



New Management Team Reinforces a Wealth of Experience

In this edition of Down to Earth we introduce many well known faces to the new management team.

Founder and Senior Principal, **Paul Williams** has decided to step aside from his leadership responsibilities so he can concentrate on the projects in Iran and provide technical and business development support.

Under Paul's leadership the business has grown from a one man operation to our current position as a market leader, expanding horizons with work in locations around the world whilst maintaining a focus on "Technical Excellence".

Steve Murphy has been appointed **Business and Commercial Manager** while **Keith Seddon** continues in his role as **Technical Manager** with both sharing the role of day-to-day running of the organisation.



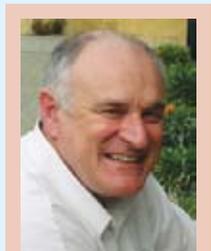
Steve Murphy,
Business &
Commercial Manager



Keith Seddon,
Technical Manager

Trevor Osborne has taken on the position of **Chief Executive Officer** bringing with him 38 years experience in geotechnical contracting and consulting.

Notwithstanding these changes it is not anticipated that you will notice any difference at a project level.



Trevor Osborne, CEO

- In this edition of Down to Earth we highlight an illustration of our quest for excellence in **Tim Fitton's** article on **Tailings Beach Slope Prediction**.
- **Stuart Barwick** gives an overview of the current ATC projects in Iran.
- On the civil geotechnical side **John Leavy** has put together some observations on the analysis of foundations for **high rise structures in Perth**.

On-Site in Iran

The design phase of the upgrade of the tailings disposal and water management system at the Sar Cheshmeh and Miduk Copper Mines in the south of Iran is nearing completion.

Now we find ourselves predominantly in the construction phase of this project. To facilitate the construction phase we have representatives on site at Sar Cheshmeh on a full time basis. Our joint venture partner, Middle East Water and Environment, provide a supervisory team of engineers and surveyors, approximately 30 people



Mehran Saffari, Superintendent & Stuart Barwick,
Project Manager at Sar Cheshmeh site.

in total, whilst an ATC representative provides overall technical advice and support to the supervisory team. Though the experience is trying at times, with hectic travel plans, missed flights, unknown destinations and overzealous taxi drivers, the overall experience can best be described as enriching.

Although the Australian Outback has been similarly described, the topography and geology of Iran is strikingly different. Every day we work at altitudes comparable to that of Kosciusko, on the geological upheaval caused by the same continental drift which created the Himalayas.



Signage in Persian (but the ATC name stands out).

The locals are quite conscious of the status of their country in one of the significant cradles of civilisation and religion. Iranian life today still reflects the traditions of 25 centuries, and between the two mine sites in the south of the country, where ATC is predominantly working, is a small village which is believed to have been continuously occupied for at least 4000 years.

In this second half of 2007, in addition to our site operations in the south of the country at the Miduk and Sar Cheshmeh Copper Mines, we continue to support Sungun Copper Mine in the north of the country in the commissioning phase.



Our site accommodation
(they are heated).

Foundations For Perth's Changing Skyline

Approximately twenty multi-storey apartment or commercial structures are currently under construction or in advanced design stages in the Perth CBD.

MPA Williams and Associates have undertaken geotechnical investigations at five of these sites since 2006, and are providing ongoing geotechnical services for the detailed design and construction phases of the projects. The sites include the 24 storey Raine Square development to house the new Bankwest Headquarters and 120 apartment units, and the 32 storey Altus building comprising 290 apartments. In total the developments will create over 700 new apartments in the CBD. Each structure includes basement car parking; of particular note is the Raine Square development where the basement will be 11m deep.



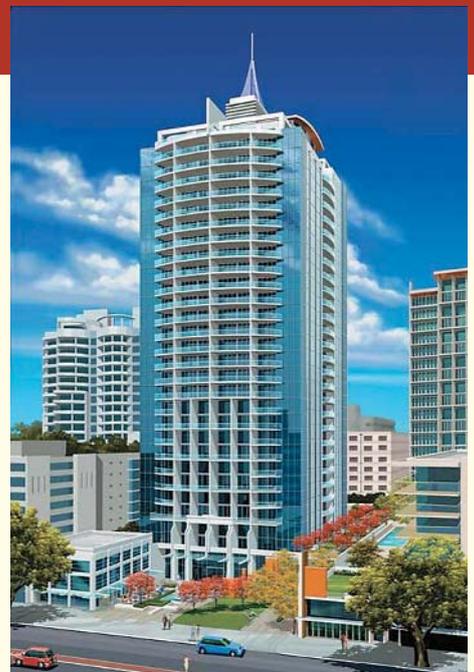
Foundation excavation – Raine Square Complex

The geology of the Perth CBD comprises wind blown dune sands (Spearwood Sands) and variable alluvial deposits of the Perth Formation (formerly classified as Guildford Formation) resting on sedimentary rocks of the Kings Park Formation or Mullaloo sandstone at typical depths of 25m.

Characterisation of these deposits, and particularly their compressibility characteristics, were undertaken using a variety of investigative methods including sonic drilling, conventional drilling, seismic cone penetration tests with porewater pressure measurement (SCPTU), and Marchetti dilatometer.

The soil moduli were determined over various strain ranges using these techniques and then factored appropriately to derive working modulus values applicable to predicted engineering strains. The derived values were also correlated with available back analysis settlement data for various buildings within the CBD.

Both finite element techniques and simplified calculation methods have been used to undertake raft settlement analyses and design of piles where appropriate. One of the structures (the 25 storey Saffron building) is 50% complete, and measured raft deflections are within 5mm of predicted settlements.

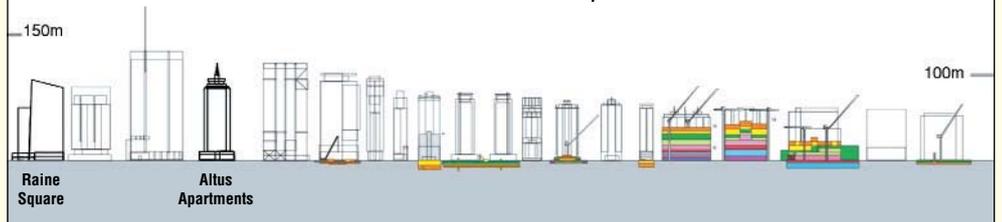


The Altus Building [artist's impression]



SCPTU Rig

Construction status of Skyscrapers over 60m in Perth (includes approvals) Coloured sections indicate completed sections



Keith Seddon, Technical Manager – In Profile

Keith grew up in Melbourne and studied civil engineering at Monash University, Clayton, at a time when the label "The Farm" had real meaning. Studying the subject of dirt and water seemed to be a natural extension.

After graduation, Keith worked for the Commonwealth in the Northern Territory for a period of two years on roads and water supply. Deciding to concentrate on geotechnical engineering, Keith undertook a Masters degree in rock mechanics at Newcastle-on-Tyne, UK. He says he has been working on rocks ever since, it's just that they have mostly been through a crusher and a mill first!

Following his return to Australia, Keith obtained employment with Coffey & Hollingsworth, and worked on his first tailings dam at Woodlawn, in NSW. He then joined Longworth and McKenzie in Sydney, and began a long involvement with the coal industry, designing haul roads, coal loaders, water and waste management, groundwater studies, and tailings dams.

Keith returned to Melbourne in the late 1980's and joined Paul Williams and Steve Murphy at MPA Williams in 1990. Tailings dams and tailings management have come to dominate his professional life. Keith has designed tailings storages in every state of Australia, as well as internationally, including Indonesia, Iran and Chile.

Keith is married to Terri, whom he first met at Newcastle University. Terri works in Education at Monash University. They have two (almost) grown-up daughters, who are also both studying at Monash.

Keith is now officially retired from activities such as rock-climbing and mountaineering, but remains active in bushwalking and cross-country skiing. Other interests include folk music and garden maintenance.

Footnote: [Right] Keith has been banned from undertaking extra-curricular activities after he broke his leg in several places whilst traipsing through the Tasmanian highlands, requiring urgent transport from Lake St Clair to Royal Hobart Hospital.



[Left] Keith pictured at a staff function in 1990.

Tailings Beach Slope Research Project



Peak Tailings Stack

Some 5 years ago, Australian Tailings Consultants initiated a research project into the prediction of tailings beach slopes.

The research involved two PhD students, Behnam Pirouz of the K.N.Toosi University in Tehran, Iran, and Tim Fitton of RMIT University in Melbourne, Australia. Additional financial support was also provided by AngloGold Ashanti and the Australian Research Council.

The purpose of the research project was to develop a reliable means of predicting tailings beach slopes formed by the hydraulic discharge of non-segregating thickened tailings slurry.

The research focused on the self-forming channel behaviour of tailings slurry that typically occurs on tailings beaches. Full scale field experiments were conducted with the use of a 10m long flume apparatus to analyse the channel flow of tailings slurry.

The flume was utilised at two mine sites in Australia; firstly at the **Peak Gold Mine** in Cobar, NSW, thanks to **Wheaton River Minerals**, and then later at the **Sunrise Dam Gold Mine** in Western Australia, thanks to **AngloGold Ashanti**.

In addition to the field experiments, Tim Fitton conducted a series of small scale laboratory experiments at RMIT University to analyse the channel flow behaviour of a wider range of non-Newtonian slurries, as well as gathering relevant data from various third parties for further validation of his models.

The end result found that the project aim was achieved from two separate working fronts, with both Behnam and Tim presenting different methods for the prediction of tailings beach slopes. Both workers presented theses towards their respective PhD's, as well as several additional journal and conference publications.

Tim Fitton presented three new tailings beach slope prediction models, with two of them capable of predicting beach slopes for both non-segregating and segregating slurries.



Setting up the flume apparatus at a mine site in Cobar, New South Wales

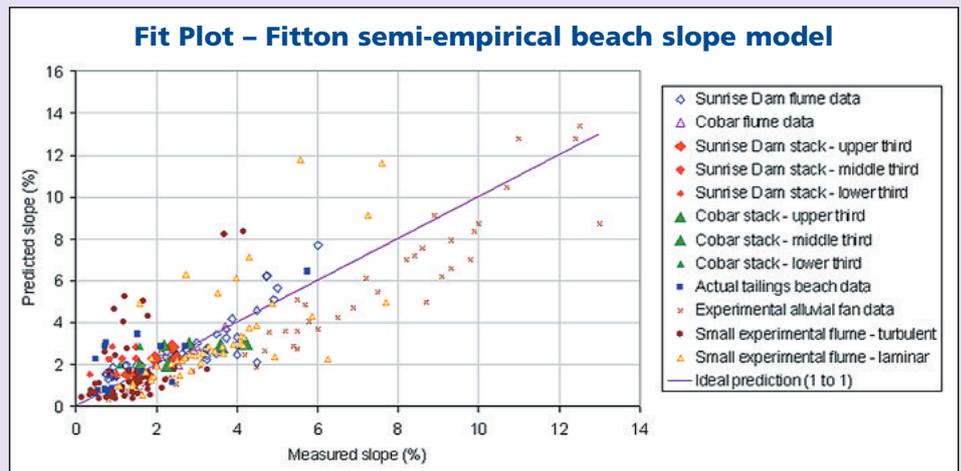


Taking flow velocity measurements in the flume

The predictive accuracy of the proposed tailings beach slope models were validated against field data compiled from various mine sites operating thickened tailings stacks and experimental data obtained from various laboratory scale tests.

The graph below shows the predictive accuracy of the Fitton semi-empirical beach slope model when tested against the validation data.

Tim was awarded a Doctor of Philosophy in August 2007 and his thesis was recognised by examiners as **"work that is of the highest merit at the forefront internationally in its field, as well as strongly competitive at an international level"**.



Congratulations Richard Tassopati

Richard Tassopati [left] was awarded the Engineers Australia Book Prize (Victoria Division) in recognition of his undergraduate achievements.



Staff News

■ **Peter Reid, Richard Tassopati and Deron Khoo** completed a course in 4WD proficiency. The course was conducted by SafeTrek & covered all aspects of 4WD operation and safety.



■ **Keith Seddon, Craig Noske, Phillip Soden and Behrouz Ghahreman-Nejad** presented an overview of ATC's current Tailings Dam and Water Dam design projects in Iran, at a monthly meeting of the **Australian Geomechanics Society (Victoria Division)**.

■ **Paul Williams, Keith Seddon and Tim Fitton** attended **Paste 2007**, the Tenth International Seminar on Paste and Thickened tailings, held in Fremantle, WA. Keith Seddon presented a paper entitled "**Post-Liquefaction Stability of Thickened Tailings Beaches**", and Tim Fitton presented a paper entitled "**Simulation of Thickened Tailings Stacks**".



■ **Steven Murphy and Craig Noske** attended the **IEAust Careers Expo** in Melbourne at the Arts Centre in April.

■ **Steven Murphy** presented a paper entitled "**In-Pit Tailings Storage – A Viable Option**" at the **Mine Tailings 2007 Conference** held in Brisbane in February.



Australian Tailings Consultants and MPA Williams and Associates offer a wide range of services in the geotechnical & mining industry and specialise in the following areas:

- Site Investigation
- Foundations and Ground Improvement
- Hydrogeological Studies
- Water Resources Infrastructure
- Hydrology and Hydraulic Structures
- Landfill and Waste Disposal
- Mine Water Management
- Tailings Slurry Pumping
- Tailings Disposal
- Pavement Design
- Geotechnical Construction
- Grouting
- Retaining walls and Slope Stabilisation
- Civil Engineering
- Project Management
- Statutory Approvals
- Laboratory Testing

MPAW Melbourne welcome the following new staff members:

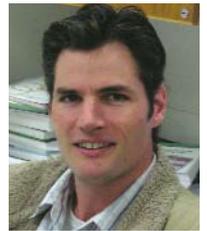
■ **Richard Tassopati** has recently completed a degree in civil engineering at Latrobe University.



■ **Mark Dillon** is a senior geotechnical engineer with 15 years experience in design of mine waste disposal facilities.



■ **Tim Fitton** has a background in mining and has recently completed an MPAW sponsored PHD on tailings beach slope research.



■ **John Walker**, originally from Scotland, is a senior geo-technician with 15 years experience working in soils laboratories' in Hong Kong, most recently with Stanger.



■ **Sing Kit Wong** is a recent civil engineering graduate from RMIT.



MPAW Perth welcome Clive Saunders, Lyon McLeod, Christopher White and Jeremy Roberson.



Clive Saunders



Lyon McLeod



Chris White



Jeremy Roberson

More Information

If you would like more copies of this newsletter, more information about **MPA Williams and Associates** or **Australian Tailings Consultants** or further information about an item mentioned in "**Down to Earth**" please contact either our Melbourne or Perth office.



MPA Williams and Associates
Consulting Geotechnical Engineers

ACN 005 931 288



Australian Tailings Consultants
Consulting Engineers to the Mining Industry

Melbourne

Contact: Steven Murphy
222 – 225 Beach Road,
(PO Box 5286)
Mordialloc, Victoria, 3195 Australia
Tel: (03) 8587 0900 Fax (03) 8587 0901
Email: mel@mpaw.com.au
Web: www.mpaw.com.au

Perth

Contact: Stuart Masterson
Suite 7, 342 Albany Highway
(PO Box 427)
Victoria Park, WA, 6100 Australia
Tel: (08) 9361 4664 Fax (08) 9361 4668
Email: per@mpaw.com.au
Web: www.mpaw.com.au

