

Cecil Green Enterprise Award for DownUnder GeoSolutions

The Society of Exploration Geophysicists (SEG) recently announced that Perth based DownUnder GeoSolutions will receive one of the industry's most prestigious awards, the Cecil Green Enterprise Award, at the Honours and Awards Ceremony, part of the SEG's International Exposition and 84th Annual Meeting in Denver, 26–31 October.

The Cecil Green Enterprise Award (http://wiki.seg.org/wiki/Cecil_Green_Enterprise_Award) was established by the SEG to recognise the importance of an individual enterprise to the economic vitality of the exploration industry and is conferred from time to time on persons who, in the unanimous opinion of the SEG Honours and Awards Committee and the Executive Committee, have demonstrated courage, ingenuity, and achievement while risking their own resources and future in developing a product, service, organisation, or activity which is recognised as a distinct and worthy contribution to the industry. Previous award recipients include that notable Australian geophysicist, Pat Cunneen.

The SEG have recognised that Matt Lamont and Troy Thompson, founders of DownUnder GeoSolutions, embody the spirit of the Cecil Green Enterprise Award in a story of personal risk and enterprise. They founded DownUnder GeoSolutions in 2003 in a shed in Matt's yard in Perth, Australia. They developed and wrote their own software, so originally they had very limited offerings (AVO and inversion software and services) while they worked on development. By 2008, the company had grown to 45 people, and 92% of the shares were held by employees. That year they won their first major Seismic Processing project covering 1500 km² of data, and commercialised the 'DUG Insight' suite of software. DownUnder now has offices around the world, employs about 200 people, and is a supplier of interpretation software and seismic data-processing services worldwide. All of this could not have been achieved without considerable personal financial risk and the incredible vision and determination of Matt and Troy.

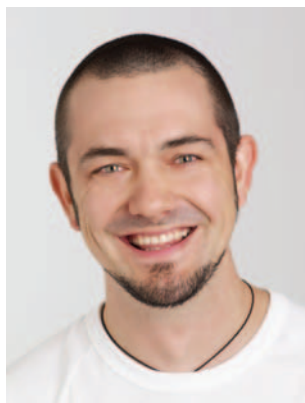
In the biographical citation Norm Uren and Carlo Bevilacqua write that both Matt Lamont and Troy Thompson

had distinguished academic careers as students in the Department of Exploration Geophysics at Curtin University in Western Australia. Matt won the competitive K. A. Richards APPEA Scholarship, an Australian Postgraduate Award, an Australian Cooperative Research Centre Scholarship, and the Australian Institute of Mining and Metallurgy Prize. He earned a bachelor of science degree with first-class honours and completed his PhD in 1998.



Matt Lamont

Troy won the Dean's Prize as the top student in the Faculty of Science whilst he was an undergraduate and was inducted as a member of the Golden Key National Honour Society. He won the AIP Most Outstanding Graduate Prize, the RioTinto/CRA Field-mapping Prize, and the Royal Society Science Medal. As a postgraduate student, he won the John Curtin Postgraduate Scholarship, BHP Billiton Research Scholarship, a Petroleum Exploration Society of Australia Scholarship, and a MERIWA Supplementary Scholarship. He completed his PhD in 2004, with Matt as one of his supervisors.



Troy Thompson

Both Matt and Troy published internationally and made international conference presentations while still students, with Matt's multiple-attenuation algorithm featured on the front page of *The Leading Edge* in January 1999. In his early career, Matt worked as a geophysicist with Phillips Petroleum, reservoir evaluation geologist with Woodside Offshore Petroleum, senior research geophysicist with Texseis (Houston), senior geophysicist with BHP Billiton in Perth, and technical leader with Seismic Imaging and Processing (Houston). Matt has always been research minded and served a very productive term as associate professor and chairman of the Curtin Reservoir Geophysics Consortium of industrial supporters for petroleum research. His strong participation ensured the industrial relevance of the research.

Matt's dream of starting his own enterprise became a reality in 2003 after he approached young, high-achieving Troy with his ideas of a small consultancy. Troy was up for the challenge. A small number of past colleagues who knew and had confidence in Matt and his vision provided a modest amount of start-up capital, and DownUnder GeoSolutions (DUGEO) was born. A small team was assembled, working from a shed (which they had to first build) in Matt's backyard in Perth, Western Australia.

In the early days, Troy headed up quantitative interpretation (QI), while Matt explored a gap he had identified in the market and focused on developing a processing and imaging tool kit for small-scale processing. DUGEO developed a unique QI workflow that attracted the attention of some local innovative oil companies, and in 2006, the first major discovery was made. This led to a string of successful discovery wells, and today, two field development projects are under way. Meanwhile, Matt developed a seismic-imaging tool kit, initially with the support of an Australian Commonwealth Government grant.

The company rapidly outgrew Matt's shed and moved to new offices in nearby Subiaco. It now has headquarters in West Perth, with seven other international offices. DUGEO's service offering has continued to expand to include illumination studies, seismic data processing, depth imaging, petrophysics,

QI, geostatistical depth conversion, and multient studies.

With a strong R&D focus from day one, DUGEO developed its own interpretation software, called DUG Insight, allowing greater productivity and providing superior technical workflows to its internal service geophysicists. It was not long before clients started to request

those tools for use themselves. DUG Insight is now the interpretation-software platform of choice in hundreds of companies worldwide. It is an interactive package, working from field tapes right through to QI.

Academic success is in no way a guarantee of success in business, but Matt and Troy's dedication, talent,

determination, and plain hard work have taken DownUnder GeoSolutions from humble beginnings to the significant global company that it is today.

The Cecil Green Enterprise Award to DownUnder GeoSolutions is well deserved and the ASEG congratulates Matt and Troy!

Thinking global, acting local: the inaugural Victorian Petroleum Geoscience R&D Forum

On Wednesday 6 August the Victorian/Tasmanian branch of PESA held its inaugural Victorian Petroleum Geoscience R&D Forum, attracting over 40 participants and covering a wide range of current, local R&D initiatives over the course of the afternoon. Senior researchers in academia, government and private organisations, along with local postgraduate students were invited to present either 'progress reports' on their geology or geophysics research or 'discussion topics' related to efforts to promote R&D and industry collaboration.

The participant mix consisted of representatives from several local oil and gas companies, local ASEG members, consultants, service providers and academics. It was particularly encouraging to see many students attend and we would love to see some come back as presenters next year. In true 'forum' style, we witnessed a higher level of audience participation, then a typical PESA luncheon, which

continued through to the PESA/ASEG/SPE social event that was held nearby and immediately afterwards.

Highlights/key learnings of the day included:

- The 'free-for-all' discussion and frank exchange of views on the state of geoscience R&D
- Similarity across some of the diverse topics via common integration techniques
- Painstaking field and lab work is still a key component of advancing our understanding of the subsurface
- Cross-disciplinary networking opportunities
- The provision of all presentations shown on the day to participants

The feedback provided on the day indicated a strong desire for us to run this event on a yearly basis, combined with more frequent communication on local R&D initiatives, perhaps using an internet forum approach. Ultimately we

hope to encourage a greater level of R&D investment from industry and, in doing so, contribute to building a healthier local geoscience community.

The latter remark probably requires a little more explanation. We are essentially referring to a 'trickle-down' effect, whereby industry R&D investment ultimately improves the opportunities for students who may eventually become the next generation of resource finders. We can only speak for Victoria, but as the major resource companies have departed (or stayed and simply stopped investing locally) many senior industry figures feel that there has been a gradual decline in local geoscience opportunities and skills. This skills gap will almost certainly be amplified by the 'great crew change' occurring at present.

A collaborative approach akin to the AMIRA model (in the minerals sector) may be the way to engage small companies that currently dominate the local scene. An appealing side benefit is that companies involved would have early and quality access to fresh talent that soon will be so desperately needed. The costs of this may be quite low for individual companies, depending on the number of collaborators; the availability of matching government funding; and via R&D tax incentives.

We are actively seeking nominations for speakers for 2015, so please get in touch with your ideas as soon as possible. We are also looking for individuals from both PESA and ASEG to join a small subcommittee with the goal of establishing a range of sustainable initiatives related to enhancing local geoscience R&D.

Speakers	Talk titles
Prof Louis Moresi, Melb Uni	The dynamics of congested subduction zones: looking for new patterns in old convergent boundaries
Dr James Gunning, CSIRO	AVO inversion, fluids and facies: maximising the discrete Bayesian posterior
Dr Anne-Marie Tosolini, Melb Uni	Early Cretaceous palaeoenvironments of Eumeralla Formation, Otway Basin
Dr Joe Cucuzza, AMIRA	Collaboration in R&D: The minerals industry experience
Prof Mike Hall, Monash Uni	Riddles from the Rifts
Hamed Aghaei, Monash Uni	Upper Strzelecki Group stratigraphic reconstruction – a case study of coastal outcrops near Wonthaggi
Helen Gibson, Intrepid Geophysics	Innovations in potential fields modelling for greenfields exploration
Helen Sant, KPMG	R&D tax incentives
Prof Louis Moresi, Melb Uni	New basin genesis hub initiative (discussion)



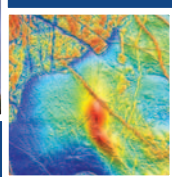
Helen Gibson presenting to the inaugural Victorian Petroleum Geoscience R&D Forum.

Representatives from other state branches of PESA and ASEG are welcome to contact the authors for support in starting up their own local version of this event. The event was fully sponsored by KPMG, who are a leading provider of services to the industry in the area of R&D tax incentives.

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Call for contributions to Mineral Exploration: Trends and Developments in 2014

A call has gone out for contributions to **Mineral Exploration: Trends and Developments in 2014** to be published in The Northern Miner, February/March, 2015. This annual review originated with the Geological Survey of Canada (GSC) over 50 years ago. In 2015, the review will be published by The Northern Miner as a supplement, in a magazine format, to be printed in time for the annual Prospectors & Developers Association Convention (PDAC) in March, in Toronto. The review is not only distributed to Northern Miner subscribers, but is also available to PDAC attendees and, ultimately, online.

The Canadian Exploration Geophysical Society (KEGS) is a 'patron' of the review, which is made possible by mining and exploration industry sponsors. The GSC also continues to play a contributing role in its production.

In 2015 the review will adopt the following headings:

- General Exploration and Corporate Highlights
- Airborne Geophysical Surveying
- Ground Survey Techniques (including drill hole methods)

The headings will cover the following topics:

- New geophysical (airborne, ground & borehole) data acquisition and processing techniques.
- New instrumentation developed during 2014 particularly that being (or about to be) offered for sale by instrument companies.
- New services offered by survey companies.

If you are interested in contributing to this review you should contact Patrick G. Killeen (pkilleen@explornet.ca).

The deadline for contributions is 14 November 2014.

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The proposed Exploration Development Incentive scheme explained



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Associates tell me that sentiment for mineral exploration is the worst they have seen in 40 years. I struggle to think what life may have been like in 1974, aside from the trend of wearing knee-high white socks. I do remember that, after graduating from geology in the late 1990s, I wrote to every mining company in Australia, including all of the big names back then, BHP, RIO, North, WMC, Comalco, MIM, Newcrest, Homestake, Anglo and others. I had a pile of about 50 rejection letters, which I kept. I was out of work for at least six months until a small consultancy opportunity arose.

Unemployment amongst Australian geoscientists is now back to levels last seen in the late 1990s, it is above 15% and probably rising. Australia's share of global mineral exploration expenditure has fallen from over 20% in the 1990's to around 12%. Clearly some of the problems that the Australian Mining

Industry has are of its own making, namely:

- Wage and cost inflation. Exploration staff used to work 2 or 3 weeks to get a week off. Not these days, with 7/7 rosters common. Inflation is not confined to the mining industry either, with Australia's minimum wage now one of the highest in the OECD.
- Productivity decline. A consequence of generous rosters and a decline in equipment productivity (down by 20% over the last 5 years).
- Excess in previous years. Drilling of prospects that had little chance of ever being economic, development of mines at the higher end of the cost curve.

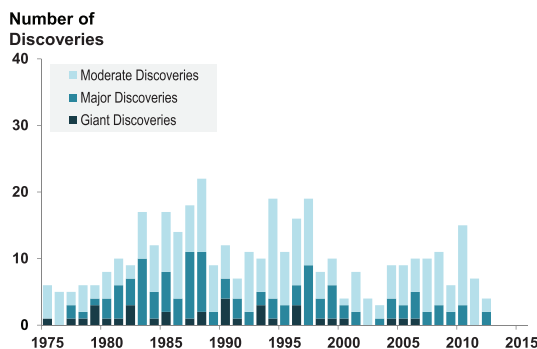
Despite these problems Australia can still be considered the most prospective country for mineral resources in the world, as indicated by rate at which discoveries are made. On average ten new discoveries are made every year (Schodde 2013, see also Figure 1) and the bulk of those discoveries are being made by junior explorers. It is estimated, for example, that 86% of all discoveries in NSW in the last decade were made by juniors (Schodde 2014). However, financial resources available to the junior sector have dramatically declined in recent years. Drilling has slowed (see Figure 2) and some forecasters predict 50% of Australia's metalliferous mines may close within the next 15 years unless spending on exploration and pre-development returns to levels seen in the last 5 years or so.

In order to encourage expenditure on mineral exploration in Australia the

Federal Government is proposing to introduce an Exploration Development Incentive (EDI) scheme. This scheme will enable tax credits to be passed on to investors in the junior mining sector. There is already deductibility and refunds for junior explorers through Research and Development (R&D) rebates, and state-based co-funding for drilling however, the individual investor can only offset their losses against other profits and capital gains. I suspect most investors in the sector are currently sitting on losses and, no doubt, many have given up any expectation of a return.

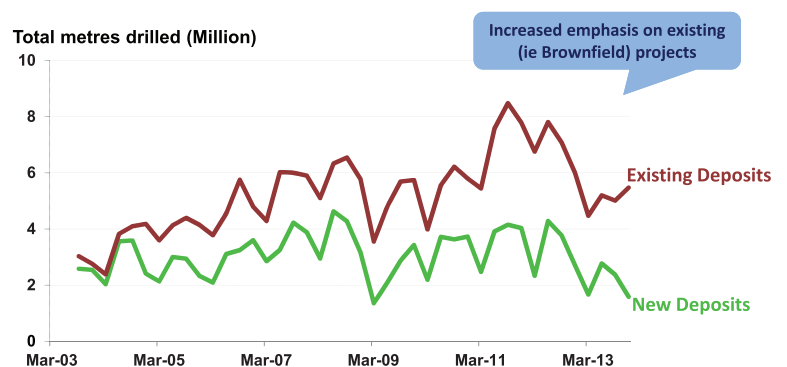
The Federal Government plans to trial the EDI scheme for three years, with a cap on exploration credits of A\$25m in FY'15, rising to A\$35m in FY'16 and A\$40m for FY'17. It is currently uncertain whether companies will apply the credits to existing share capital, or only newly issued shares. Future capital raising (newly issued shares) should be preferred if the aim of the scheme is to attract new money for exploration. In the current environment, persuading new investors to put money into mineral explorers is like getting blood from a stone.

The scheme can only be used for companies exploring for minerals (not petroleum, gas or quarry materials) in Australia, and is not available to entities in production. As the scheme is designed to boost discovery rates, the incentive will not be applied to expenditure on scoping and feasibility studies (an incentive is definitely needed here, as many companies struggle to fund this stage), but will be applicable to geophysical data acquisition and analysis,



Note: Excludes satellite deposits within existing Camps. Also excludes Bulk Mineral discoveries. Analysis based on Moderate-, Major- and Giant-sized deposits

Figure 1. Number of significant discoveries made (non-bulk discoveries Australia: 1975–2012). Source: Schodde, 2013.



Note: Includes exploration expenditures on Bulk Minerals (such as coal, iron ore and bauxite) Data reported on an annualised basis.

Source: ABS Cat No. 8412.0

Figure 2. Amount of exploration drilling in Australia (Sep 2001 – Dec 2013). Source: Schodde, 2013.

which will be good news for many ASEG Members!

Canada introduced a tax incentive scheme in the early 1980s. Between 1987 and 1991 around C\$3b, or 93% of exploration expenses, were covered by the scheme (including petroleum incentives). In 2006, the scheme funded around C\$600m in exploration, or a 3.5× return on the cost of the scheme to the government. The Canadian share of global mineral exploration rose by 50% to around 18% in the years following introduction of the scheme. Currently there are various incentives in different Canadian states, with some wind-back of previous schemes.

In recent years, over A\$1b was spent annually on Australian mineral exploration (outside of bulks), hence a A\$100m credit over three years appears to be too low. There are potentially hundreds of exploration companies in Australia that may apply for the scheme. An annual cap of A\$50m rising to A\$100m is more realistic, otherwise the scheme could prove token, with significant scale-back for applicants, minimising the desired impact.

A report by KPMG (2013) suggested the flow-on net benefit from an un-capped scheme to Australian tax revenues would be A\$106 to A\$283m/a. Numerous other Australian studies conducted in recent years have come to a similar conclusion; the benefits of the scheme far outweigh the cost.

It is possible to limit the scheme to prevent distortions. For instance, limiting the credit per company to A\$1m or A\$2m/a would favour smaller companies who currently struggle for funds. Additionally, limiting the credit individuals can claim per company, to say A\$100 000, could prevent distortions by major shareholders (and directors). Evidence out of Canada suggests individuals on the top tax bracket, many of whom allegedly have little interest in

the underlying securities, have used most credits. It may also be worth considering a reduction in the credit to 20 or 30% (rather than an amount based on taxable income brackets) and including non-taxpayers (like self-funded retirees many who pay no tax but often have plenty of cash to invest). The more investors attracted to the sector, the better. Why construct a bias towards the top tax bracket?

What the scheme should be aiming to do is to divert a small portion of the unproductive money sitting in bank deposits: all A\$1 736b of it (APRA 2014) and dividend paying stocks (many of which are no longer investing in Australia in a meaningful way) into real risk-capital, which has a demonstrated outstanding return to the nation.

If we replace all those mines, which may close over next decade, by continued exploration and pre-development, we could preserve hundreds of thousands of jobs (direct and indirect) and billions in state royalties and federal tax receipts. The risks associated with mineral exploration are extreme but the benefits to the taxpayer clear – therefore tax benefits should be generous.

Sentiment towards junior companies in Australia has picked up in recent months, as investors realise the ASX indices are mature and that future growth will come from new sectors, including the junior resources space. Canny investors will also remember that there are always cycles within cycles. There was a lot of money to be made from the last downturn (1998 to 2003), when a number of mergers and takeovers saw 50% plus premiums common and major new groups (like FMG) were established. When one commodity cools, others often heat up (in popularity at least). The zinc price rose over 26% in the last year (excluding the recent pullback). Nickel has made an astonishing recovery, rising 34% since 2013. Next year who knows which metal

will run? Tin looks good, and is back at support levels.

Let's hope the Exploration Development Incentive scheme is implemented soon and is constructed in the best way to attract new money and investors to junior explorers. A meaningful amount of money (hundreds of millions) flowing through the sector would get the drill rigs turning and lay the foundations for the next group of major discoveries, like the Nova nickel and DeGrussa copper deposits recently found in Western Australia.

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