

From high-risk to high-rise

Thorough investigation allows industrial land to be redeveloped for residential use

Douglas Partners' approach of clearly understanding client requirements and thoroughly understanding soil, groundwater and soil vapour conditions on site allowed the confidence for the redevelopment to proceed. Our practical solutions provided a cost effective outcome.

In 2010, BATA downscaled Australian operations to sell two-thirds of their Pagewood manufacturing facility.

In line with due diligence, and to assess potential health risks associated with the proposed redevelopment, BATA sought to identify—and potentially remediate—existing site contamination issues.

Douglas Partners (DP) was engaged in 2011 to conduct a preliminary contamination investigation across the 14-hectare facility. Located within the Botany Sand Beds aquifer, the land was highly susceptible to groundwater contamination due to soil permeability.

Our investigation uncovered a heavy industrial history of WWII armoury, vehicle and cigarette manufacturing including underground fuel tanks, waste collection pits, degreasers and solvents. The potential for widespread soil and groundwater contamination was high.

As a result, a Phase 2 contamination investigation was designed to cover the site's soil profile and groundwater characteristics in detail. Field investigations totalled more than 200 test bores, 36 groundwater monitoring well positions, 30 passive and 15 active soil vapour

installations and nine cone penetration tests. An innovative technique of using hydrophobic dye for fast field identification of hydrocarbons was used successfully to optimise the investigations.

While investigations revealed little contamination, a

Remediation

Action Plan was developed which identified minor metals and asbestos contamination in the soil. The existing building footprint was also identified for detailed assessment on removal.

With investigations complete and sale imminent, we presented the findings to tenderers bidding for the site. Our extensive review and information sharing reinforced buyer confidence and the site was sold to Australia's largest residential apartment developer, Meriton.

Following this success, we were engaged by Meriton to validate the site for residential and mixed land uses, and secure Site Audit Statements for their development application.

On demolition and removal of the primary manufacturing building, it was confirmed that asbestos containing materials were present. Consequently, we formulated an Asbestos Management Plan whereby a number of targeted areas were identified and subject to detailed

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Aerial view of BATA site at Eastgardens during works.

investigation. This process has been effectively applied with minimal soil removal needed.

We've also achieved significant savings on landfill disposal costs by assessing and designating reuse options for soils uncovered during civil works. Our quick response to site issues and land availability has ensured a strong and ongoing working relationship.



PAUL GORMAN
SENIOR ASSOCIATE
/ ENVIRONMENTAL
ENGINEER

CLIENT British American Tobacco Australia and Meriton
YEAR 2011-2016 **LOCATION** Pagewood, NSW



IN THIS ISSUE...

- Minimising risk in QLD • DP creates WA first
- Expert assistance in Port Stephens • New lab on the Sunshine Coast

Work Experience with DP

Douglas Partners supports tomorrow's engineering specialists by providing work experience opportunities to high school students who show an interest in engineering. Seth Sheerin who is studying year 10 at Geelong Lutheran College recently undertook a week of work experience with DP. During his visit, Seth shadowed and assisted Arthur Rowling, the Geelong office branch manager.

Seth gained an understanding of working life in a regional office and spent a day in DP's Melbourne office.

Seth spent the week reading DP's technical manual, studying geology maps, viewing a landslide video and discussing the trigger mechanism, observing shrink-swell index laboratory tests being undertaken, plus assisting with preparing a tender by researching the anticipated ground conditions, calculating slope gradients and proposing borehole locations. Arthur also showed Seth some of the projects DP were working on in the area, including a visit to the former Geelong gun club site that was partially remediated.

DP would like to thank Seth for undertaking work experience with Arthur in the Geelong office and wishes Seth all the best with his future studies.

Seth Sheerin undertakes a site visit with Geelong Branch Manager, Arthur Rowling



Land contamination poses threat to residential development

Investigation of the cattle dip commences.

Queensland adapts to changing legislation

When a residential developer contacted us with a potentially serious environmental hazard, our team of leading experts got straight to work. Here's how our comprehensive analysis, problem-solving and negotiation skills ensured a land contamination issue resulted in approval to proceed.

Mount Margaret estate is set within the lifestyle precinct of Townsville's Alice River and has been developed in stages since 2012.

In the year following commencement of stage one, the Queensland Government introduced the amended National Environment Protection (Assessment of Site Contamination) Measure.

This posed a significant challenge, as the subdivision was formerly an operating cattle station and listed on the Environmental Management Register (EMR) due to likely use of organochlorine pesticides (OCPs), such as DDT.

Our environmental specialists were engaged to assess the potential impact of the station's cattle dip and its contaminants on stages one and two of the development. After thorough investigation, we found no evidence of OCPs in the soil and initial land parcels were excluded from the EMR.

With this positive result in hand, we were then appointed to undertake further investigation to ensure all remaining land was also removed from the register.

Subsequent analysis showed low levels of DDT in surface soil around the cattle dip. Based on Department of Environment and Heritage Protection (EHP) requirements only two options were available, either offsite disposal or onsite containment. However, chemical concentration levels exceeded local landfill guidelines and Townsville City Council wouldn't allow a containment cell within the subdivision.

The estate's viability was genuinely compromised. That was until September 2015, when DP identified that the newly introduced EHP requirement for compulsory use of Contaminated Land Auditors may allow a more practical solution.

This legislative change, combined with our skilled negotiation, saw a relaxation of the remediation goals. Supporting evidence also showed the levels of OCP didn't pose a significant risk to the environment or community, and the resulting Contaminated Land Investigation Document was the first to be approved by EHP on initial submission after the introduction of compulsory CLA's.

Negotiations with site auditor and regulatory bodies successfully minimised the risk to the development.

David Little

ENVIRONMENTAL SCIENTIST



CLIENT Hobson Constructions YEAR 2016 LOCATION Townsville

DP knowledge sharing creates WA first

Wallaby underground gold mine

Developing a new zone under difficult geotechnical conditions, Gold Fields Australia sought Douglas Partners' expertise. Drawing on our Queensland coalfields experience, we developed an innovative solution fit for the Western Australian goldfields.

The wallaby underground gold mine is located in the eastern goldfields region of Western Australia, 220 kilometres north east of Kalgoorlie, below an open cut.

Gold is set within conglomerate, overlain by a salt lake and a 120 metre deep palaeochannel filled with alluvial clay, sand and gravel. The sand and gravel layers contain highly saline aquifers.

Expanding into a new zone, the mine needed two vent shafts excavated. Shaft excavation through such deep alluvium and aquifers had never been undertaken in Western Australia.

Douglas Partners (DP) was asked to provide specialist advice and services for shaft feasibility, design and construction based on our geotechnical experience in complex conditions.

DP contributed its specialist expertise in a risk workshop with the client and five potentially favourable locations were identified. Drilling through the alluvium using high frequency sonic drilling was recommended to increase core recovery

which was critical to identify potential fissuring in the soils.

A preferred site was selected and then drilled to its full depth of 750 m. DP provided analyses of the results and advice on shaft excavation methods,

With our depth of knowledge and experience in complex conditions in Queensland coalfields, we were able to effectively transfer that to Western Australian goldfields.

stresses and deflection of the concrete liner and options for dealing with water inflow from the aquifers and with potential wedge failures from the fissured clay.

As a result, a decision was made to excavate the alluvium and very weathered conglomerate by conventional hand-sink methods to a depth of 85 metres before changing to a raise bore. The shaft successfully reached this depth and preparations to complete the project by raise boring are underway.

DP approach saves time and money



Site inspection on the Port Stephens foreshore.

We are privileged to not only assist our clients with solving their ground engineering problems but we also get to see some special parts of the world. One example was a small project along the foreshore of Port Stephens in NSW where our client (Royal Haskoning DHV) was looking to prepare conceptual designs for the upgrade of an existing boat ramp and a pontoon structure.

For this project, rather than jumping into a costly investigation program, Douglas Partners used a total engineering geology approach to inform our client on the geotechnical risks and opportunities for the preliminary design of the boat ramp. This approach combines a review of Douglas Partners extensive data base, GIS mapping and a site inspection by a senior geotechnical engineer to understand the geological and geomorphological history of the area. Following the site inspection, a conceptual geotechnical model was developed and based on our experience in similar geological conditions, preliminary advice was provided to our client within a few days of the inspection.

Although the above project was small, the total engineering geology approach can also be applied to large civil projects. Using our experienced team of engineers and over 50 years of geotechnical data, we can provide early advice to projects such that preliminary design can commence and a targeted subsurface investigation can be implemented.

Scott McFarlane

PRINCIPAL/ GEOTECHNICAL ENGINEER



John Braybrooke
PRINCIPAL/ENGINEER
GEOLOGIST

Background image: Wallaby underground gold mine, Western Australia

CLIENT Gold Fields Australia YEAR 2016
LOCATION Western Australia



Laboratory Services on Sunshine Coast



SHAE HARRY

In November 2014, the DP Sunshine Coast office opened its laboratory facilities, appointing Shae Harry as Laboratory Manager. Shae has over 20 years of experience in construction material testing, most of that gained in the Sunshine Coast region. Shae's strong client focus, technical competency and leadership have led to strong growth of the laboratory business. The laboratory is NATA accredited for a wide range of tests and staffed by a strong team of experienced local soil technicians. A recent expansion into adjacent premises has provided extra space allowing for increased efficiency and throughput.

The laboratory was primarily set up to complement the existing engineering services. Together with the engineering team, led by Branch Manager Brett Egen, the Sunshine Coast Branch is able to provide total geotechnical service solutions to its clients.

A large proportion of the work comprises Level 1 bulk earthworks testing and construction advice for large residential subdivisions, some involving up to 300,000 m³ of earthworks fill. The laboratory is also involved with local council road rehabilitation programs and several leading engineering consultants. With the Sunshine Coast experiencing a population boom in recent times, the laboratory has added major road works and infrastructure projects to its capabilities.

The Sunshine Coast Branch is able to provide total geotechnical service solutions to its clients.

Meet the Team

Introducing... Arthur Castrissios

PRINCIPAL/GEOTECHNICAL ENGINEER



Arthur was appointed Branch Manager of DP's Wollongong office in February 2016, yet another milestone in his career in geotechnical consulting which began in DP's Sydney office in 1995.

Arthur grew up on the North Coast of NSW and during his high school years became fascinated with the engineering challenges associated with the proposed Pacific Highway upgrades. This interest in engineering resulted in him studying Civil Engineering at UNSW. He was awarded a cadetship which enabled him to pay his way through university and work on the highway projects between studying.

Arthur is an example of the Douglas Partners philosophy of "growing its own". His experience is broad, having worked at DPs Sydney, Melbourne, and Macarthur offices along the way and included a year on DPs specialist Cone Penetration Testing rig. In 2001 he completed a Master of Engineering Science.

Arthur is an example of the Douglas Partners philosophy of "growing its own".

As Wollongong Branch Manager Arthur now leads a team of 18 staff providing a full range of geotechnical, environmental and earthworks services in the NSW South Coast Region.

Having been based in Wollongong since 1996 he has a wealth of local project experience, including numerous subdivisions in the Illawarra including Shell Cove, Redgum Ridge, Cordeaux Heights and McCauleys Beach and upgrades to HMAS Albatross, Nowra, Stockland Shellharbour and Port Kembla Coal Terminal. He has been working closely with some of his clients for almost his entire career and continues to focus on providing practical, cost-effective outcomes.



Douglas Partners supports UDIA Western Sydney

Douglas Partners were pleased to be principal sponsor of the UDIA Western Sydney Luncheon held in June. The luncheon was focussed on the growth in western Sydney especially residential development and infrastructure development in the local government areas of The Hills, Campbelltown, Penrith, Camden and Liverpool.

DP have had a dedicated office in Western Sydney for more than 20 years and are proud to be associated with this growing region.



Chris Kline from Douglas Partners' Macarthur Office addresses the audience at the UDIA Western Sydney Luncheon.

FOR MORE DETAILS

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