

Capitalising on our Position APAS2013 Conference

A captivated APAS2013 audience.



The technical exhibits generated a lot of interest throughout the conference.



by Dr Volker Janssen



Dignitaries at the Opening Ceremony

agencies and private industry. Continuing the tradition of being a practically oriented conference, a wide range of topics relevant to the surveying and spatial information community was covered. Being a highlight on the CPD calendar, APAS2013 satisfied the year's requirements in regards to both cadastral and surveying practice CPD points. Following tradition, the conference kicked off on Tuesday afternoon with the annual APAS golf tournament.

13TH MARCH – MORNING

The first session started with Case Bosloper (LPI, retired) explaining the significance of the Transit of Venus observations, as viewed through the eyes of a surveyor. He focused on the state of celestial mechanics in the 18th century and the exciting mathematical developments that were taking place at the time.

David Barrington (sole practitioner & Ultimo TAFE) outlined several surveys undertaken at the Sydney Cricket Ground over the last 15 years. This included

the determination of the horizontal and vertical geometry of the field, its reconstruction in 2000, sporting field set-outs, the building of the Trumper Stand in 2008, the field renovation in 2010 and the current Stage 2 development.

Grant Calvin (Greater Taree City Council) followed with a discussion of the principles applied for determining the comfort zone for human habitation with a view to provide more sustainable development. He showed that potential energy savings of 30% can be achieved by aligning dwelling construction and orientation on modern subdivisions with passive solar house design.

The Opening Ceremony took place at the beginning of the day's second session. It included a Welcome to Country by Matilda House, Elder of the Ngambri-Ngunnawal People, followed by addresses from Grant Kilpatrick, President of APAS, Graeme Stewart, President of ISNSW, Gary Maguire, President of SSSI, Paul Harcombe, Chief Surveyor of NSW, and Bill Hirst, Surveyor General of the ACT.

After the official opening, Bess Moylan (Illawarra TAFE) presented emerging training delivery methods for surveyors in the Vocational Education and Training sector. The introduction of flexible learning has highlighted issues for different student cohorts related to self-paced learning, mentoring, recognition of prior learning, and authenticity of evidence.

Adam Long (TransGrid) outlined the mixed bag of surveying skills required in the design of a power transmission line. This involved analysing and overlaying spatial data from many sources and field surveys to provide relevant and accurate information to designers, land economists, land valuers and project managers.

13TH MARCH – AFTERNOON

The first afternoon session began with Prof Chris Rizos (UNSW) describing Locata, a new Australian terrestrial distance measurement technology based on radio frequency signals. He discussed the possible role Locata can play as part of the National Positioning Infrastructure and how Locata can complement (and even replace) GNSS in difficult signal environments such as open-cut mines, urban canyons and indoors.

Dr John Dawson (Geoscience Australia) explained the limitations of our national datum in regards to underpinning current and future GNSS positioning capabilities and serving a wider community of users. He provided an overview of the drivers for developing Australia's next generation datum, initial concepts and indicative timeframes for its implementation.

Closely related to this topic, Joel Haasdyk (LPI) described the data-mining efforts undertaken in NSW to collate and clean the archived 62,000 GNSS

baselines for the first-ever state-wide adjustment. He demonstrated that the accuracy and consistency of the datum can be significantly improved by utilising CORSnet-NSW in the datum realisation.

The second session of the afternoon kicked off with a discussion forum seeking feedback on the potential impacts of an improved Australian datum and how any disruption during the transition can be minimised. Dr Craig Roberts (UNSW) led through the discussion that included Dr John Dawson (GA), Prof Chris Rizos (UNSW) and Doug Kinlyside (LPI) on the panel. This was the first time surveyors have had the notion of a datum whose coordinates move constantly to reflect movement on the ground from tectonics, subsidence and other events. It was an engaging session with many questions asked, but the new datum is an abstract concept and it is expected that several more of these forums will be required to really investigate the true impact on the profession.

Nicholas Gowans (LPI) outlined how CORSnet-NSW local tie surveys are performed by LPI. These GNSS surveys initially provide 'local-fit' coordinates for each CORS that are consistent with existing local ground control for applications requiring a connection to SCIMS. In the context of a next generation Australian datum, these observations will be used to propagate the CORSnet-NSW coordinates outward to the ground control network in the state-wide adjustment.

Dr Volker Janssen (University of Tasmania) proposed an indirect GNSS-based approach for the tracking of tree-dwelling animals. This involves tracking the prey rather than the predator in order to map the animal population. He demonstrated that this method can effectively estimate the number and spatial distribution of drop bears

present in a particular area and provide valuable insights into the animal's hunting behaviour. For this contribution, Volker later received the Keith Haddon Memorial Prize for the best paper/presentation.

The session was followed by short presentations of the technical exhibitors. During both days, there were also plenty of opportunities for networking and to explore the newest developments by visiting the exhibitors' booths. All the big names in the business were present. The Annual Dinner concluded the day with dinner speaker Dr David Headon (cultural adviser to the Centenary of Canberra) discussing theodolites, knights and new beginnings in relation to the contribution of surveyors in the new national capital.

14TH MARCH – MORNING

The day's first session started with A/Prof Terry Birtles (University of Canberra, retired) tracing Charles Scrivener's professional career and outlining his task to locate the nation's capital, Canberra. This also included a description of the conflict between using Snowy Mountains water resources for the irrigation of Riverina settlement expansion and the requirements of Australia's national capital city.

Mike Stapleton (Landdata Surveys) discussed the consequences of watershed boundaries of the ACT, which were established by ignoring existing cadastral boundaries. He outlined a survey of residue parcels and issues associated with differing coordinate and land administration systems on either side of the boundaries as well as access in mountainous terrain and through



Above: Surveyors at TS Old Joe.



Left: TS Gooroo.

and expected to provide significant productivity improvements. SCIMS3 will incorporate and integrate other related systems and datasets such as CORNet-NSW station metadata, the survey mark register, geodetic measurement data and mark images.

This was followed by Dick Ellis (LPI) describing the issues that need to be considered in the construction of a state-of-the-art EDM baseline. He used the newly constructed 7-pillar Eglinton EDM baseline (located in Bathurst) as an example. Topics included site selection, planning, logistics, Work Health and Safety considerations, and pillar construction.

14TH MARCH – AFTERNOON

The first session of the afternoon commenced with Craig Sandy (Esri Australia) providing an overview of how the cadastral infrastructure can be shaped for a digital future. He showed that parcel fabric technology can be used to transition the static digital cadastral database (DCDB) to a dynamic, survey title-based numerical cadastral database (NCDB) that accurately models the nation's cadastral network.

Ian Harper (Geodata Australia) expanded on this topic, discussing how the digital environment can provide considerable efficiencies in survey and land administration. Accuracy and data integrity in the database will be crucial. He also stressed the importance of the

surveying profession embracing the transition from the measurement-based systems of the past to the position-based systems of the future.

Rod Eckels (McMullen Nolan Group) presented a field methodology for road and railway surveys, using mobile laser scanning to achieve the highest accuracy at traffic speed. He investigated accuracy boundaries, Work Health and Safety, the potential of this relatively new technology, and the impact that it may have on standard surveying procedures.

The last session began with Narelle Underwood (RMS) outlining the impact of natural disasters on the cadastre. She investigated how several overseas governments and surveying professions have responded to the destruction of their cadastral boundaries following a variety of natural disasters (particularly earthquakes), and made a series of recommendations in order to increase the resilience of the Australian cadastre.

This was followed by two open forums, including a conference review and the Annual General Meetings of APAS and SSA. The elected APAS office bearers for 2013/14 are Grant Kilpatrick (President), Geoff Lenton (Vice President & Public Officer), Gavin Evans (Secretary), Nicholas Gowans (Treasurer), Neil Bennett (Past President), Dr Volker Janssen (Publications Officer), Kevin Thompson (Conference Manager), Graeme Stewart (ISNSW Representative), and Committee Members Jarad Cannings, Fred de Belin, Les Gardner and Thomas Grinter.

The very successful conference concluded with dinner speaker Geoff Lenton (RMS) outlining the survey work performed during the 2012 resurfacing and waterproofing of the Sydney Harbour Bridge.

The APAS2013 conference proceedings are available on CD for purchase from APAS.

15TH MARCH – MORNING

On Friday morning during overcast conditions, a site visit was conducted to TS Old Joe on the NSW-ACT border, one of NSW's most important trigs. Recently LPI assessed all trig stations in NSW to determine the 'best trig' in the state (TS Kosciuszko won the award). Assessment criteria included GDA94 and AHD71 survey accuracy, access and accessibility, situation and site, GNSS suitability, strategic usefulness, heritage and local



Top: Excursion to TS Old Joe

Above: Inspecting survey marks at the NSW-ACT border

significance, general condition, beacon condition, uniqueness of structure, number of Deposited Plans connected to, AUSPOS rating, and number of GNSS and terrestrial observations for each trig. The group also inspected TS Gooroo, an old stone cairn trig used to provide cadastral connections for cadastral map productions in 1878.

PARTNERS PROGRAM

It was with great anticipation that a fledgling partners program was added to this year's conference. Given that it was Canberra Week, a wide range of interesting visits was integrated into the 2-day program. The highlights included the Toulouse Lautrec exhibition at the National Gallery of Australia and a look at a very lively Question Time in Parliament. Wives and partners were made to feel welcome at all of the social conference functions, particularly the Annual Dinner. Many thanks to all of the partners who together drove, navigated and provided such enjoyable company in Canberra this year.

APAS2014

APAS2014 will be held in Pokolbin, Hunter Valley, on 31 March – 2 April 2014. Please consider contributing to next year's conference by presenting a paper. There is a lot of fantastic work being done out there – why not tell the profession about it? For more information and to indicate interest in presenting at APAS2014, please contact the APAS Publications Officer, Dr Volker Janssen at LPI (Volker.Janssen@lpi.nsw.gov.au).

The committee plans to again offer a partners program consisting of a series of friendly experiences at APAS2014. The conference hotel is very close to the Hunter Valley Gardens, and wine tours and/or cooking classes can be arranged if there is enough interest. ■

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new GNSS techniques and attempt to document their work in relation to the universal MGA.

At the workshop examples of 'Clause 12.7 Deposited Plans' were presented where connections to CORS reference stations had been drawn as far as 90km away, and the 'X' and 'Y' placed on the CORS trigs. Another 'work-around' was to not document MGA at all, and to adopt the local magnetic meridian from two local marks, surveyed using GNSS as a tool only. It was noted that whilst this method is satisfactory, some councils, government bodies, project managers and even company directors are insisting on a 'GNSS equals MGA only' policy – for the obvious reasons. The third example is what will emanate from the SG9 policy and that is to show 'X' – 'Y' on two locally determined durable marks.

This avoids long connections to X and Y which are of no use to the local cadastral infrastructure. It is also worth noting that a surveyor using AUSPOS or the CORS network has no idea where the azimuth comes from, or which reference stations have been included in the solution. Showing the determination of your local X and Y on a 12.7 Deposited Plan is not limited to the following examples, which include an accompanying validation, which will also be a requirement in the new Direction:

- An AUSPOS determination at X and Y (not just at X). Validated by EDM measurement between them provided the distance is greater than the specified minimum.
- Repeat (at least two 30 minutes apart) CORS RTK observations at X and at Y. Validated by independent Local Base

Station RTK observations of X and Y (two receivers required).

- CORS STATIC including X and Y. Validated by double occupation of the two stations including the observation of the vector between X and Y (two receivers required).

Education and 'knowing your equipment' is also covered in the document, which is nearing completion. Relegations and directions can only go part of the way in achieving their desired intention. The rest is up to us, as the leaders, teachers and registered surveyors that we are, to ensure that we do know our survey gear and the results it is giving us. I can say that as a participant at the workshop it was very successful and I commend the organisers for including representatives from the many organisations who participated. ■