EISSI Award Winner
National Arboretum, Canberra

Canberra
100th Anniversary

Scrivener
Selecting the site of Australia’s Capital City

Footprints
Surveyors on the Opera House construction

FeET
Surveyors’ Fee Estimation Tool goes online
The Association of Consulting Surveyors NSW and the Institution of Surveyors NSW have organized another Awards Evening at the Hilton Sydney to celebrate the NSW EISSI AWARDS 2013 on Saturday, 7 September 2013. Be part of the celebrations as finalists and awards are announced showcasing the wide range of activities undertaken by Surveyors and Spatial Scientists in NSW.

Lucky Door Prize:
Dinner for 2 in Glass Brasserie for value up to $150.00
To be drawn from registrations received before the 23 Aug 2013.

Discounted Accommodation:
A discounted rate of $299 for a Hilton King Guest room is available to all attendees (subject to availability). For reservations, please phone Lauren at 02 9265 6046 or email: Lauren.Poll@hilton.com. Booking Code: GEISS

For further enquiries or Awards Registration Form: ACS NSW on (02) 9267 9728 or visit on-line at www.acsnsw.com.au or www.surveyors.org.au

The NSW EISSI AWARDS 2013 would like to thank our sponsors:

---

**Platinum**

**Gold**

**Silver**

**Bronze**

---

**QUOTE CORNER**

“When life knocks you down, try to land on your back. Because if you can look up, you can get up.”

~Les Brown~

Cover: National Arboretum Visitor’s Centre under construction, the subject of this month’s article by EISSI award winner Daniel Rowseal of Clarke and Di Pauli Surveyors.

All material, opinions and reports published in this magazine are for the interest of members. No endorsement by the Institution of Surveyors, New South Wales, Incorporated, is given or implied by their publication.
This month’s President’s report has a communication theme. The first item is my address to the surveyors receiving their Certificates of Competencies for registration at the Institution office on the 12 April. It is an important event for the candidates and the Institution goes to a lot of effort to make the occasion special for them and their families. The second is part of an email by me that was published in Column 8 of the Sydney Morning Herald on 29 April. For those unfamiliar with Column 8, it is a column in the paper where readers write in about topics of interest. Topics that are quirky or esoteric often feature. The third is an analysis of the Institution’s first webinar on 17 April.

**ADDRESS TO SURVEYORS RECEIVING CERTIFICATE OF COMPETENCY FOR REGISTRATION**

Address to surveyors receiving their registration certificates at the Institution office in front of their families and Institution guests.

First of all on behalf of the Institution let me congratulate you all on passing your registration. All the surveyors here appreciate what an achievement that is. You have now joined an elite club of professionals in the spatial industry. You have now proved to yourself and your peers that in terms of surveying you have obtained your registration at a time when your professional services are very much in demand. It has been forecast that demand for your services will continue to increase without a corresponding increase in supply. By the financial year 2018/19 it has been forecast that this shortage will put $30 billion in construction work and approximately 15000 private dwellings at risk. So the future from your point of view is very bright indeed.

So let me finish by once again congratulating you on your achievement and wear the badge of “registered surveyor” proudly.

**COLUMN 8 SEGMENT IN SYDNEY MORNING HERALD ON 29 APRIL**

I submitted an email in response to a previous Column 8 segment that asked the question whether co-ordinates would change with continental drift and whether a fudge factor existed to work out the change. Below is the piece as reported in the column:

On a less contentious subject, regarding last week’s question about whether GPSs adjust for continental drift, Graeme Stewart, the president of the Institution of Surveyors NSW, and who better?, says, “Yes if you use the international co-ordinate system. In Australia we tend to be a bit tricky and use a local co-ordinate system that doesn’t change with time. There is a fudge factor (surveyors prefer the more glamorous term ‘datum transformation’) you can apply to convert between the two systems.”

I consider pieces such as this as being one small part of the jigsaw in promoting the profession of surveying to the wider community.

**INSTITUTION’S FIRST WEBINAR ON 17 APRIL**

The topic for the Institution’s first webinar was on the Surveyor General’s Direction No.9 detailing techniques for the use of GNSS in cadastral surveys. Doug Kinlyside and Dick Ellis of Land & Property Information graciously agreed to present the webinar. Interest in the event was much greater than expected of undertaking your work. Perhaps it might involve becoming familiar with GIS software, or perhaps undertaking aerial photography using toy planes, or using existing LiDAR data for your projects. There are so many new technologies and sophisticated software packages available to make surveying a continuing challenging and exciting career.

As with all professions the learning does not stop here. You will need to continue to develop your skills and to keep up with emerging technologies; legislation and procedures to effectively carry out the tasks that society will expect of you. In this regard it is imperative that you are a member of a learned professional body. This will give you access to continual professional development and a network of contacts within the industry that will enable you to mature and improve your skill level. The Institution wants to be an essential element of your development as a professional surveyor. This will enable you to plant your second tripod leg firmly.

As professionals you will need to maintain the highest ethical standards. Society and your peers will expect your conduct to be based upon integrity, social justice and competence. Your responsibilities for the rights and welfare of the community need to come before your own interests and other fellow professionals. You will need to always be mindful of acting in fairness and honesty towards clients, employers and colleagues. By maintaining these standards you can plant your third tripod leg firmly.

So with your tripod firmly set up on knowledge, professional association and ethics you will be able to confidently and accurately measure forward. At this point I would like to give you some advice. Take this opportunity to gain as broad a range of experiences that you can. At this stage of your career don’t get locked into being too narrowly focused. Always think about new and inventive ways of undertaking your work. Perhaps it might involve becoming familiar with GIS software, or perhaps undertaking aerial photography using toy planes, or using existing LiDAR data for your projects. There are so many new technologies and sophisticated software packages available to make surveying a continuing challenging and exciting career.

The other piece of advice that I would like to give you is to continue to develop your communication skills. You will notice that all advertised jobs of any substance mention something like “must have good communication skills”. I was on an interview panel recently and one of the applicants simply wrote “I have excellent communication skills” and nothing more. This person was cut from the interview. In my opinion, as a whole, surveyors, like scientists and engineers, have traditionally not excelled in this area. Think of yourself as being part of a team, develop your negotiation skills, take opportunities to give professional presentations, and take the time to network and promote the profession of surveying.
TWILIGHT SEMINARS COMING UP:


48TH ANNUAL INSTITUTION GOLF DAY! DON’T MISS IT !!!
The 48th Annual Institution Golf Day will be held again this year at the Ryde-Parramatta Golf Club on Thursday 8th August. This was a great event in 2012 so start organising your teams today.

Great prizes to be won on the day. Registration form is in this month’s Azimuth.

Terina Sawyer, Administration Manager

2013 NSW EXCELLENCE IN SURVEYING & SPATIAL INFORMATION AWARDS

Closing date for submissions is Monday 8 July. Judging takes place on 12 July.

Each year this event gets bigger and better and 2013 will be no exception with some new and exciting additions to the night. Tickets sell fast so make sure you book your table early.

Registration form is in this month’s Azimuth.

Early Bird Fee: closes Friday 26th July. The Early Bird Fee is $1,800.00 for a table of 10 (with naming rights).

Lucky Door Prize: Registrations received before the 23rd August will go in the draw to win a dinner for two in the Hilton Hotel’s Glass Brasserie (valued up to $150.00).

Discounted Accommodation: A discounted rate of $299.00 for a Hilton King Guest Room is available to all attendees (subject to availability).

Please contact Lauren (02) 9265 6046 or email: Lauren.Poll@hilton.com.

Booking Code: GEISS.

Master of Ceremony: This year our Master of Ceremony will be Peter Berner. Peter is without doubt one of Australia’s most popular entertainers and standup comic and with his intelligent humour and quick wit is guaranteed to have his audience in hysterics.

This is an urgent reminder – even though the closing date has been passed - it’s not too late to get an entry in.

To place an advertisement in the Azimuth please contact Terina Sawyer for a Media Kit on (02) 9264 2076 or email: manager@surveyors.org.au.

There has been a lot of activity around and about Canberra lately, as this year is, of course, the centenary of our national capital.

A number of conferences and seminars have been held in Canberra so far this year, including the APAS conference (reported in the May edition of Azimuth) and the Surveying and Spatial Sciences Conference. This month John Brock reports on the Surveying and Spatial Sciences Conference and reflects on his experiences of working in the capital and possibly commits some kind of heresy in suggesting that Scrivener’s plan room hut may have been used for some less salubrious purposes!

Also this month is a tribute to Charles Scrivener, the man primarily known for his efforts in helping to locate the site of the national capital (and perhaps secondarily known for his epic moustache!) And this national capital (and perhaps secondarily known for his epic moustache!) And this month’s EISSI award article is also Canberra themed, describing the challenging construction survey work required for the National Arboretum Visitor’s Centre.

I’ve been getting plenty of emails lately. Mostly these have been related the introduction of the interactive PDF Azimuth available on the ISNSW website, and able to be accessed through the link emailed out to each member. The response has been very positive, however some members are having trouble opening and persevere and try it again next month, the electronic Azimuth is a work in progress and hopefully will continue to evolve and become more user friendly. If you do have recurring problems, please contact Linda at ISNSW headquarters to help you sort them out.

Most of the other emails I have received in the last month have been in relation to my declaration of my fondness for my HP 42 calculator, as reported in last month’s editor’s report. Many respondents seemed surprised that I was still using the original calculator, when free apps for your smartphones are available as a substitute. It made me think I had failed to take this important step into the modern technological age. I was also informed that a lot of the young surveyors don’t even use calculators, they just upload files into the total station or GPS and work from that. Possibly the calculator is going the way of the plumb bob, the field bag and field notes. This may be a step forward into the new age of surveying, but in the meantime, I’m happy to plod along with my old faithful HP 42.

See you next time.

Paul Davis-Raiss, Editor-in-Chief
azimuth@surveyors.org.au
President Graeme Stewart commenced the meeting at 10:05am.

Apologies Received: Grahame Wallis (Immediate Past President), Philip Hayward (President Elect), Jason Hay (Murray Group), Paul Swan (TAFE), Karl Bretreger (University of Newcastle), Gaby Van Wyk (SSSI NSW)

No Conflicts of Interest were declared.

Treasurer's Report – Mathew Hynes (Honorary Treasurer) – Finances of ISNSW are still on track. Discussed funding on new website which is to come from the reserves, tabled initial thoughts regarding 2013-2014 budget.

Membership Report – Vicki Tester (Honorary Secretary)

Welcome the following new members:
• Ali Fuah Salim Almagbile – Student Membership
• Vito Zec – Student Membership

A membership status application and a membership re-instatement were approved and unfortunately a member was struck off for non-payment of fees. Membership is still strong with the total number of members sitting at 1334.

Administration Manager’s Report - Terina Sawyer (Administration Manager)

Numerous matters discussed including:
• EISSI Award 2013 – The Registration form will be available in the June Azimuth together with a double page advertisement, the early bird rate will only apply to bookings made before the end of July.

Policy and Governance Matters

Various Matters under consideration including:
• Continued review of policy and governance documents – the following reviewed policy was adopted: P23 – Reimbursement of Expenses incurred by Members. All adopted policies can now be found in the members section of the ISNSW website.
• AIBS re RCS issue – ISNSW has received correspondence advising that RCS has taken out copyright on the name ‘Chartered Surveyor’ within Australia.

Throughout the afternoon session of the Board Meeting the various reports of the Sub-Committees, Regional and Special Interests Groups and Co-Operating Associations were presented.

Matters reported on included:
Website – After much deliberation, and interview of the top three companies, it has been decided to employ SiteSuite to create the new ISNSW website, with the aim to have it up and running by the end of June. Information is still being added to the current website with video footage from ADS 2013 currently being uploaded to the members section.

Azimuth – Azimuth has gone digital with much positive feedback, though it will still be circulated in its usual hard copy format. On members 2013/2014 registration forms members will be given the option to only receive Azimuth in digital format.

The meeting concluded at 4:45pm.

For a more extensive review of the above ISNSW Board Meeting, copies of the ratified minutes are available through the ISNSW Office.

Vicki Tester,
Honorary Secretary ISNSW

---

Surveyor’s Quiz compiled by Michael Spiteri

A Quiz from the April 1913 Board of Surveyors Exam

In the spherical triangle ABC the correct value of the side “a” is 147,760.96 ft., and the angles are observed – A = 65° 26’ 47.68”, B = 28° 7’ 16.42”, and C 86° 25’ 58.4”.

Adjust the angles and compute the sides “b” and “c” in feet.

Solution next month.

Please forward your solutions to michael.spiteri3@bigpond.com

---

SOLUTION TO LAST MONTH’S QUIZ

As promised John Coyne’s solution to last month’s solar panel puzzle and his poem.

Intersection CB and Sun-Tree at given azimuth

E 53.628
N 42.752
H 4.04 (interpolated)

Length of shadow
Distance to tree from intersection: 10.195
Want shadow length to be less than distance to tree: solve
Height difference < tan Elev × distance
Height difference < 3.26
Trimming needed = 11.14 - (4.04+3.26) = 3.84

Poem over page
The shaded panel survey

By John Coyne

Jack had solar panels installed, shading them was a tree.
To maximise the power output, they had to be shade free.
The west side of a gable roof was a poor position –
The last thing that he needed was more light inhibition.

Now, Jack had done some surveying, at university.
So thought that he could calculate the trimming of the tree.
The thesis for his final year concerned using sunlight –
Making a computer programme to place the sun just right.
He’d done a student project for his building and land.
So had east-north coordinates that he needed at hand.

A primary fact that’s wanting is the height of the tree.
With a bit of mathematics, this can be found simply.
“T’ll mark the tip of the shadow, then find the length of this.
Using the sun’s elevation, the height I cannot miss!”
The only possible shadow was cast out on the street.
Getting a level measurement – too difficult a feat.
Plan B entailed lengths of wood—together these were strapped.
This was poked up through the branches, with this the height was trapped.

Positioning the tree was done by offsets from the house.
The block was skewed a bit from North—to calculate took nous!
Next, he found the position for the solar panel block.
He climbed up on the tile roof and found a steady dock.
From known points on the building, ‘round the panels he went.
Also, the heights above the floor from taken measurements.
To put the panels on the map, from the measurements done.
The slope of the roof was needed – arctan of rise on run.
Downloading a free mini-CAD helped process the data.
Thus, he did his positioning without being a martyr.

The sun positioning programme, for winter solstice time,
Showed the first time the morning sun, above the roof, did climb.
Sun bearing and elevation, now, unfortunately,
Aligning with tree and panels, casts shade unhelpfully.
So the shadow’s outward reach will not, the panels, blight.
Panel-tree distance by tan of the sun’s elevation –
That’s the calculation to make for system salvation.

So now Jack’s got the needed height for trimming up the tree.
He’s grateful for the things he learned—his surveying degree.
A tree surgeon gave him a quote to safely take the top—
It was too high a price to pay for such a simple lop.
Nothing happened to Jack’s tree—panels, winter shaded.
His solar electricity is slightly degraded.
A by-product of the project was he made some software,
For checking his calculations, even though, done with care.
Another thing he found to do, on a friend’s suggestion—
Using the tricky problem for a Survey Quiz question.

© J. P. Coyne, 2013
Because of the 3-dimensional complexity of internal and roof design, it was recognised at the very beginning that surveying was going to play a major role in the construction of this building.

Clarke & Di Pauli’s brief was:

• to keep construction activity moving at all times by efficiently managing all survey activities, because construction of virtually all structural elements was totally reliant on set-out by our surveyors.

• to assess the numerous architectural, civil and structural engineering plans for consistency and sufficiency of information and to allow adequate time for issues to be resolved with minimal delays.

The National Arboretum is situated on Canberra’s western rolling fringes, within 6 kilometres of the city centre and boasting magnificent views of Lake Burley Griffin. The master plan for the development included gardens, outdoor sculptures, hotel, playground, outdoor events space, as well as the visitor’s centre.

A number of prominent local businesses, including developers and builders volunteered and donated their time and professional services to build the visitor’s centre which was to include a bonsai pavilion, artworks and a café/restaurant.

Clarke & Di Pauli Surveyors are proud to having been invited by the builder to be a part of this group and to play this critical role.

As part of the 2003 bushfire recovery program, the ACT Government held a nation-wide competition for the design of the National Arboretum which was envisaged by Canberra’s architect Walter Burley Griffin so many years ago. The arboretum features 100 forests of rare and symbolic trees from Australia and around the world, set on a 250 hectare site. The goal of the National Arboretum was to create a place of international standard and interest, which is of outstanding beauty and a destination and recreational resource in its own right.

The National Arboretum is situated on Canberra’s western rolling fringes, within 6 kilometres of the city centre and boasting magnificent views of Lake Burley Griffin. The master plan for the development included gardens, outdoor sculptures, hotel, playground, outdoor events space, as well as the visitor’s centre.

A number of prominent local businesses, including developers and builders volunteered and donated their time and professional services to build the visitor’s centre which was to include a bonsai pavilion, artworks and a café/restaurant.

Clarke & Di Pauli Surveyors are proud to having been invited by the builder to be a part of this group and to play this critical role.

As part of the 2003 bushfire recovery program, the ACT Government held a nation-wide competition for the design of the National Arboretum which was envisaged by Canberra’s architect Walter Burley Griffin so many years ago. The arboretum features 100 forests of rare and symbolic trees from Australia and around the world, set on a 250 hectare site. The goal of the National Arboretum was to create a place of international standard and interest, which is of outstanding beauty and a destination and recreational resource in its own right.

The National Arboretum is situated on Canberra’s western rolling fringes, within 6 kilometres of the city centre and boasting magnificent views of Lake Burley Griffin. The master plan for the development included gardens, outdoor sculptures, hotel, playground, outdoor events space, as well as the visitor’s centre.

A number of prominent local businesses, including developers and builders volunteered and donated their time and professional services to build the visitor’s centre which was to include a bonsai pavilion, artworks and a café/restaurant.

Clarke & Di Pauli Surveyors are proud to having been invited by the builder to be a part of this group and to play this critical role.

As part of the 2003 bushfire recovery program, the ACT Government held a nation-wide competition for the design of the National Arboretum which was envisaged by Canberra’s architect Walter Burley Griffin so many years ago. The arboretum features 100 forests of rare and symbolic trees from Australia and around the world, set on a 250 hectare site. The goal of the National Arboretum was to create a place of international standard and interest, which is of outstanding beauty and a destination and recreational resource in its own right.

The National Arboretum is situated on Canberra’s western rolling fringes, within 6 kilometres of the city centre and boasting magnificent views of Lake Burley Griffin. The master plan for the development included gardens, outdoor sculptures, hotel, playground, outdoor events space, as well as the visitor’s centre.

A number of prominent local businesses, including developers and builders volunteered and donated their time and professional services to build the visitor’s centre which was to include a bonsai pavilion, artworks and a café/restaurant.

Clarke & Di Pauli Surveyors are proud to having been invited by the builder to be a part of this group and to play this critical role.

As part of the 2003 bushfire recovery program, the ACT Government held a nation-wide competition for the design of the National Arboretum which was envisaged by Canberra’s architect Walter Burley Griffin so many years ago. The arboretum features 100 forests of rare and symbolic trees from Australia and around the world, set on a 250 hectare site. The goal of the National Arboretum was to create a place of international standard and interest, which is of outstanding beauty and a destination and recreational resource in its own right.

The National Arboretum is situated on Canberra’s western rolling fringes, within 6 kilometres of the city centre and boasting magnificent views of Lake Burley Griffin. The master plan for the development included gardens, outdoor sculptures, hotel, playground, outdoor events space, as well as the visitor’s centre.

A number of prominent local businesses, including developers and builders volunteered and donated their time and professional services to build the visitor’s centre which was to include a bonsai pavilion, artworks and a café/restaurant.

Clarke & Di Pauli Surveyors are proud to having been invited by the builder to be a part of this group and to play this critical role.
SURVEY SCOPE

Typically on other construction sites, grids would be set out as a base to allow other trades to work from. However in this situation, this practice would be of very little use. Instead, every structural element had to be calculated and set out, quite a few of which required complicated and intricate survey calculations and highly accurate set out.

The survey scope included calculations and survey for:
- bulk excavation
- detail pad and footing excavation
- survey of very irregular surfaces including down into excavated footing pads and determination of complicated volumes having crossing and overlapping cut/fill areas.
- depth of underlying rock shelf
- internal and external hydraulics
- re-enforcing steel for walls and columns
- holding down bolts
- precast and mullion columns
- radial and curved grids
- highly accurate Work-as-Executed survey on window millions for design of vertical glazing
- high accuracy Work-as-executed survey of HD plates on top of precast columns
- hardwood roof rafters
- grid set on top of columns
- accurate and periodic monitoring survey of the roof structure, to monitor increase in roof load
- accurate Work-as-executed survey of critical roof glazing set out points for design in Dubai and for cutting, to fit seamlessly in between the ‘fingers’

SITE LOCATION, ACCESS

The site was cut into the side of a hill. The accuracy of different structural elements was paramount in them all fitting together like a glove.

Critical elements requiring accurate positioning, such as the base of the struts on top of columns, the ends of struts underneath the roof and ‘finger’ roof geometry, proved to be the most difficult to access both physically and to see from survey control.

The terrain did not offer many opportunities for good positioning of survey control, and visibility of elements from survey control was extremely limited and proved very challenging.

To achieve physical access and line of sight to critical points, we had to:
- do height safety training to be able to walk on top of the roof structure using harnesses
- use scissor lifts to reach tops of columns
- strategically establish elaborate survey control around the site for remote surveys, using Leica 1200 total stations and sets of angles, levelled and adjusted by least squares.

STRICTIC APPROACHES TO PROBLEM SOLVING

A project of this complexity and the size of the survey component presented us with varying logistical and procedural challenges that had to be solved and managed.

The high expectations and requirements by the client and by various consultants was significant relative to timing. The expectation was that the field survey would commence quickly and that the data flow would be immediate.

Combined with the complexity of the survey scope, the project certainly created management challenges.

We had to grind back and come up with efficient strategies, firstly to manage our resources and secondly to devise innovative procedures and field and office solutions to ensure an efficient and seamless flow of data from the field to office and then on to the waiting client and other professions.

To assist us in managing these challenges we had to adapt some of our existing Quality Assurance procedures (ISO9001: 2008) and also create new ones for field and office calculations.

USE OF INNOVATIVE TECHNOLOGY AND LATERAL THINKING

Tried and true construction surveying techniques were predominantly used for this project.

Leica GMP 104 monitoring targets were used for remote monitoring of the roof with increasing roof load.

A hold-point on the roof construction was an accurate, 3-dimensional Work-as-executed survey of over 450 critical ‘set out’ points (visible nails/targets, placed in strategic locations by glaziers) used for remote surveys, using Leica 1200 total stations and sets of angles, levelled and adjusted by least squares.

This survey was later sent to Dubai for input, and this set the parameters of the reduction, checking and calculations process.

We approached Mr Ken Toleman of GeoComp Consulting and he was very quick in writing such a reduction routine in his GeoCivil survey software. The routine automated this 3D reduction as well as the QA checks using redundant observations and the calculation of the final 3D coordinate of each point. As a result, we were also able to provide an automatic coordinate comparison (diff E, N, RL) of the actual position of ‘set out’ points, as compared to the design, for each point.

SPATIAL COMPONENT OF THE PROJECT

As surveyors we were entrusted to assist with and report on the accuracy of the constructed structural elements. The spatial component of this project was extremely critical for the jigsaw to fall into place.

We had to assist in manipulating and aligning spatial data with 3D models of various designs and translate that to usable marks on the ground, on top of columns and above the roof, allowing

construction of the building to progress rapidly.

Our 3-dimensional Work-as-executed survey of HD plates on top of precast columns was critical for designers to accurately design the column struts holding up the roof.

SUCCESSFUL COMPLETION OF SURVEY BRIEF

Clarke & Di Pauli Surveyors have managed to complete the above brief with satisfaction and great success. The key outcome that we were able to achieve was to maintain the spatial integrity of the design and structural accuracy and reliability of all construction works on the existing site.

This gave the builder surety and confidence in progressing from one step of construction activity to another and confidence that the design jigsaw is going to fall accurately into place without costly delays.
Charles Robert Scrivener
Selecting the site of Australia’s Capital City

On the 100th Anniversary of the establishment of Canberra, it is worthwhile honouring Charles Scrivener, the first Commonwealth Surveyor General responsible for helping to select the site for Australia’s Capital city.

In 1880 Charles Scrivener passed the Licensed Surveyor’s exam with a result of 100% and was appointed staff surveyor for the NSW Lands Department. In 1891 he defined the boundaries of the 50,000-acre Gloucester Estate of the Australian Agricultural Company north of Port Stephens. Then in 1897 whilst surveying in the Mt. Irvine district (Blue Mountains) he recommended that this area become a National Park. However the Government of the day did not approve.

Australia’s Federation in 1901 required that a federal district of 250 square miles be set aside in NSW for a neutral seat of Government to be located at least 100 miles from Sydney. Scrivener accompanied Alexander Oliver, Chairman of the NSW Land Appeal Court, to report on Dalgety as a suitable site for the National capital, using the waters from the Snowy River as a water supply. However in 1901 Oliver’s three site recommendations were Bombala, Orange and Yass. Then in 1903, Sir John Forrest, a surveyor and Federal Parliamentarian from Western Australia, having inspected 25 locations in the Southern Monaro from Western Australia, having inspected 25 locations in the Southern Monaro

Selecting the site of Australia’s Capital City

Rivers and marking the boundaries of the areas of the Molonglo and Queanbeyan square miles, working out the catchment of 60 square miles. He also was responsible for triangulation of the ACT covering 900 square miles, working out the catchment areas of the Molonglo and Queanbeyan Rivers and marking the boundaries of the ACT. (The plan room Scrivener built is sited just north of Parliament House on State Circle).

Further surveys he had under his control were the Yass to ACT railway, marking the lands at Jervis Bay granted by the State of NSW to the Commonwealth, the proposed railway from ACT to Jervis Bay, the small arms factory at Lithgow, the Quarantine Stations in Western Australia and North Head in Sydney; the railway from Port Augusta to Kalgoorlie; checking longitude at Port Augusta; negotiation for the acquisition of a site for the General Post Office in Perth; selection of a site in Newcastle for a Customs House; and selection of sites for the Department of Defence.

Scrivener was a surveyor, eminent in his profession with an exceptionally wide range of scientific and professional knowledge and practical experience. He was noted for the volume and speed of the work he completed, his consistently high accuracy, the quality of the documenting of his surveys and the clarity, legibility and attention to detail of his plans and field notes. Scrivener was the main author of the Departmental Plan for Canberra, proposed in 1912, as the alternate to Walter Burley Griffin’s design. Scrivener was honoured with an Imperial Service Order in 1913. In 1915 he retired to live at Mt. Irvine on 50 acres where he designed and built his house and laid out the garden, reticulating water from a spring. He built and operated a saw mill until after the First World War, when he gave it to his son. He involved himself with the improvement of the road into Mt. Irvine. He was a man of whom it was said that “the public interest came first”.

Scrivener died 26th September 1923 in a private hospital at Killara in Sydney at the age of 67.

Details have been taken from the exhibition compiled by the Mt. Irvine and Mt. Wilson Historical Society in 2001 and now held by LSNSW.

Additional material by Terry Birtles from APAS 2013 presentation ‘Charles Scrivener’s Task to Locate a National Capital’

Ever since my childhood I have great memories of when my parents would take me on vacation to our National Capital of Canberra. I never found the radial road layout, as designed by the American Walter Burley Griffin, to be a problem like I seem to hear a lot of other visitors to the ACT complain about. From this early time it was always a big thrill for me to leave the borders of NSW to venture into another State or Territory.

Having completed my studies at the University of New South Wales in the Bachelor of Surveying degree in 1977, the Parramatta surveying firm Exley Smith O’Keefe and Partners, for whom I had been a private cadet, arranged for me to be placed with McKimmie Jameson and Partners in Queanbeyan to complete the rural experience component as required by the NSW Board of Surveyors. Lasting about 4 and a half months with the surveyor I left after a disagreement (which I have been led to believe is not hard to have with me?)

immediately gained employment under articles to the best surveyor I have ever been fortunate enough to work under. Mr Ian Rognald Morton Clarke, otherwise known as “Bill.” Half of my work was within the ACT which although suffering extremes of temperature was nevertheless most enjoyable. I even trialled in three games, two of which were against First Grade sides Manly and Western Suburbs, with the Queanbeyan Blues coached by the renowned Don Furner, then eventually played with the Navy base rugby league side HMS Harman which was fantastic.

From all of this nostalgia you may be able to garner that I have an inherent love for our Federal Capital which I have since discovered is world famous as one of the most picturesque and spectacular planned cities from the Garden City Movement of the early Twentieth Century

In recognition of the 100th year since King O’Malley drove in the first surveyor’s peg on 20 February 1913 to start the construction of the Federal Capital Territory (as it was originally known) our Country’s Capital is celebrating in great style through many displays and events especially planned for this year. The function for surveyors was the Surveying and Spatial Sciences Conference 2013 held from 15 to 19 April at the National Convention Centre. Naturally we stayed at the Mercure Ainsle Hotel built in 1927 and situated closely to the City Centre and Convention Centre.

On the first day of the conference I was invited to be a presenter at the History and Heritage Workshop well ably organised by Canberra surveying stalwart Frank Blanchfield who I have known for many years. The excellent array of quality speakers provided a brilliant day of surveying history with first class PowerPoint presentations filled with intriguing images and maps unfortunately only attended by about 20 people including the presenters. Initial
John Brock and Frank Blanchfield at the ceremony for the replacement of King O'Malley's peg.

talker was ACT historian Matt Higgins (not the Queensland surveyor!) who is an expert on the borderlines of the ACT. Not only did he take us through the history of the border survey itself he also showed us some images of survey reference trees which have since been lost in prior bushfires. Following Terry Birtles' authoritative biography of the legendary principle surveyor of the ACT Charles Robert Scrivener I revealed those earliest explorers and surveyors who were instrumental in opening up the Limestone Plains among which were Throsby, Meehan, Hoddle and Dixon. I also related the amazing tale of a replica Port City designed by Henry Ferdinand Halloran near the ACT Jervis Bay Territory called Pacific City which was scarcely occupied due to the non-fulfilment of the plan to extend the railway line far enough south to service the proposed seaside metropolis. Other speakers were Adrian Cammins on McDouall Stuart, Lindsay Perry on Mattheus Flinders and the Naming of Australia, a brilliant project to create a giant map of the Early Navigators of Bass Strait headed by Greg Rechleston. Finding Burke and Wilks Plant Camp by Frank Leahy and finally Canning Stock Route Surveys by the great nephew Camp by Frank Leahy and finally Canning Stock Route Surveys by the great nephew of A.W. Canning himself James Canning. Other speakers were Adrian Cammins on McDouall Stuart, Lindsay Perry on Mattheus Flinders and the Naming of Australia, a brilliant project to create a giant map of the Early Navigators of Bass Strait headed by Greg Rechleston. Finding Burke and Wilks Plant Camp by Frank Leahy and finally Canning Stock Route Surveys by the great nephew of A.W. Canning himself James Canning from Melbourne. To top off a wonderful day Frank then had a bus to take us on a Scrivener Tour of Canberra which concluded at the spot determined by the Young Surveyors Group to be EXACTLY where King O'Malley had placed that first peg just over 100 years before. In attendance to witness the ceremonial replacement of this mark was even the daughter of the surveyor Percy Sheaffe who can be seen in the right of the 1913 snap as King O'Malley belts the marker into the ground. Utilising Percy's original field notes it would appear that this "first" peg was actually strategically placed under the professional guidance of surveyor Sheaffe in a position relative to the calculated radial line as designed in the layout for the city. However the final deliberations of Frank's young surveyors will become available in the near future so keep your eyes out for the ultimate result.

Attendance at the Welcome Reception on Tuesday night and Young Surveyors Cocktail Party the following evening were most convivial and an opportunity to catch up with old friends not seen in eleven years since I have not attended a SSSI Conference since it took over from the Institution of Surveyors Australia in 2002. Finishing off our commitment with this next event Kerima-Gae and I attended a great Scrivener Breakfast on Thursday morning.

In 2013 Association of Consulting Surveyors (ACS) NSW is once again leading the effort to keep surveyors informed and aware to current market conditions for the surveying industry. The overall aim of this drive is to boost the confidence of the profession as a whole in its knowledge of what constitutes a charge-out fee that is not only fair and reasonable to the public but feasible and sustainable for those running a survey practice.

This initiative is comprised of various projects such as the data collation and analysis of hourly rates and salary figures across the profession, along with the reinvention of the Surveyors' Fee Estimation Tool (FeET). This system is based upon the "Guide for Survey Fees" as published by the Institution of Surveyors from 1997 – 2007 which proposed that survey fees should be estimated based upon a combination of:

- suggested piecework figures
- salary rates and time estimates
- overhead costs
- risk margins
- profit margins
- and specialised equipment rates

In 2013 Association of Consulting Surveyors (ACS) NSW is once again leading the effort to keep surveyors informed and aware to current market conditions for the surveying industry. The overall aim of this drive is to boost the confidence of the profession as a whole in its knowledge of what constitutes a charge-out fee that is not only fair and reasonable to the public but feasible and sustainable for those running a survey practice.

This initiative is comprised of various projects such as the data collation and analysis of hourly rates and salary figures across the profession, along with the reinvention of the Surveyors' Fee Estimation Tool (FeET). This system is based upon the "Guide for Survey Fees" as published by the Institution of Surveyors from 1997 – 2007 which proposed that survey fees should be estimated based upon a combination of:

- suggested piecework figures
- salary rates and time estimates
- overhead costs
- risk margins
- profit margins
- and specialised equipment rates
By utilising this proposed system, surveyors were able to begin quoting and estimating fees with a true understanding of all overhead and running costs that contribute to the calculation of a required charge-out rate. This in turn allowed surveyors to clearly differentiate between their desired income versus their required income – a theoretical maximum and minimum which all estimates should fall between.

FeET was later developed as a semi-automated version in Microsoft Excel which takes these basic considerations and calculations to the next level by suggesting guide rates based upon a multiplying factor comprised of the Australian Male Weekly Earnings (AMWE) as well as a regional multiplier which accounted for the surveyor’s individual area of operation. For example, projects based in Sydney versus Darwin are likely to encounter a dramatically different scale of costs and therefore fees.

In mid 2012 ACS New South Wales commenced an initiative to reinvent the system as an online portal via the ACS members website, as a free tool for use by ACS members. The first stage of this initiative was to undertake a member survey, the results of which were as follows:

- many surveyors do use the existing FeET system
- many surveyors found that the Microsoft Excel version was too clunky or too transparent – showing its inner calculations and formulas to the point of causing confusion
- some surveyors found that the system was only worth using for large jobs in its current form
- over 90% of people said they would be interested in using an online version

These results were conclusive enough to justify the redevelopment of FeET as an online version, the core goals of which are:

- to make the system simpler and more straightforward
- to close in the system and cover over some of the nuts and bolts so that surveyors only need concern themselves with the input and reporting screens
- to centralise the system and improve accessibility, allowing user to login from anywhere and access the job data with a secure login code
- to allow users to store a history of jobs and reports
- to allow the comparison of figures from past estimates
- to allow for efficient rollout of new functionality, guide values, AMWE values etc.

Following concept planning, the initiative was then taken to a feedback group comprised of surveyors who were specifically chosen for their high level of knowledge pertaining to the existing FeET system. Feedback from this focus group has shaped the development of the system over the past year. Upon first using the new FeET system surveyors will be encouraged and prompted to consider all possible overhead factors contribute to their general running costs, including overheads, salaries, specialised equipment rates and per item costs which are then combined with a multiplier based upon the number of staff, productivity and billable hours per staff member, regional multiplier and AMWE.

Creating an estimate is simple. First a project’s title and address is entered. Disbursement items and job type are selected and the user is prompted to indicate which staff will be involved in the project. The number of lines and boundaries for the job are entered, including slope, vegetation and length of each, along with expected billable hours per project task. This generates a project summary which can be printed or printed for the benefit of the client or for the user’s personal records. Once the project has been actioned and completed the surveyor can then use the FeET projects sign-off screen to indicate and record whether the initial estimate was an accurate summary and can use this data to shape estimates moving forward.

We are excited to announce that phase 1 of the FeET Online public release to ACS members is coming this June 2013.

Veronica Bondarew
ACS NSW
the consultations and considerations by Geoscience Australia on a
dynamic Datum for Australia.

Our first advertised speaker for the evening was Ian Harper from
GeoData Australia with a presentation on why changes in
digital database technology together with cadastral modelling
will challenge the future of surveyors. Ian pointed out that in
the past survey plans modelled the cadastral and surveyors
were necessary to locate boundaries. He used examples to
demonstrate that the resultant historical cadastral will be
modelled more effectively in a digital database. These examples
included his firm’s cadastral modelling along the route of
the North West Rail Link, the Circular Quay to Kensington Light Rail
route and a ‘whole of state’ integration project in Tasmania.

Ian pointed out that with accurate measurement tools more
freely available there is already a perception that anyone will
be able to identify their boundaries with a GNSS device. That
perception, he said, was countered by the current Torrens
system of governance which requires a Registered Surveyor for
boundary definition and validation.

Ian discussed how the digital environment can provide
considerable efficiencies in survey and land administration and
how critical it is that the survey profession must be foremost
in the transition from measurement-based systems of the past
to the position-based systems of the future. Accuracy and
data integrity in the database, he said, will be the key to those
efficiencies.

Ian’s presentation was a powerful reminder of the
opportunities presented by cadastral modelling to all surveyors
in order to remain relevant in a world of integrated data
management systems.

The second advertised presentation for the evening was
Finding Bungengol? Surveying Solves a 200-Year-Old Mystery by
Fred de Belin, Manager Survey at City of Ryde Council.

Fred’s presentation was a fine example of how surveying
techniques can be used to help solve long standing mysteries.
When the First Fleet arrived in Sydney in January 1788,
Wissilakaware Bungengol was about 25 years old. Bungengol,
as he became known, developed a good command of English
and went on to play a very important role in communications
between the indigenous population and the early European
settlers. The site of the Sydney Opera House, Bungengol Point,
is named in his honour.

In 2010 Dr Peter Mitchell prepared a report to City of Ryde
Council’s Heritage Advisory Committee regarding his search of
historical documents aimed at locating Bungengol’s grave. Dr
Mitchell requested that Council’s surveyors look at his findings
and evidence to confirm his conclusion as to his location of the
gestone.

Enter Fred de Belin and his survey team. Fred’s starting point
was a photograph uncovered by Dr Mitchell and taken around
1900 which shows what appears to be an old simple gravestone
surrounded by stones on the property of James Squire at Putney
on the Parramatta River. The foreground, mid ground and
background of the photograph provide markers which could be
used to locate the position of the camera and hence the gravestone
itself.

Fred explained to the meeting how the identification of the
surrounding sites and markers in the photograph followed by
intersecting sight lines and calculation of distances and ratios
led to the positioning of the grave site in the present built
environment. Fred used other validation from circumstantial
evidence and reasonable deduction using current photo images.

The later use of ground penetrating radar at the site identified
by Fred was inconclusive, finding no bones or artefacts such as axe
heads or breast plates but it did disclose that the earth below
the surface had certainly been disturbed in that area consistent
with a grave.

So is the location identified by Dr Mitchell and refined
by Fred de Belin using survey techniques, the grave-site of
Bungengol. Fred had clearly formed his own view but left it to
us, an analysis of the data he provided, to form our own opinion.

Whatever way, it is certain that Bungengol is buried in the
vicinity and the publicity in Sydney newspapers and the general
public interest generated was priceless.

Mark Gordon on behalf of the members thanked both Ian
and Fred for their time and contribution to another successful
meeting of the Cumberland Group of Surveyors.

Future Cumberland Group meetings for the year are as
follows. Please note the new date for the previously advertised
October meeting which has been moved forward to Wednesday
11 September 2013.

- 19 July 2013 (Land Development Seminar)
- 11 September 2013 (General Meeting)
- 2-3 November 2013 (Special 50th Anniversary Event)

Warren Thomas
Publicity Officer
Cumberland Group of Surveyors

NSW Chair Report

There were a number of points that stood out for me during the recent SSIC
conference. I believe discussion on some of these topics should continue and
the spatial practitioners should become proactive in implementing the lessons
learned by others. I want to revisit a few of these and challenge spatial practitioners
to discourse.

First, it seems that the SIO approach to spatial data management is alive
and well. Some presentations focused on new projects that were silo
based, and identified the decision for this approach - although not admitting
that they were SIO’s of course. The majority though understood the importance
of Enterprise Solutions. Many people now “get it”, but struggle with the realities
of non-open technologies and the pervasiveness of proprietary systems that
makes a completely holistic approach to Enterprise solutions difficult.

Although the broader digitalisation of spatial software platforms are generally capable of
delivering open, integrated solutions, there are many factors that make this
a difficult and almost impossible target. Often the decision makers are simply
driven by the bottom line or external pressures, while the spatial practitioners
are simply not capable of defining good business cases to drive true enterprise
solutions.

Something else I found interesting was the developments around dynamic
databases. It would seem that at first glance here in Australia, with a really stable
continental drift, there is little or no need for something as complex as a dynamic
datum. Spatial practitioners in New Zealand of course will have a completely
different opinion. In reality, spatial practitioners have been working with dynamic
data all the time. Perhaps working with dynamic datasets will have more
advantages than disadvantages. I will certainly watch this space.

Something really encouraging for me was the way in which spatial practitioners
showed interest and participated across disciplines. I truly hope that this will
continue. Let’s learn from one another. We will all benefit.

Gaby van Wyk
SSIS NSW Region Chair
Contact
NSW Regional Executive Officer, Kitchi Fitzhumble
at nsw.nsw@sssi.org.au
Chair, Gabriel van Wyk at chair.nsw@sssi.org.au

Upcoming Events

WEBINAR – GISP-AP CERTIFICATION

In the Spatial Information & Cartography Commission expertise is
acknowledged by the internationally-recognised Geographic Information
Systems Professional (Asia Pacific) (GISP-AP) Certification. Endorsement
under this Certification informs the general public and other professionals
that your skills and expertise in spatial information and cartography are
recognised at SSIS’s highest level.

This webinar is an introduction and “How to” guide to getting SSIS
certification.

- Lots of essential information provided about the philosophy and background
  of the certification process.
- At the end of the presentation there will be an opportunity to
  raise questions regarding your own contribution to the industry and what
  counts towards your certification.
- Following on from this webinar there will be a NSW GISP-AP Application
  Workshops held in Sydney CBD on the 9th July 2013.
- Presenter: Heidi Brown

Heidi Brown has certified and, 5 years later, re-certified through the SSIS GISP-
AP Program. She can help you understand the application process & walk you
through the differences between CPD, CPK, EDUC & Experience Points. Pointing
out the areas you need to pay particular attention to build your application for
GISP-AP Certification.

Date: Tuesday, 16th June 2013
Time: 1 to 2pm AEDT (NSW, ACT, VIC, TAS, QLD), 12:30 to 1:30pm MST (ID, UT),
11 to 12pm AWST (WA)
Where: Webinar, Online
Cost: SSIS Members FREE, IGI NSW Members (Alliance Rate) FREE, Non-
Members $30
CPD: 1 SSIS CPD Point, 1 Survey Practices CPD Point (BOSIS)
Registration: Please visit http://www.sssi.org.au/Events/list-view.html for
more information and details on how to register.

Can’t Attend Webinar: If you cannot attend the webinar at this time but
would still like to view it, please register for the event and you will receive a
recording of the webinar.

GISP-AP CERTIFICATION APPLICATION WORKSHOPS

In the Spatial Information & Cartography Commission expertise is acknowledged by the internationally-recognised Geographic Information Systems Professional (Asia Pacific) (GISP-AP) Certification. Endorsement under this Certification informs the
general public and other professionals that your skills and expertise in spatial
information and cartography are recognised at SSIS’s highest level.

WHY

Following on from the GISP-AP Certification Webinar held on the 18th
JUNE 2013 about being held in response to a number of questions from people
interested in GISP-AP Certification and expressions of interest in receiving some
help with the application process.

The purpose of the event is to work with a small number of active applicants to
help them get themselves ready to submit an application to become a GISP-AP.
WHAT
Participants will be expected to bring their GISP-AP Application paperwork and any material relating to the certification program that they have questions about. Potential applicants and applicants at any stage of the process are welcome. The workshop could be used to start an application, or work through any concerns related to completing one for submission.

The workshop convenor, Heidi Brown, is GISP-AP Certified and familiar with the application and assessment processes. The structure of the workshop will depend on where the participants are at in their applications and what the primary concerns are. In order to facilitate preparation for the afternoon, participants will be asked to indicate where in the application process they currently think they are at registration.

WHO
The event is for people currently working on, or about to start, an application to become GISP-AP Certified. Participant numbers are limited to a maximum of 8 people per workshop.

Presenters: Heidi Brown
Date: Tuesday, 9th July 2013
Time: AM Workshop: 9:30am to 12:30pm or PM Workshop: 1:30pm to 4:30pm
Where: Association of Consulting Surveyors NSW Inc. Suite 4, Level 10, 99 Bathurst St, Sydney, NSW 2000
Cost: SSSI Members FREE, SSSI Members (Alliance Rate) FREE, Non-Members $40
CPD: 2 SSSI CPD Points; 2 Survey Practice CPD Points (ROSSI)
Registration: Please visit http://www.sssi.org.au/Events/1/grid-view.html for more information and details on how to register.

NSW News
ANNOUNCEMENT AND CALL FOR PAPERS
NSW REGIONAL CONFERENCE 2013 AND ANNUAL DINNER
“Spatial Networking - Crossing the Great Divide”

SSSI NSW along with the Central Western Group of SNSW, Southern Group of SNSW and MSIA (Mapping Sciences Institute Australia) invite you to attend the Spatial Networking – Crossing the Great Divide: NSW Regional Conference 2013 and Annual Dinner, to be held on Friday, 15th November to Saturday, 16th November 2013 in Bathurst at the Mount Panorama Pit Complex.
Networking Drinks and Dinner on Friday night.

SSSI NSW are working together with Central Western Group of SNSW, Southern Group of SNSW and MSIA to provide a regional conference this year that covers all of SSSI’s commissions “Spatial Information and Cartography ∙ Land Surveying ∙ Engineering and Mining Surveying ∙ Remote Sensing and Photogrammetry ∙ Hydrography”.

The theme of this year’s conference “Spatial Networking – Crossing the Great Divide” will focus on how surveying and spatial science professionals work together, the crossing of the professions. It is also timely as this year we are celebrating the bicentenary of the crossing of the Blue Mountains.

The conference program will include only plenary sessions with guest speakers. There will be no break-out sessions. This is in keeping with the theme of “crossing of the professions”.

An invitation is extended to those wishing to submit a paper, presentation or poster presentation for this year’s conference. Abstracts must provide an overview of the project, research or topic to be presented, with a maximum of 300 words and be submitted in Microsoft Word or PDF. Submission of Abstracts will close on Friday 21st June 2013.

Joining as this is a NSW Regional Conference the talks we are aiming for are:

• Regional or urban focus within NSW (e.g with relevant legislation, practice, spatial/surveying policy)
• Demonstrate / application of best practice and standards (Australia / international)
• Show overlaps between the specialities (commissions), interoperability of systems
• Joint presentations of speakers showing overlaps and teamwork between professionals e.g. engineering working with surveying and mapping.

For more information or to submit your abstract please send an e-mail to Kelly Rischmiller (SSSI NSW Regional Executive Officer) at reo.nsw@sssi.org.au or Phone: 02 8005 0972
Organising Committee: SSSI - Gabby Van Wyk, Ross Johnson, Warwick Hehir and Kelly Rischmiller
Central Western Group of SNSW - Michael Spiteri and Craig Jaques
Southern Group of SNSW - Greg Goodman MSIA - Hark Saiol and Doug Herrick

Congratulations to all 2012 APSEA Winners
THE 2012 APSEA AWARDS DINNER WAS HELD ON THURSDAY EVENING, APRIL 18 AT THE NATIONAL CONVENTION CENTRE.
The dinner presented an entertainment filled event allowing delegates to unwind and celebrate the success of their peers within the Surveying and Spatial Industry. There were 7 awards presented on the night and a huge congratulations to the winners.

Professional of the Year - James Spain (Accepted by Tom Brownlie)
Professional Eminence Award - Chris Pozzi
Student - Undergraduate - Philip Nixon (Accepted by Nick Lawrence)
Student - Postgraduate - Jacob Delfos
APSEA Winners

Lighting Up GNSS Positioning Blackspots In Open Pits Thanks To The Leica Jigsaw Positioning System

Dr Ryan Keenan, Project Manager – Leica Mining Solutions, Leica Geosystems and Dr Brendon Lilly -Product Manager - Jps and J2drill Leica Geosystems Mining Division presented this lunchtime webinar which was held on the 1st May 2013.

The presentation showcased the ground-breaking radio positioning system that can be considered a “local GNSS” invented by Locata Corporation (Locata), Dr Ryan Keenan presented this new Locata technology and showcased how Leica have combined this technology with their Leica Jigsaw Positioning System (Jps), the world’s first commercial product to combine the Locata signals produced by a Locata system into a high-precision GNSS+Locata positioning device. Dr Brendon Lilly was made available at the end of the presentations for any questions on this new technology.

A recording of the webinar was made available for those who could not attend the webinar but registered at the time. If you would like to view this recording please contact the NSW REO, Kelly Rischmiller at reo.nsw@sssi.org.au
Outstanding University of Southern Queensland (USQ) Bachelor of Spatial Science (Surveying) graduate, Phillip Nixon, was recently awarded the Undergraduate Student Project at the annual Asia-Pacific Spatial Excellence Awards on top of receiving two ‘outstanding student project’ awards at the state level.

This represents an extraordinary achievement for a project that many rural cadastral surveyors would appreciate wholeheartedly, especially given that the project is at the lower 2 unit project range competing against projects from 1 unit to 4 unit duration. It takes an extraordinary project at the undergraduate level to win this award against post-graduate student projects at the coursework graduate certificate, graduate diploma and Masters level.

The annual Asia-Pacific Spatial Excellence Awards are the only awards for the Asia-Pacific region that recognise the achievements of both individuals and organisations engaged in the surveying and spatial information industry at the national level. The Undergraduate Student Award (Regional & National) is conferred on a student who has undertaken a research project in the course of their studies that contributes to the surveying and spatial science profession. Students eligible to nominate for the award include final year undergraduates and graduates including Honours, Graduate Certificate/Diploma, Vocational and Educational Training (e.g. TAFE, Polytechnics) and Masters by coursework.

Earlier, Phillip had been awarded the University Student Project of the Year at the NSW Excellence in Surveying and Spatial Information Awards 2012, and the Undergraduate/Graduate Project Award (USEA), the Clem Jones Medal, at the 7th Annual (Queensland Spatial Excellence Awards. This was the first time for a student to receive both state awards and highlights the growing recognition of the excellence of spatial science graduates at USQ and the increased awareness of the USQ brand in NSW.

Phillip, whilst in his final year at USQ was a University Medallist, which is the university’s most prestigious undergraduate award and is awarded to a small number of graduates each year whose academic performance has been consistently of the highest order, the Spatial Science and Surveying Institute Old Centenary Prize donated by the Surveying and Spatial Science Institute, Australia, Queensland Division, for the graduating external student who demonstrates the highest level of proficiency in practical and academic work and a sincere interest in the profession, and also the Aurecon Prize for the best Bachelor of Spatial Science seminar presentation and project.

In one of the more innovative student projects, Phillip’s project was titled “Using sun observations to set an azimuth by combining and comparing Automatic Target Recognition in a Total Station with GPS observed time and position.” The hypothesis of the project was to develop a method to get the Automatic Target Recognition on a total station to track the sun and text the accuracy that could be obtained taking solar observations in this manner in comparison to GPS observations. As a by-product of the project Phillip wrote a program for taking solar observations, reducing the observations based upon a GPS observation and location to a single point and obtaining the azimuth for a line. The basic flow of the technique, and it’s interface with the total station and accessories is that the sun is sighted through the lens and filter and is recorded by the ARC, the horizontal circle records the observed bearing and the time using its onboard clock. The values are sent to the sun azimuth program which uses GPS time to obtain a time correction rather than the traditional stopwatch for the time and attitude method and the geod file to compute the deflection of the vertical and calculate the azimuth of a line.

Many a rural cadastral surveyor will fondly remember finding a solitary reference tree at the corner of a property when undertaking a rural boundary definition and getting out the dark glass for a sun observation. The surveyor now has the option to either put in two marks to undertake GPS observations, or they can undertake a sun observation. By taking a single GPS reading and using the ATR of the instrument and the sun as a reference point, the time taken for solar observations is significantly reduced and results in a faster and increased level of accuracy in azimuth determination - to the delight of the rural cadastral surveyor.

The University of Southern Queensland congratulates Phillip Nixon on his achievements and his continued success in the NSW surveying profession.

As an aside, those intending to enrol into USQ surveying programs through http://www.qpac.edu.au are advised that applications close on July 1st for semester 2 enrolment.

Shane Simmons
Senior lecturer, program coordinator Surveying and Spatial Science, USQ

The Institution of Surveyors NSW Benevolent Association Ltd

The Association is entirely dependent upon voluntary financial contributions to cover the cost of operating. These contributions have to date come primarily from the Institution, together with several small grants, donations and legacies from members and the estates of members. Any donation would be gratefully received.

The objects of the Association include:

- To counsel, help and advise any member of the Institution of Surveyors New South Wales Inc. in need, or in distress to overcome health and/or professional problems.
- To offer advice, guidance and, in circumstances considered by the Directors to be special, financial assistance by way of grants, loans or payments:
  (a) to the family, surviving spouse and/or dependants of any member of the Institution of Surveyors, New South Wales who dies;
  (b) to the family, spouse and/or dependants of any member of the Institution of Surveyors, New South Wales, who is incapacitated and who, as a result, is incapable in the opinion of the Directors, or managing the affairs and welfare of himself or herself or his or her family, surviving spouse or dependants.

In order for the Benevolent Association to provide assistance when needed, the Benevolent Association needs to be informed of the circumstances that may warrant such assistance. In this regard ISNSW members are asked to provide such information to:- ISNSW Benevolent Association Ltd, Secretary Phone (02) 9264 2076 or isnsw@surveyors.org.au
OBIITURY

Obituary
John Stuart Allman, the man who put Australia on the map

John Allman passed as away on Wednesday 24th April 2013. John (born 1930) formerly an Associate Professor at UNSW School of Surveying, was instrumental in the establishment of the Geodetic Network Adjustment of Australia, 1984-1994. A short biography from the School’s history reads:

Before his retirement in 1989, Associate Professor John Allman had single-handedly performed the computational adjustment of all precise terrestrial observations, VLBI observations and Satellite Doppler observations across Australia since the 1860s. The computation required the application of ten years research into the Method of Least Squares and the Solution of Very Large Systems of Equations. The collection and validation of the data set from the National and State Departments took 5 years. The adjustment was known as AGD84 and was carried out on a classically defined geodetic datum and was accepted as the foundation for all mapping in Australia.

John Allman’s work literally ‘put Australia on the map’ and was recognised in 1984 when he was invested as a Member of the Order of Australia (AM) for his contributions in the field of geodesy and surveying.

John Allman’s funeral was held on 30 April at Port Macquarie, and was attended by his wife Betty, their four children and 11 grandchildren, as well as many friends, both local and from Sydney. In a special tribute, all of his fellow 1962 BSurv graduates (Tony Robinson, Ron Benjamin, Brian Kent and Jimmy Sheaves) as well as two from that year’s BE (Civil) graduating class, attended. Bill Kearley attended to represent his colleagues from the School at UNSW.

Obituary
John Philip Dynes 1925 - 2013

Phil Dynes commenced working life as a PMG telegram messenger at 15 years of age. By the time he was old enough to enlist in WW2 he had completed 2 years in Morse code telegraphy. Phil was looking forward to service as aircrew in the RAAF particularly as a navigator... (was this the first of a future surveyor?). An early training accident resulted in the loss of sight in one eye. So his aircrew ambitions were gone but he was accepted into the RAAF for non flying duties. With this background in early 1945, he was posted to No 200 Special Duties Flight based at Leyburn, Queensland. 200 Flight operated the 4 engine Liberator Bombers dropping equipment and special forces personnel into the South East Asian area.

Phil displayed a gift in telegraphy that led to him being involved in decoding intercepted Japanese signals. He never spoke much of this but some 5-6 years ago he was awarded, by the British Government, a limited issue medal recognising his links with the Blechley Park British WW2 code breaking organisation.

Phil describes how he entered the surveying profession after the war. "While at Leyburn a party of surveyors were surveying the Toowoomba – Goodwindi road which passed through the campsite. The war had ended and as they approached the camp I became interested in their activities and spent some time with them. They had a backboard vehicle and the surveyor had a collar and tie and leather leggings out in the middle of nowhere. His two chairman, who were quite skilled with the axe, addressed him as ‘Sire’. Of course he was measuring and looking through his theodolite and making notes in his field book and often referring to the many plans he had in his vehicle. This intrigued me no end as before my eye injury I had been hoping to be a navigator in the air force. I spent time with them watching them use their calculating machine on endless calculations and plans—it was too much, my future was assured.

"Needless to say when I was demobilised I had one goal – a

Commonwealth Reconstruction Training Scheme course in surveying. This I was fortunate enough to secure and with one year spent passing the Leaving Certificate and four years articled to Mr Wal Lewis and Dick Langford I returned to my employment with the Commonwealth as a Registered Surveyor in 1952.

"During our articles with Wal Lewis it was mandatory that we joined the Institution of Surveyors as a student member and I was upgraded to Member in June 1952 following my registration. My career commenced as a Land Surveyor Grade 1 on a salary of 334 pounds per annum with the Department of the Interior doing fieldwork in the Sydney area as well as elsewhere in NSW. Surveys involved the whole gamut of land held by Federal authorities including post offices, aerodromes, military establishments, naval depots, aviation beacons, meteorological stations, radio beacons and all manner of offices and establishments held by Federal authorities. One of my earliest and oddest jobs was checking the sphericity of the Parks Radio Telescope dish after it was set in place on its mountings. This involved setting my theodolite in the centre of the dish in its horizontal position and observing angles of elevation and direction to a series of small targets set at the intersection of the framework members in concentric circles around the dish. The angles had been predetermined from a fixed height of instrument setting and corrections were made by adjustment by the bolts and nuts by spanner.

"My next major prime project came in 1970 when I was appointed Resident Surveyor at Kingford Smith Airport during the construction of the present International Terminal and the extension of the main runway into Rotaby Bay. All told this project took just over 4 years and involved a staff of up to 6 surveyors and technicians. On completion of the project my field days ended when I was given a managerial job at the Australian Surveying Office in Sydney where I spent my years until retirement as Supervising Surveyor for NSW."

Phil was elected a Fellow of the Institution in 1976 and President of ISNSW for the years 1978 – 1979. One of the many achievements during his Presidency was the purchase of the ISNSW’s first purchase of real estate. In 1999 Phil wrote a fascinating book "Leyburn’s Librators" documenting the history of this hitherto little known unit of the RAAF. The forward of the book says in part – “Little has been known publicly about the activities of the RAAFs 200 Special Duties Flight which was a top secret unit in the last year of WW2 clandestinely dropping personnel from ‘Z Special Unit behind enemy lines in Borneo and Timor’. The book can be found in the ISNSW library and is well worth a read.

He retired from surveying in 1984 after an interesting and satisfying career of 36 odd years and was made an Emeritus Fellow of the Institution in 1993. Phil continued as a member of the Seniors Group and to encourage and promote the heritage of the profession. Phil had always called his houses “The Azimuth” as he said it represents the history of this hitherto little known unit of the RAAF. The forward of the book says in part – “Little has been known publicly about the activities of the RAAFs 200 Special Duties Flight which was a top secret unit in the last year of WW2 clandestinely dropping personnel from ‘Z Special Unit behind enemy lines in Borneo and Timor’. The book can be found in the ISNSW library and is well worth a read.

He retired from surveying in 1984 after an interesting and satisfying career of 36 odd years and was made an Emeritus Fellow of the Institution in 1993. Phil continued as a member of the Seniors Group and to encourage and promote the heritage of the profession. Phil had always called his houses “The Azimuth” as he said it represents the history of this hitherto little known unit of the RAAF. The forward of the book says in part – “Little has been known publicly about the activities of the RAAFs 200 Special Duties Flight which was a top secret unit in the last year of WW2 clandestinely dropping personnel from ‘Z Special Unit behind enemy lines in Borneo and Timor’. The book can be found in the ISNSW library and is well worth a read.

He retired from surveying in 1984 after an interesting and satisfying career of 36 odd years and was made an Emeritus Fellow of the Institution in 1993. Phil continued as a member of the Seniors Group and to encourage and promote the heritage of the profession. Phil had always called his houses “The Azimuth” as he said it represents the history of this hitherto little known unit of the RAAF. The forward of the book says in part – “Little has been known publicly about the activities of the RAAFs 200 Special Duties Flight which was a top secret unit in the last year of WW2 clandestinely dropping personnel from ‘Z Special Unit behind enemy lines in Borneo and Timor’. The book can be found in the ISNSW library and is well worth a read.

He retired from surveying in 1984 after an interesting and satisfying career of 36 odd years and was made an Emeritus Fellow of the Institution in 1993. Phil continued as a member of the Seniors Group and to encourage and promote the heritage of the profession. Phil had always called his houses “The Azimuth” as he said it represents the history of this hitherto little known unit of the RAAF. The forward of the book says in part – “Little has been known publicly about the activities of the RAAFs 200 Special Duties Flight which was a top secret unit in the last year of WW2 clandestinely dropping personnel from ‘Z Special Unit behind enemy lines in Borneo and Timor’. The book can be found in the ISNSW library and is well worth a read.

He retired from surveying in 1984 after an interesting and satisfying career of 36 odd years and was made an Emeritus Fellow of the Institution in 1993. Phil continued as a member of the Seniors Group and to encourage and promote the heritage of the profession. Phil had always called his houses “The Azimuth” as he said it represents the history of this hitherto little known unit of the RAAF. The forward of the book says in part – “Little has been known publicly about the activities of the RAAFs 200 Special Duties Flight which was a top secret unit in the last year of WW2 clandestinely dropping personnel from ‘Z Special Unit behind enemy lines in Borneo and Timor’. The book can be found in the ISNSW library and is well worth a read.

He retired from surveying in 1984 after an interesting and satisfying career of 36 odd years and was made an Emeritus Fellow of the Institution in 1993. Phil continued as a member of the Seniors Group and to encourage and promote the heritage of the profession. Phil had always called his houses “The Azimuth” as he said it represents the history of this hitherto little known unit of the RAAF. The forward of the book says in part – “Little has been known publicly about the activities of the RAAFs 200 Special Duties Flight which was a top secret unit in the last year of WW2 clandestinely dropping personnel from ‘Z Special Unit behind enemy lines in Borneo and Timor’. The book can be found in the ISNSW library and is well worth a read.

He retired from surveying in 1984 after an interesting and satisfying career of 36 odd years and was made an Emeritus Fellow of the Institution in 1993. Phil continued as a member of the Seniors Group and to encourage and promote the heritage of the profession. Phil had always called his houses “The Azimuth” as he said it represents the history of this hitherto little known unit of the RAAF. The forward of the book says in part – “Little has been known publicly about the activities of the RAAFs 200 Special Duties Flight which was a top secret unit in the last year of WW2 clandestinely dropping personnel from ‘Z Special Unit behind enemy lines in Borneo and Timor’. The book can be found in the ISNSW library and is well worth a read.

He retired from surveying in 1984 after an interesting and satisfying career of 36 odd years and was made an Emeritus Fellow of the Institution in 1993. Phil continued as a member of the Seniors Group and to encourage and promote the heritage of the profession. Phil had always called his houses “The Azimuth” as he said it represents the history of this hitherto little known unit of the RAAF. The forward of the book says in part – “Little has been known publicly about the activities of the RAAFs 200 Special Duties Flight which was a top secret unit in the last year of WW2 clandestinely dropping personnel from ‘Z Special Unit behind enemy lines in Borneo and Timor’. The book can be found in the ISNSW library and is well worth a read.
Letters to the Editor

I have just seen your editorial in the May Azimuth. We solved the problem of dead HP 42 calculators with an iPhone App. Except for it being marginally smaller, and the key being less tactile, you would not know that it is any different. It also solves the problem of having to reprogramme if a battery dies, as you could always get it with you, you can save your programs, and it is marginally cheaper.

Thanks to all those who got back to me regarding the HP calculators. Most of those emails were to remind me that a perfectly good substitute HP 42 could be obtained within an iPhone app. I have always got it with you, you can save your programs. Maybe I am a bit too old school but I reckon nothing beats the feel of the original machine. I still use it pretty much every day, so $100 or so is not bad value for the money.

Phil Youdale

Looking Back

100 Years Ago

The following are extracts from the June 1913 edition of The Surveyor:

Notes on a Proposed Standard Survey for Sydney

Read at a Meeting of the Institution of Surveyors, NSW, on Tuesday June 17th 1913 by T. G. Wilson, Junr.

Every city or town of any dimensions requires a standard survey if its public services are to be economically and methodically administered and this need has been met in most cities either by a high class survey to which all other surveys are connected, or else a survey is made for some special purpose, such as a detail survey for sewerage. A survey of this latter description can be made use of to make a general plan of the locality, on which can be shown the position of sewers, water and gas mains, and other street services, and the plans are useful for municipal assessments.

As time goes on the survey becomes obsolete, and unless it is well and permanently marked and good field notes kept, it generally pays after a few years in a progressive district to discard the original survey and to prepare a new one.

What is wanted in a city like Sydney is a high-class permanently marked survey, which will last for all time, and have a value as a record of land occupations and boundaries. This fact was recognised and in the early eighties the detail survey was undertaken. A high standard of accuracy was set for this survey, and for a few years it was vigorously carried out, until the more urgent requirements of the sewerage department were met. The progress of the survey gradually dwindled, until in 1904 no one was engaged upon it. Among the reasons for its discontinuance may be mentioned (1) the shortage of money due to bad seasons; (2) the survey having coped with present requirements; (3) the relatively large cost of the survey.

However, a survey of this character could not long be done without in such prosperous and progressive years as we have had between 1804 and the present, and both the Public Works Department and the Metropolitan Board for Water Supply and Sewerage have found it necessary to employ field and office staffs to make sufficient detail surveys to cope with the work of sewerage rectification. These surveys are being carried out in a precise and accurate manner and much more attention is being given to the permanent marking than was the case some years back.

A standard survey of the city of Sydney and also of its suburbs is needed, because the general survey has become practically obsolete and the marking has in many instances disappeared. The National Detail Survey is in much the same condition, except in localities where it has been recently revised for sewerage purposes. The National Rail Survey of the city, where it is not obsolete, has been if I may be allowed to use the term, “revived to death.” The full significance of this may not be apparent to all our members, but if they were favoured with an instruction to carry out what would be in many instances, the third revision survey of a city block with average city traffic, they would realise that those in authority have not acted with undue haste in giving consideration to a new standard survey on up-to-date and approved lines.

Without wearying you with any further reasons for the need of a standard survey, I will pass on to speak of the offices which a survey of this character should fulfil. To my mind, the first and most important is that of being a survey of record for land titles, and by a system of permanent marking and the establishment of monuments to give a settled and unchallengeable basis for the delimitation of boundaries. Secondly, to provide a means for designing sewerage systems and for recording the positions of sewers, house drains, water services, gas mains, electric lighting services, systems of overhead wiring for electric tramways, etc. Thirdly, to provide plans for property assessments for such authorities as departments of taxation and municipal councils, and for fire brigade boards. Fourthly, to take the place of a military reconnaissance survey, and fifthly, for use in engineering projects, such as railways and tramways, bridges, road and street improvements, wharves and harbour works.

And now I come to a description of what I consider the class of survey which will meet the case, having due regard to the standard of accuracy required, the case with which other and subordinate surveys may be connected to it, and the facilities for re-fixing boundaries with a minimum of time and expense.

The standard survey would be divided under four heads, which I such name as follows:–

1) The primary or triangulation survey
2) The skeleton survey
3) The alignment traverse
4) The detail survey

First of all, I will deal with the primary or triangulation survey. In the past standard traverses and skeleton surveys have been connected to the existing trigonometrical surveys, but this could not be done to advantage at the present time for various reasons. For instance, a large number of the original stations have been destroyed, others are built over. Some are unreliable, while others have become obscured by tall buildings. For these reasons it can be seen that the usable trigonometrical stations are not situated in suitable positions to form a basis for a new and high-class survey.

Another reason why it would not be advisable to connect to the original trigonometrical stations is that the advances in chaining with long steel bands have made the error less in many instances than that in the angular measurements of the original trigonometrical survey, with the result that it has been necessary in national detail survey work to ignore the values of some stations, so as not to introduce unduly heavy adjustments. These unreliable stations are generally trigonometrical intersections. Taking these facts into consideration, I am of the opinion that to connect a new standard survey with the old trigonometrical survey would be emulating the man who put new wine into old bottles.
Last month’s Footprints featured some photos taken during the construction and later maintenance of the Opera House. These photos inspired Michael Elfick to dig out a few old slides and negatives taken when he was working as a site surveyor during the construction of the Opera House roof shells.

Michael writes: During this period of construction, the structure was moving as ribs were erected and stressing took place. The site staff surveyors monitored this phase of the work and this included both the placement of the rib segments and deformation measurements.

You will see that all set ups were on small stands bolted firmly to the concrete structure. Because of the vibration from concrete pours and other shakes and movements, a tripod would not last five minutes.

Above: Bob Wyatt checking the rib. He was using a special instrument which was built by Felder Instrument Company for this purpose. Three of these were made, and I have one of them which I now use as a paper weight.

Right: Shows a theodolite mounted at about 70 degrees to the horizontal at the top left corner of the shot. At the time I was measuring the flexing of the erection arch and I could do so using the vertical circle if I bolted the theodolite so that it was on a radial line from the centre to the shell sphere. Not in the textbook, or in the manufacturer’s recommendations, but it worked.

Left: A typical survey station on the shells - note the sun shield for the instrument. Peter Osment is observing and Paul McNamara booking.

Below: This shot shows a station on the side shell - not much to hang on to here so note the addition of foot rests. Bob Wyatt observing and Paul McNamara booking. The nature of the job required a fairly innovative approach at times and as previously noted, OH&S was a bit different then.
Membership Connect

The Institution of Surveyors NSW is pleased to welcome and congratulate the following members admitted on 3rd May 2013

Robert Dicker
Comments: After a 30+ year career as an airline pilot, based both in Australia and Hong Kong, I decided to retire from long haul flying and take a new path in life.

Simon Erginel
Age: 30
Career: Studying a Cert III of Surveying & Spatial Information Services at TAFE Sydney Institute.
Areas of Interests: Geospatial, Mining, Geodetic/GPS, Spatial Information, Hydrographic, Mapping, Town Planning.
Future: In the immediate future I am looking forward to completing my studies and continuing on with the Diploma of Surveying. During my studies I aim to gain broad exposure and experience within the spatial field. My long term goals are to study a Bachelor of Spatial Science and become a registered Surveyor. I would ideally like to find a position that enables me to apply different aspects of my knowledge of surveying, planning and property development utilising my Degree in Property Development & Planning I acquired during my time in the UK.

Peter Cormick
Comments: At a young 64 years of age I am now returning to the fold, thanks to the welcome influence of an Institution elder, Alan Sheshard.
Areas of Interests: My interests have always included mathematics and physics - and literature.
Career: My career in surveying started relatively late, in my thirties, but through the first class tuition and guidance from Wally Wassermann, Laurie McDonald and Claude King, and later Allan Mall and Peter Mayberry (my marginally younger Master Surveyor), I managed to get up to speed. I look forward to the company of fellow surveyors and the pleasures of leisurely-paced surveying, especially in the bush.

Michael Fuller
Career: This is my 40th year in the profession, I have worked in the UK, North Africa and Thailand. I have been in Australia 32 years and for the past 18 years have been my own Survey Engineering Practice. I believe surveying is one of the best careers someone could choose, it has taken me around the world to work in some very interesting places with plenty of tales to tell.
Areas of Interests: Apart from work my interests are my Family, soccer, golf, fishing, weekend drives, motor sport.
Future: As for the future I would like a younger Partner to help run the practice to allow me to improve on the golf handicap.

From the NSW Government Gazette

G.G. 12TH APRIL 2013
The following instruments were officially notified on the NSW legislation website:
• Gessnack Local Environmental Plan 2011 (Amendment No 3)
• Holroyd Local Environmental Plan 2013
• Hunters Hill Local Environmental Plan 2012 (Amend No 1)
• Manly Local Environmental Plan 2013
• Shellharbour Local Environmental Plan 2013
• State Environmental Planning Policy (Sydney Region Growth Centres) Amendment (The Hills Growth Centre Precincts) 2013
• Sydney Local Environmental Plan 2012 (Amendment No 1)
The following species were listed as a vulnerable species under the Threatened Species Conservation Act 1995:
• Falco subbuteo G.R. Gray, 1843 – Black Falcon

G.G. 19TH APRIL 2013
The following items were listed on the State Heritage Register:
• Tocal College – C.R. Alexander Campus and Movable Collection, 815 Tocal Road, Tocal
The following address locality boundaries are proposed to be amended:
• Address locality boundary between Figtree and Unanderra in the Wollongong Local Government Area
• Boundary between Gundagah Shire, Liverpool Plains Shire and Warrumbungle Shire

G.G. 26TH APRIL 2013
The following instruments were officially notified on the NSW legislation website:
• Albury Local Environmental Plan 2010 (Amendment No 8)
• Liverpool Local Environmental Plan 2008 (Amendment No 25)
• Tenterfield Local Environmental Plan 2013
The following address locality boundaries are proposed to be amended:
• Address locality boundary between Lake Cathie and Lake Innes in the Port Macquarie Hastings Local Government Area
The following local government area boundaries were amended:
• Boundary between Young Shire and Widden Shire
Pursuant to the provisions of the Surveying and Spatial Information Act 2002, the undermentioned persons have been registered as Land Surveyors in New South Wales from the dates shown.

Pursuant to the provisions of the Surveying and Spatial Information Act 2002, the undermentioned persons have been registered as Mining Surveyors (Unrestricted) in New South Wales under the Mutual Recognition Act 1992, from the dates shown.

For suggestions on how to improve our AI, visit our feedback section at https://www.surveyors.org.au.
LOOKING FOR WORK
Surveying Student James Rostirolla, from Ultimo TAFE NSW is looking for a casual assistant position in the Illawarra area. Email: j_rostirolla@hotmail.com

FREE TRIAL
Many Surveyors use BricsCAD. Download a free trial at www.bricsys.com

2013 CALENDAR OF EVENTS

JUNE 2013

<table>
<thead>
<tr>
<th>DATE</th>
<th>EVENT CODE</th>
<th>ORGANISATION</th>
<th>ACTIVITY/FUNCTION/MEETING</th>
<th>LOCATION</th>
<th>OPD POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>1</td>
<td>The Institution of Surveyors NSW</td>
<td>Committee Meeting</td>
<td>L4, 162 Goulburn St Surry Hills</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>2</td>
<td>The Institution of Surveyors NSW</td>
<td>Twilight Seminar</td>
<td>L4, 162 Goulburn St Surry Hills</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>3</td>
<td>Southern Group</td>
<td>Seminar</td>
<td>The Goulburn Club Goulburn</td>
<td></td>
</tr>
</tbody>
</table>

JULY 2013

<table>
<thead>
<tr>
<th>DATE</th>
<th>EVENT CODE</th>
<th>ORGANISATION</th>
<th>ACTIVITY/FUNCTION/MEETING</th>
<th>LOCATION</th>
<th>OPD POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>The Institution of Surveyors NSW</td>
<td>Committee Meeting</td>
<td>L4, 162 Goulburn St Surry Hills</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>5</td>
<td>Cumberland Group</td>
<td>Development Seminar</td>
<td>Liverpool Catholic Club</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>6</td>
<td>The Institution of Surveyors NSW</td>
<td>Twilight Seminar</td>
<td>L4, 162 Goulburn St Surry Hills</td>
<td></td>
</tr>
</tbody>
</table>

AUGUST 2013

<table>
<thead>
<tr>
<th>DATE</th>
<th>EVENT CODE</th>
<th>ORGANISATION</th>
<th>ACTIVITY/FUNCTION/MEETING</th>
<th>LOCATION</th>
<th>OPD POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>7</td>
<td>The Institution of Surveyors NSW</td>
<td>Committee Meeting</td>
<td>L4, 162 Goulburn St Surry Hills</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td>Seniors Group</td>
<td>Lunch 12:00pm Quarterly Meeting 1pm</td>
<td>L4, 162 Goulburn St Surry Hills</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>9</td>
<td>The Institution of Surveyors NSW</td>
<td>Annual Golf Day</td>
<td>Ryde-Parramatta Golf Club</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>10</td>
<td>The Institution of Surveyors NSW</td>
<td>Twilight Seminar</td>
<td>L4, 162 Goulburn St Surry Hills</td>
<td></td>
</tr>
</tbody>
</table>

SEPTEMBER 2013

<table>
<thead>
<tr>
<th>DATE</th>
<th>EVENT CODE</th>
<th>ORGANISATION</th>
<th>ACTIVITY/FUNCTION/MEETING</th>
<th>LOCATION</th>
<th>OPD POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>11</td>
<td>The Institution of Surveyors NSW</td>
<td>Committee Meeting</td>
<td>L4, 162 Goulburn St Surry Hills</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>12</td>
<td>The Institution of Surveyors NSW Inc/Association of Consulting Surveyors</td>
<td>NSW Awards for Excellence in Surveying &amp; Spatial Information 2013</td>
<td>Hilton, Sydney</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>13</td>
<td>Cumberland Group</td>
<td>General Meeting</td>
<td>Parramatta Workers Club</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>14</td>
<td>The Institution of Surveyors NSW</td>
<td>Twilight Seminar</td>
<td>L4, 162 Goulburn St Surry Hills</td>
<td></td>
</tr>
</tbody>
</table>

OCTOBER 2013

<table>
<thead>
<tr>
<th>DATE</th>
<th>EVENT CODE</th>
<th>ORGANISATION</th>
<th>ACTIVITY/FUNCTION/MEETING</th>
<th>LOCATION</th>
<th>OPD POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>15</td>
<td>The Institution of Surveyors NSW</td>
<td>Committee Meeting</td>
<td>L4, 162 Goulburn St Surry Hills</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>16</td>
<td>The Institution of Surveyors NSW</td>
<td>Twilight Seminar</td>
<td>L4, 162 Goulburn St Surry Hills</td>
<td></td>
</tr>
</tbody>
</table>

NOVEMBER 2013

<table>
<thead>
<tr>
<th>DATE</th>
<th>EVENT CODE</th>
<th>ORGANISATION</th>
<th>ACTIVITY/FUNCTION/MEETING</th>
<th>LOCATION</th>
<th>OPD POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>17</td>
<td>The Institution of Surveyors NSW</td>
<td>Committee Meeting</td>
<td>L4, 162 Goulburn St Surry Hills</td>
<td></td>
</tr>
<tr>
<td>2-3</td>
<td>18</td>
<td>Cumberland Group</td>
<td>50th Anniversary Celebration and Blue Mountains History Seminar</td>
<td>Carrington Hotel Katoomba</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>19</td>
<td>Seniors Group</td>
<td>Lunch 12:00pm Quarterly Meeting &amp; AGM 1pm</td>
<td>L4, 162 Goulburn St Surry Hills</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>20</td>
<td>The Institution of Surveyors NSW</td>
<td>Twilight Seminar</td>
<td>L4, 162 Goulburn St Surry Hills</td>
<td></td>
</tr>
</tbody>
</table>

DECEMBER 2013

<table>
<thead>
<tr>
<th>DATE</th>
<th>EVENT CODE</th>
<th>ORGANISATION</th>
<th>ACTIVITY/FUNCTION/MEETING</th>
<th>LOCATION</th>
<th>OPD POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>21</td>
<td>The Institution of Surveyors NSW</td>
<td>Committee Meeting</td>
<td>L4, 162 Goulburn St Surry Hills</td>
<td></td>
</tr>
</tbody>
</table>

Conferences & Seminars

FIG REFERENCE FRAME IN PRACTICE TECHNICAL SEMINAR - LSC
21-22 June 2013
 Philippine International Convention Centre - Vicente Sotto, Pasay City.
 Michael Liita, mikael.liita@lm.se and Rob Sarib, robert.sarib@nt.gov.au

2ND EXPLORATION & MAPPING IN MINING CONFERENCE
16-18 July 2013
Four Points by Sheraton
Perth, Western Australia
www.explorationandmapping.com

IGARSS 2013
21 - 26 July 2013
IEEE International Geoscience and Remote Sensing Symposium
Melbourne, Australia
www.igarss2013.org

GIS IN MINING & EXPLORATION CONFERENCE 2013
31 July – 01 August, 2013
Duxton Hotel, Perth, Western Australia
http://www.gisminning.com.au

FIG 5TH INTERNATIONAL LADM (LAND ADMINISTRATION DOMAIN MODEL) WORKSHOP
25 September, 2013
Kuala Lumpur, Malaysia, (in conjunction with ISG 2013)
www.isoladm.org

19TH INTERGEO
8 - 10 October 2013
Essen, Germany
www.intergeo.de

19TH APAS CONFERENCE 2014
31st March to 2nd April 2014
Pokolbin, Hunter Valley, NSW

Classifieds

FREE TRIAL
Many Surveyors use BricsCAD. Download a free trial at www.bricsys.com

Looking for work
Surveying Student James Rostirolla, from Ultimo TAFE NSW is looking for a casual assistant position in the Illawarra area. Email: j_rostirolla@hotmail.com
Leica Viva TS15 – DREAM MACHINE.

Surveyors have dreamed of an instrument that works like this. Making your visions become reality, faster, more accurately. Now, the fastest imaging total station is here. The Leica Viva TS15 incorporates an advanced image sensor to further boost total station productivity. And with unique functionality, total station images can be captured, enhanced with sketching and linked to any point of interest. With Leica Viva TS15 the addition of advanced imaging functionality and the Leica SmartWorx Viva easy-to-use onboard software makes the fastest total station even faster!

Welcome to Leica Viva – let us inspire you

...let us inspire you