildes, “so we couldn’t believe how quick it was to put down. Sections we’d normally have spent four days on, were completed in two.”

Being a moisture sensitive product, when Leighton Works had the opportunity of a dry day, Winstone Aggregates regularly ran up to twelve trucks to meet site demand.

PAUL BOYCE Account Manager, Winstone Aggregates and ANDRE WILDES Pavements Foreman, Leighton Works.

To complete the motorway project, the Leighton Works team have demolished a stretch of the old SH20 route and realigned the Puhinui Stream to allow for the construction of the Roscommon-Puhinui connecting road, a task that has involved a series of challenging tasks.

Excavation work began by carving out a new path for the Puhinui stream alongside the existing stream. At each end, a steel sheet pile wall was installed, acting as a dam, to keep the existing stream out of the new channel until required.

Following completion of the excavation, the sheet piling was removed allowing the new stream to fill with water while the old stream drained. As the old stream drained, the fish were rescued and relocated under the supervision of fresh water ecologists. During the project, over 1,000 specimens of aquatic life have been relocated.

Now that the stream has been diverted, construction has begun on the final connecting road linking the Cavendish and Puhinui Interchanges. The soft ground beneath the old stream will be removed before placing over 20,000 cubic metres of material, starting with a layer of rock to provide a solid foundation. Once the correct height has been reached, the road pavement will be constructed. The connecting road is due to open at the start of 2011.

Intricate patterns reflect the unique Pasifika identity of Manukau

Although not quite as obvious as the large concrete structures on the SH1-SH20 flyover, other changes to the landscape form part of the project. These include intricate, inlaid patterns on bridge barriers and retaining walls. The designs have been developed to reflect the Pacific influence on Manukau. The bridge barriers were made off-site at the project’s precast yard in Takanini before being brought to the site and installed onto the bridges.

Last but not least, a challenging task to complete the motorway project

The new 150 metre stream has been specially constructed to imitate a natural stream with rocks and bends. The flow has been slowed and more shelter has been provided for the fish.

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Kiwis are great recyclers. Every week more than 2.5 million households put out around 4,000 tonnes of recyclable materials for processing by Visy Recycling.

Visy Recycling works to collect recyclable materials from New Zealand’s homes, schools and business, sorting the material at their Onehunga recycling facility, the most advanced of its kind in the Southern Hemisphere.

The organisation has a historical association with glass beneficiation (sizing and colour sorting) both in New Zealand and in Australia. General Manager Paul Thorn says it was Visy Recycling’s experience and commitment to invest in a purpose built recycling facility that in 2007 ensured the award of kerbside recycling contracts for Auckland and Manukau. A $30 million plant (excluding buildings) was commissioned in 2008. “Since then”, he says “Visy Recycling has processed a massive 280,000 tonnes of recyclable materials”.

Visy Recycling Glass Plant Manager Mark Ferguson has a team of eighteen people running the plant. Together, they process up to 24 tonnes of glass per hour. “At the pace we’re working at, each of our six 100 tonne bunkers fills up pretty quickly — within a few hours.

Co-mingled glass (cullet) undergoes seven stages of processing using optical sorters. The cullet is first screened by passing through two optical contaminant separators. Using further optical separation techniques, the flint (clear), amber and green glass is divided into individual streams. A final automated colour check completes the process.

At Visy’s Materials Recovery Facility in Onehunga, technology has transformed the sorting process. Following the hand removal of non-recyclables and magnetic removal of steel, the material conveys through a trommel. Here, the bulk of the containers (glass, plastic and aluminium) fall through while the paper travels on. Materials that have fallen through the trommel pass over a vibrating screen where fine pieces of glass are removed. The remaining materials move over an air classifier to separate the lightweight materials (aluminium and plastic) from the heavier glass materials. Meanwhile, the glass passes through an automatic detector to remove ceramics. The remaining glass bottles are then conveyed into storage hoppers and plastic bottles, cartons and aluminium are sorted into separate streams and conveyed into storage bays or baled ready for delivery to processing plants.

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The business has been built around a closed loop approach — recyclable materials are collected and processed then disbursed to other Visy businesses and beyond for reuse.

We rely heavily on cartage to keep the product moving. ”

The glass is transported to the local bottle manufacturer by Metrobulk, a predominantly non-quarry transport division of Winstone Aggregates. Established in early 2010, the cartage contract involves three shifts operating 24 hours, up to seven days per week. Metrobulk Manager Sean Bryant is moving swiftly to manage demand. Already an articulated trailer has been added to the fleet and a full time driver has been employed. “It’s essential that we plan well ahead to ensure we not only meet forecast but also any increase in demand.” This coming year, it’s anticipated that Metrobulk will cart around 92,000 tonnes of glass for Visy.

MARK FERGUSON Visy Recycling Glass Plant Manager and SEAN BRYANT Metrobulk Manager.

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Winstone Aggregates operates three complementary sites within the Wellington region. One of only a few quarries in the area capable of producing a wide range of aggregate products, Belmont Quarry provides high-grade aggregates essential for use in roading and construction throughout the wider region.

Petone Sand Plant supplies the building industry with sand and shingle, valuable fine and rounded aggregates. And Dry Creek Cleanfill provides an outlet for clean, excavation waste disposal.

Requirement for rock and concrete continues to grow, and projects such as the Inner City Bypass and Dowse Interchange have driven demand upwards by 20%. Based on the number of large roading and construction projects proposed in the Wellington region, that demand is expected to sustain.
Petone sand plant supplies the building industry with a valuable fine, rounded aggregate consisting of the placement of 150,000 cubic metres of overburden, were undertaken and completed batter slopes were stabilised by topsoiling and hydroseeding with a selected area of planting.

In constructing the Cottle overburden disposal dump, Winstone Aggregates have exceeded their compliance requirement to reduce or avoid adverse effects on the environment. In doing so they’ve been awarded the ENCORE Excellence in Compliance Award 2010 by Greater Wellington Regional Council, Department of Conservation and the Wellington Hawke’s Bay Conservation Board.

Belmont Quarry wins ENCORE Excellence in Compliance Award 2010

To ensure the future development of the site, the removal and disposal of overburden (material overlying the quarry rock) was required to facilitate ongoing access to the resource.

Winstone Aggregates identified the Cottle land adjacent to the quarry as being a suitable area to place the overburden and consent applications were granted in August 2009. Wellington Quarries Manager Rob Paddison says that since work began, access roads have been constructed, sub-surface drainage installed and topsoil and vegetation stripped. Bulk earthworks,

“It’s wonderful for Belmont Quarry to be honoured for demonstrating our commitment to environmental restoration” says Rob Paddison, Wellington Quarries Manager. “The support from our environmental team has been tremendous. What we’re most impressed by is the fact that this award can only come as a result of independent nomination”.

Winstone Aggregates dredges an average of 50,000 cubic metres of sand and gravel annually from the bed of the Hutt River mouth. The resource consent for this activity expires in May, 2011 — an application for a new consent was lodged this month.

Extraction of sediment from the dredged area is by way of a mobile hydraulic excavator mounted on a barge and positioned by a tug. The excavator digs the bed level to a maximum depth of 4.25 metres below the water level. When the barge has a full load (about 60 cubic metres) it is pushed to the shore and the sediment is unloaded for processing.

Extraction is required mainly for river flood management purposes as it is important that the river mouth be kept free of excessive sedimentation and the formation of a sand bar which would restrict flood flows and have the effect of increasing upstream water levels and increasing the risk of flooding in the lower part of the Hutt Valley.

Sand and gravel recovered from the river mouth is predominantly carted to Belmont Quarry to supply the building industry with a valuable fine, rounded aggregate.

Dry Creek Cleanfill one of Winstone Aggregates’ busiest sites

The number of cleanfills in New Zealand has been rapidly increasing over the past decade. The cause is mainly due to the increase in landfill charges, creating a need for lower-cost waste disposal alternatives that are considered harmless to the environment.

Determining if a particular waste is acceptable in a cleanfill requires an assessment of how the waste will behave when it is placed, and the potential effects of the waste on the environment.

At Dry Creek this has been simplified by the installation of a raised portacom and viewing deck, enabling thorough inspection of loads. Laboratory testing of soils further complements the acceptance process.

Dry Creek is one of Winstone Aggregates’ busiest sites. Extensive works carried out by Transpower on the Hayward’s Hill Substation (expanding the substation while still operational) and widening works to SH2 are making a significant contribution to the site.

Dry Creek is a former Winstone Aggregates quarry. Once the area has been cleanfilled, it will be rehabilitated.
Whether you call it cement treating, modifying or stabilising, the technique essentially improves the quality of basecourses for road building.

Increasingly popular, plant stabilising improves the accuracy of the production process allowing for a more controlled and consistent finished product. This cement modified aggregate can be used in a wide variety of applications including heavy trafficked highways, pavements and building foundations. It provides improved resistance to rutting, enhanced longevity and increased resistance to moisture.

Following several stages of crushing, washing and screening to produce the aggregate product, testing is undertaken to confirm accordance with customer specification. The product is then stored in certified numbered stockpiles, ready for the next part of the CTB production process.

Cement treated basecourse or CTB as it’s commonly known, has been around for a while but recent technological advancements mean that it’s now a simple task to deliver a consistent product manufactured to individual specification, with only a day’s notice.

The aggregate is loader-delivered from the stockpile into the CTB feed hopper then conveyed into the mixing plant where it’s mixed with a computer-controlled blend of aggregate and water with measured amounts of cement, typically 2 to 5%.

CTB from each production run is tested in one of Winstone Aggregates’ IANZ accredited laboratories to ensure the customer’s strict specification is maintained. The results of these test reports, both pre and post blend, are available for customers in electronic or hardcopy formats.

Winstone Aggregates’ trucks are covered immediately after loading to ensure the CTB is maintained at optimum moisture content during transit. Upon delivery on site, fresh CTB acts in a similar manner to traditional unbound basecourse and can be placed using a variety of methods, the most common being grader or paver-laid. Because it is delivered at optimum moisture content, there is no requirement for the addition of water on site.

The mix hardens after compaction and curing to form an excellent base material which is then overlaid with a bituminous wearing course to complete the road structure.

Available nationwide, CTB is a high performing economic solution that can be tailored to customer requirements. Winstone Aggregates can stabilise the full range of basecourse and sub-base products to NZTA Specifications.

“The continuous feed plant is capable of producing in excess of 300 tonnes of CTB per hour. It’s one of the most technologically advanced, computer controlled CTB plants in New Zealand.”

JASON LOWE, National Operations and Manufacturing Manager, Winstone Aggregates.
Tim started at Belmont Quarry, managing the site for four months, before making the shift to Hunua Quarry. Running the organisation’s largest site during a recession hasn’t been easy. “Our first sub-million metre year since 2002 has been difficult to manage. For quarry development there are some challenging pit areas with geotechnical face stability challenges.”

But at the same time, massive successes contrast the difficulties. Employee engagement has improved and in terms of health and safety, staff are not just paying lip service — they’re acting upon hazards. “There is a strong team spirit at Hunua Quarry. The guys do genuinely look out for each other. It’s a real credit to them — the site’s almost 2 years LTI free.”

The site has also won multiple awards for environmental and community initiatives, it’s undertaken country’s largest quarry blast and has supplied cement treated basecourse (the most significant amount of its kind in New Zealand history) into the SH20-1 project, as well as hundreds of thousands of metres of other products.

He’s enjoyed tracking the benefits that efficiency projects have brought to the site. Already underway when he arrived at Hunua Quarry, the HP4 (tertiary cone crusher) installation has brought improved throughput and better tailored product yield. Three new CAT 775F dumpers have improved production. “The guys love them. They’re safe and efficient and use less fuel — they’re definitely a huge improvement.” He’s also enjoyed the strategic element. “I’m a strong believer that if you get it right at the quarrying excavation end, if you get the volume and the quality right at the start, everything else flows on from there. If the plant breaks down you can repair it; if it’s catastrophic you can get mobile equipment in. But, if the rock’s not there, then nothing happens. I aim to have a three or four month blast plan — when a quarry gets towards the end of its life you need to be pretty methodical, keeping a long term view in mind.”

Tim’s recently been promoted to the role of Southern Area Operations Manager, responsible for the Amberley, Yaldhurst, Otaki, Waikanae, Wairere Road and Puni sites.

“I’m thrilled about the challenges ahead of me. This is the perfect job, you can take as much interest in the geology as you like but still have the business side of it to focus on; it’s the perfect balance really.”

“There is a strong team spirit at Hunua Quarry. The guys do genuinely look out for each other. It’s a real credit to them — the site’s almost two years LTI free.”

TIM HAZELL Southern Operations Manager

“I love the rocks, it’s the history. There’s millions and millions of years there. It’s more fundamental than aesthetic — it’s what they are and what they represent. It’s the foundations of just everything.”

Born in the Isle of Wight, Tim moved to Wales when he was seven. His father was an officer in a high security prison and his mother was a midwife. His uncle was a geologist which Tim says “was probably why I took a slant towards geology.”

He started with a BSc in exploration geology at Cardiff University before heading to Venezuela to work as an oil exploration geologist. There he and 50 others lived on a rig, four weeks on, two weeks off. While on the rig, the down time was twelve hours and there was nothing much to do except relax, go to the gym, eat healthy food (no alcohol was available) and rest. The fortnight back on shore was a different story... “a bit of a boys fortnight”. Good fun he says, but not what he wanted to do long term.

Following a year off travelling and eighteen months as a management trainee within a large retail business, Tim made the move to RMC (now CEMEX), an organisation with divisions in aggregates, ready mix concrete, cement and building products. As a management trainee, he worked the first four months in the ready mix and aggregates divisions, spending time in technical, sales, accounting, laboratories, transport and even a week with the general manager: “A fantastic grounding”, he says “you get to see everything within the business.” Tim then took on a role as a ready mix sales representative. Not really favouring sales, it wasn’t long before he was back in the aggregates division, first as production supervisor and then quarry manager at Taffs Well, a 60 hectare limestone quarry. High on his list of achievements at Taffs Well was the construction of a £4,000,000, two-lane tunnel to improve road access. At 200 metres in length the tunnel was also wide enough to accommodate two-way quarry traffic.

It was time for a change though and having never been to New Zealand he thought it might be a bit of an adventure. His wife Sarah and girls Emily and Grace were keen so in 2007, the family moved to Wellington.

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But at the same time, massive successes contrast the difficulties. Employee engagement has improved and in terms of health and safety, staff are not just paying lip service — they’re acting upon hazards. “There is a strong team spirit at Hunua Quarry. The guys do genuinely look out for each other. It’s a real credit to them — the site’s almost 2 years LTI free.”

The site has also won multiple awards for environmental and community initiatives, it’s undertaken country’s largest quarry blast and has supplied cement treated basecourse (the most significant amount of its kind in New Zealand history) into the SH20-1 project, as well as hundreds of thousands of metres of other products.

He’s enjoyed tracking the benefits that efficiency projects have brought to the site. Already underway when he arrived at Hunua Quarry, the HP4 (tertiary cone crusher) installation has brought improved throughput and better tailored product yield. Three new CAT 775F dumpers have improved production. “The guys love them. They’re safe and efficient and use less fuel — they’re definitely a huge improvement.” He’s also enjoyed the strategic element. “I’m a strong believer that if you get it right at the quarrying excavation end, if you get the volume and the quality right at the start, everything else flows on from there. If the plant breaks down you can repair it; if its catastrophic you can get mobile equipment in. But, if the rock’s not there, then nothing happens. I aim to have a three or four month blast plan — when a quarry gets towards the end of its life you need to be pretty methodical, keeping a long term view in mind.”

Tim’s recently been promoted to the role of Southern Area Operations Manager, responsible for the Amberley, Yaldhurst, Otaki, Waikanae, Wairere Road and Puni sites.

“I’m thrilled about the challenges ahead of me. This is the perfect job, you can take as much interest in the geology as you like but still have the business side of it to focus on; it’s the perfect balance really.”