

# SUPPORTING THE COAL INDUSTRY

Abigroup is delivering the design and construct component of the Greta Train Support Facility currently being built in the Hunter Valley, NSW.

**LEAD CONTRACTOR :** Abigroup Contractors  
**CLIENT :** Pacific National  
**PROJECT END VALUE :** \$80 Million  
**COMPLETION :** August 2012  
**ARCHITECTS :** Caldis Cook Group Pty Ltd



which permeated the site. A mine void grouting technique was employed to fill gaps, and initially it was thought that around 23,000 cubic metres of flyash-cement grout needed to be injected into the voids of the disused mines. This was reduced to around 6,000 cubic metres because the hard rock on site meant that the area was not as susceptible to the effects of mine voids.

The other challenge has been the rain, says Stavropoulos, 'Every month since we've started, we've lost four to five days which is significant when you consider we only have 22 working days in a month.'

The project site is 49.3ha, with more than 50% of this land being preserved for the conservation of native flora and fauna. Stavropoulos has seen 'lots of critters' in the area, with big kangaroos hopping across the temporary access path when he leaves at night. Environmental reports have been prepared and nest boxes have been positioned for birds and squirrel gliders.

The new facility will enable refuelling, routine train inspections and standard maintenance work as well as the various administration this generates. About 185-200 workers have been on site every working day during construction and 38 new jobs have been created and training is underway for Pacific National operators to commence once the site is up and running.

Abigroup is one of Australia's leading contractors working in areas including building, engineering, water, mining, rail and energy. They started as a NSW civil engineering company in 1961 and prominent past work includes the M2 and the M7 Motorways and the Acer Arena in NSW.

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**The Greta Train Support Facility is an \$80 million project that Abigroup took on as a design and construct contract.** Located near the small historic town of Greta in the Hunter Valley. When complete the new facility will improve Pacific National's coal haulage services in the region.

Construction began in June 2011 with the team overcoming many challenges on the project so far. Project Director James Stavropoulos said, 'The major challenge has been the hard rock, there was much more than we were expecting and we've had to blast it to get it out. This means a lot of double handling because you then have to break the blasted rock into smaller, manageable bits. The team have reused all of the hard rock that's been excavated on site to create a flatter ground for the five new railway tracks and other new buildings.

A provisioning shed for refuelling, changing crew and re-sanding was also constructed, along with a locomotive washing building, (with recycling treatment systems for the used water). Maintenance facilities for the wagons were built to include a hardstand area, maintenance workshop, storage for trucks and vehicles, office space, amenities and lunch room for workers and a store room. Fuel and water storage, fencing, car parking and access railways, appropriate lighting and landscaping also had to be constructed.

The team are also delivering the project within a significant archeological site with thousands of historical Aboriginal and European artifacts being uncovered during the project.

Extra work was also done at the start of the project to remediate former coal mines



Below Newcastle Earthmoving were contracted to clear all the timber and salvage what was cleared for recycling at the Greta site.

## CLEAN AND CLEAR

Newcastle Earthmoving has a reputation for being a leader in their industry. It was a natural choice to have them provide their services on the Greta Train Support Facility project in the Hunter Valley.

The state-of-the-art Train Support Facility, which is located just outside the township of Greta, is set to increase the efficiency of Pacific National's coal haulage services in the area and provide significant benefits to the entire Hunter Valley Coal Chain.

The new Greta Train Support Facility allows for a range of services that include refueling activities, maintenance, crew changes, storage and administration. The facility is located between the existing main northern railway passage and the Hunter Expressway. Situated on approximately 49 hectares, more than half the site has been preserved for native flora and fauna conservation.

The team at Newcastle Earthmoving was responsible for clearing all timber on the Great Train Support site and salvaging reusable logs ready for recycling. The team also provided timber-mulching services and disposed of all surplus mulch.

Newcastle Earthmoving is an established excavation and earthmoving company with a large fleet of excavators fitted with specialised timber handling attachments. The company is complimented by a fleet of trucks, which are specifically designed for the handling of timber and mulch. In addition, they possess a portfolio of highly productive and efficient timber mulching equipment. The team is extremely experienced in carrying out detailed excavation work on projects of all sizes.

Apart from providing extensive services for clients onsite, Newcastle Earthmoving also supply products which include mulch, firewood and sawn timber such as fence posts and rails which can be cut to size.

With a high emphasis on workplace safety and environmental sustainability, Newcastle Earthmoving is leading the way in their chosen field. The team incorporates proven forestry clearing techniques with innovative technology which is adapted to civil clearing.

Some other projects the team has worked on include:

- Buladelah Bypass – Clearing, Mulching and Silt Control.
- Karuah to Buladelah Pacific Highway Upgrade – Subcontractor to Abigroup for clearing, mulching and logging.
- Cooperook to Herrons Creek Pacific Highway Upgrade – Subcontractor to Thiess for clearing, mulching and logging.
- Hunter Expressway – Subcontractor to Abigroup and Thiess for clearing, mulching and logging.

Newcastle Earthmoving services a wide area throughout New South Wales and specialises in the removal of trees, clearing of freeways, subdivisions, road widenings and residential and commercial projects.

For more information contact Newcastle Earthmoving, 35 Bonville Avenue Thornton NSW 2322, phone 02 4966 0470 fax 02 4966 0474 mobile 0417 260 557 - John Tranter



Below Haycor's involvement on the Greta train Support facility was bulk earthworks, civil and final trim of the roads and rail lines.

## FIT FOR THE JOB



Haycor Pty Ltd has been operating in the building and construction industry for more than fifteen years. During this time they have developed extensive expertise and skill amongst their workforce as well as building up the necessary equipment and resources to provide the best possible service to their clients.

Particular areas of expertise include Civil Works, Sewer Main Installation, Water Main and Utility infrastructure, Plant Hire and Labour Hire.

Haycor continues to excel in their field by providing outstanding solutions and results on all projects. The company has been involved in major civil contracts throughout New South Wales including the Hickson Road Development in Sydney, Lane Cove Tunnel, Liverpool to Ashfield pipeline, Leura to Katoomba Upgrade, Mardi to Mangrove pipeline, construction of M7 motorway, Redbank Tunnel deviation and the upgrade of

Port Botany bulk liquids berth. Haycor now offers its clients an integrated multi-disciplined project management and construction service which is a service encompassing all aspects of engineering, construction, supervision, management and contract resolution.

The Haycor team was selected to work on Greta Train Support Facility in the Hunter Valley. Their major involvement in the construction of the facility was bulk earthworks, civil and final trim of roads and rail lines. They had several excavators on-site ranging from 35 tonne to 12 tonne to carry out bulk works including GPS systems and rock saws. There were also six dump-trucks to keep the excavators working at optimum speed, water carts and bogie trucks. In addition to this, Haycor also provided operators, form-workers and spotters.

In the early stage of the bulk works they hit blue rock at 300mm layer and had to cut down

5 meters in some areas. The final trim included detailed grader work around services. Smaller machinery carried out works in and around the base of the provisional shed, fuel farm and maintenance sheds. These detailed excavations were carried out with precise measurements within the confined spaces of the steel structured buildings.

Despite unusually wet conditions, hitting excessive rock and other challenges, the team enjoyed working seamlessly with both Pacific National and Abigroup. The constant direction from Abigroup was flawless.

**For more information contact:** Haycor Pty Ltd PO Box 818, Lane Cove, NSW 1595 Office phone 02 9719 1113 Francis Hayes - Managing Director mobile 0409 234 041 - email : info@haycor.com

## REDUCING RISK

Douglas Partners is an industry leader in the investigation of abandoned mine workings. The company uses innovative methods and equipment to investigate mining voids in order to give their clients reliable assessments of risk exposure and realistic options to help their clients achieve project objectives.

For the Greta Train Support Facility, Douglas Partners provided advice on geotechnical, mine subsidence, site contamination and groundwater matters.

The team at Douglas Partners delivered geotechnical solutions for bulk excavations, foundation support for the various site buildings, treatment of poor ground at the site and the alignment for the site access road. They investigated the location, layout, depth and condition of abandoned coalmine workings which date back to the 1860's.

Douglas Partners also provided Pacific National and Abigroup Contractors with specialist advice on the condition, risk assessment and treatment of abandoned coalmine workings in the Greta Seam.

Where mine voids lie close to the ground surface, there is a tendency for gradual collapse of isolated voids to form "potholes" where the unstable mine roof collapses to reach the

ground surface. Finding the mined voids in the coal seam and then stabilising these voids by grouting presented a serious challenge to the geotechnical and construction teams. The project was handled by experienced staff and resulted in a successful outcome.

Douglas Partners began working with Abigroup Contractors in 2011 to assess the risks to construction personnel and plant due to ongoing pothole subsidence on site, and to put in place work practices to manage these risks. Douglas Partners went on to monitor the mine filling operations that were undertaken by Abigroup for the project.

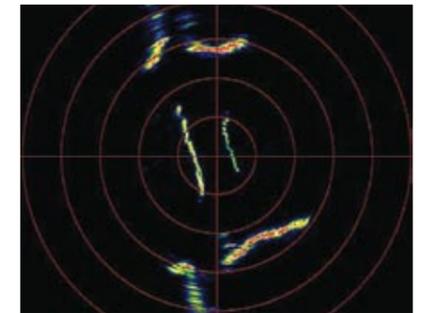
Acoustic sounding equipment (sonar) and underwater CCTV camera were deployed in dedicated boreholes to assess dimensions and condition of the strata and mine voids beneath the site.

Douglas Partners is recognised as a leading Australian engineering consulting firm, specialising in the fields of Geotechnical, Environmental, Groundwater, Laboratory and Drilling services. They believe that the key to providing integrated, practical and cost-effective solutions involves listening to their client's needs and applying the knowledge gained from over 45 year's collective experience and 60,000 successful projects.

Below Douglas Partners provided advice on geotechnical, mine subsidence, site contamination and groundwater matters.

Douglas Partners achieve continued success through effective communication, thorough analysis of the data, careful examination using state of the art techniques and computer programs along with the provision of concise, practical advice and reports.

**For more information contact Douglas Partners Newcastle,** Will Wright Branch Manager, email will.wright@douglaspartners.com.au, phone 02 4960 9600, website www.douglaspartners.com.au



**Below** Peter Bellairs Consulting reviewed the blast designs and ensured blasting wouldn't threaten existing or new structures, including the railway line.

## BLAST CONTROLS



**Peter Bellairs Consulting was contracted on the Greta Train Support Facility project to review the blast designs and ensure blasting wouldn't threaten existing or new structures, including the railway line.** Having started his working life as a geologist/geophysicist, working extensively in mines and for major explosives company's, Peter Bellairs was the right man for the job. His company has been running for 11 years and there are still only a few people in Australia who can do what he does.

Blasting is much cheaper than its alternatives, but it needs to be safe. The ARTC who own the rail infrastructure were concerned that the blasting could collapse the old underground workings that ran underneath the Support Facility. Mr Bellairs used a patented technology to generate

blasting risk assessment information. The method predicts expected ground vibrations from blasting based on looking at generic designs then looking at how the peak particle velocity (ppv) is likely to be transmitted through the various types of structures, calculating the likely stresses and strains – if these exceed the tensile strength of the surrounding area then there is a problem.

The process considers proposed hole depth, explosive amounts and types. The MIC (Maximum Instantaneous Charge) is then calculated and added to the known generic ground vibration laws from the Hunter Valley. The ppv, in terms of millimetres per second is then generated with a mathematical formula. Mr Bellairs also considered that the railway has

been running over the underground workings at quite shallow depths with fully loaded trains going over the tracks - their vibrations had never caused the underground workings to collapse. Fortunately, the predicted ppv strains of blasting didn't even come close to the tensile strength of the rock and blasting could go ahead.

Peter Bellairs consults on many blasting projects involving an array of structures including power poles, levy banks, bridges, culverts, rail lines, pipelines and roads to name a few.

*For more information contact Peter Bellairs Consulting Pty Ltd, 13 April Circuit Bolwarra Heights NSW 2320, mobile 0401 716 708, email peter.bellairs@optusnet.com.au*

## MOVING THE EARTH FOR THE GRETA TRAIN SUPPORT FACILITY

**Image** CZL Group's machinery working on the site preparation for the Great Train Support facility.



**Earthmoving contractor CZL Group took on the crushing contract for the new Greta Train Support Facility.** Specialising in mobile crushing and screening, CZL Group have a specialised fleet of machines available for hire with operators.

Up to 10 of the 30 employees at CZL Group worked on the facility and Rob Grisinger, Managing Director at CZL Group noted 'It was a bigger job than anticipated because of the volume of work that was required, otherwise it was a difficult job due to all the wet weather the last few months'. In excess of 170,000 tonnes of product was crushed from rock blasted on site. Grisinger noted that 'All the crushed rock is being re-used for roads and general fill'.

Up for hire at CZL Group are 31 different machines including the latest technology with Kobelco SK250 excavators. There are also graders used for levelling and mixing materials. Graders with GPS facilities download the design of the project using a USB stick - the GPS measures heights to prepare the ground precisely.

Also in the fleet for hire at CZL Group is a 14H grader, standard and specialised excavators from 14-35 tonnes, skidsteer loaders, articulated dump trucks, front end loaders, watercarts, road trucks and tippers and a tractor/slasher to mow the road edges.

CZL Group are well equipped to crush and screen different products, running them

through a series of meshes or grids to identify the right product for various uses. Much of the stemming gravel they identify is used as road gravel or in mines to fill up holes before blasting or excavation.

CZL Group has been in operation for over seven years. They are based in the Hunter Valley and work throughout the central coast, north-west corridor and north and south coast regions of NSW. Other projects they're working on include the Hunter 8 Rail and the Integra Coal Operations by Vale Australia.

*For more information contact CZL Group Pty Ltd, 48 Mustang Drive Rutherford NSW 2320, phone 02 4931 9224, fax 02 4931 9503, website www.czlgroup.com.au*



## MATERIALS HANDLING ENGINEERING

CRANES, WINCHES, CONVEYORS, ENGINEERED LIFTING SOLUTIONS, STOCKYARD MACHINERY, JACKS

Originating in 1934, Sam Technology Engineering (STE) is an Australian company supplying materials handling engineering services to the mining and transport industries.

STE provided the sanding system and miscellaneous cranes to the new Greta Train Support Facility. They sourced the technology and project managed the assembly of the central

storage system for sand which is used to provide tractive effort on the wheels of the locomotives.

Philip Schmidt, Managing Director, hails from a long line of engineers, with his son James also working as an engineer for the company. Schmidt explained that the company's strength lies in their lateral thinking from experience in so many different areas. STE have offices in Sydney and Melbourne with an in house design and

consulting team and workshop. They are also working on the full maintenance rail facility at Nebo in Queensland and building a ship loader in a joint venture for Townsville Port Authority.

For more information contact Sam Technology Engineering (STE), 130-148 Woodpark Road Smithfield NSW 2164, phone 02 9721 5900, fax 02 9681 3487, email sales@samtechnology.com.au, website www.samtechnology.com.au

Greta Train Support Facility, NSW



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