



2020 Vision: APAS2017 Conference

The Association of Public Authority Surveyors NSW (APAS) was formed in 1994 primarily to cater for the needs of surveying and spatial information professionals working within state and local government and the education sector. Nevertheless, private surveyors also benefit immensely from APAS events such as conferences and seminars, which form an important part of the annual professional development events calendar.

APAS prides itself on organising an annual conference that is highly informative, focussed on practical outcomes relevant to the surveying and spatial information community and provides ample opportunity for interaction with colleagues and exhibitors showcasing their newest technology. Traditionally, more than one third of delegates belong to private industry.

The APAS2017 conference was held in Shoal Bay on 20-22 March 2017. The conference theme was "2020 Vision". It attracted 250 delegates from New South Wales and interstate, representing both government agencies (48%) and private industry (52%).

APAS2017 included 7 sessions with 24 presentations, most of which included a full paper. Continuing the tradition of being a practically oriented conference, a wide range of topics relevant to the surveying and spatial information profession was covered. This year's big topics included GDA2020 and datum modernisation, update of the Surveying and Spatial Information Regulation, preservation of survey marks, laser scanning, and surveying with drones. There was also plenty of opportunity for networking and exploring the newest developments at the technical exhibitors' booths.

APAS2017 was a highlight on the CPD calendar, satisfying the year's requirements in regards to both cadastral and surveying practice CPD points. As usual, the conference kicked off on Monday afternoon with the annual APAS team building event (golf tournament).



APAS2017 conference

21st March – Morning

The first session started with Dr Volker Janssen (DFSJ Spatial Services) providing some background on coordinate systems and datums before explaining the terms GDA2020, AUSGeoid2020 and ATRF. He outlined how important the modernisation of Australia's national datum is for users intending to benefit from the improved geodetic infrastructure and emphasised that geodetic control underpins all spatial data.

Following on, Nicholas Gowans (DFSJ Spatial Services) presented an overview of GDA2020 while detailing NSW's efforts and contribution to the national GDA2020 adjustment to date. Based on a couple of GDA94-GDA2020 case studies, he evaluated the performance of GDA2020 across NSW in terms of positional uncertainty and showed the significant improvement gained.

Lisa Powell (DFSJ Spatial Services) described the various imagery and elevation products created by DFSJ Spatial Services and the accuracy requirements for these products. She examined the survey requirements, processes and practices involved in providing survey control for these products with an emphasis on working in remote locations. This included a case study on the survey control capture for a large project that will provide a digital surface model for Western NSW.

The Official Opening took place at the beginning of the day's second session. Following an entertaining Welcome to Country by Uncle John Ridgeway OAM, Elder of the Worimi People, keynote addresses were given by Narelle Underwood, Surveyor General



Keynote address by Narelle Underwood, Surveyor General

of NSW, John Minehan on behalf of Gaby van Wyk, President of SSSI, Michael Green, President of ISNSW, and Wayne Fenwick, President of APAS.

After the official opening, Thomas Grinter (DFSJ Spatial Services) outlined the collaborative work performed by DFSJ Spatial Services and the Office of the Surveyor-General Victoria to investigate an 0.14 m anomaly in the Australian Height Datum (AHD) at the NSW-Victoria border. Using GNSS technology and conventional 2-way levelling, the anomaly was identified, interrogated, resolved and the remainder attributed to the accumulation and distribution of error in the original data used to propagate AHD across Australia.

Vittorio Sussanna (DFSJ Spatial Services) investigated the performance of AUSGeoid09 in mountainous regions of NSW, from a user's perspective. Comparisons were undertaken in an absolute sense (i.e. single point) and relative sense (i.e. height difference between two points). AUSGeoid09 generally provided AHD height differences at the ± 0.05 m to ± 0.09 m level (1 sigma) and substantially increased the percentage of GNSS-derived height differences meeting third-order differential levelling specifications. AUSGeoid2020 is expected to provide further improvements.

21st March – Afternoon

The first afternoon session began with Simon Hine and Les Gardner (DFSJ Spatial Services) outlining a number of key reforms introduced into the proposed Surveying and Spatial Information Regulation 2017. These include specifications for positioning outcomes, greater integration with the Map Grid of Australia (MGA) and AHD, and centralisation of information workflow to support digital government, digital business and ePlan automation.

Craig Barnes and Vanessa Field (Lands Advisory Services) reminded surveyors and public authority land managers about the impact of native title on public land. Discussing two recent native title cases, they outlined that the Commonwealth, State and Territory Governments are generally liable to pay compensation for the extinguishment or impairment of native title. However, States and Territories can 'pass on' this liability to third parties in certain circumstances by either legislation or under contracts.

Anthony Oliver (ADW Johnson) described an extensive rural cadastral survey of Crown land for the purpose of Aboriginal land grant under the Aboriginal Land Rights Act. It consisted of 9 titles, encompassing about 750 ha of land, and made reference to existing surveys undertaken between 1836 and 2006. Challenges included Work Health and Safety considerations in steep and remote terrain, Aboriginal heritage sites and the varying survey standards and methods over the last 180 years.

The second session of the afternoon kicked off with Michael Dunn (RMS) describing the densification of DFSJ Spatial Services' Greater Sydney Subspine Network (GSSN) for RMS' Western Sydney Infrastructure Plan projects. He outlined

the extent of surveys undertaken by RMS and plans for the development of regional subspine networks, demonstrating the benefits of this approach for large infrastructure projects and the preservation of survey infrastructure.



Presenters captivated the APAS2017 audience with a wide range of topics.



Grant Calvin receives the best conference paper award from APAS President Wayne Fenwick.

Grant Calvin (MidCoast Council) outlined the investigation and assessment process involved in developing an innovative technique for upgrading a small causeway in rural NSW. The final result, based on a house slab, has improved the level of service of the roadway, maintained the existing creek habitat, improved fish passage through the structure and installed a fit-for-purpose low maintenance structure that will service the community for years to come. For this contribution, Grant later received the Keith Haddon Memorial Prize for the best conference paper.

Rod Eckels (McMullen Nolan Group) presented a new method for validating Mobile Laser Scanning (MLS) corridor surveys. Using two project examples, he demonstrated the advantages of this new 'multi-pass' method over the traditional 'multi-target' approach. This included identifying issues with target control coordinates, validating MLS road corridor models and detecting small ground subsidence or change.

On behalf of Richard Lemon, Josh Cowley (Jacobs) demonstrated the power of 3D laser scanning technology by discussing the archival recording of a historically significant site in Windsor. Combining an existing site survey with terrestrial and MLS as well as multi-beam sonar bathymetry, a single unified, spatially accurate, full-colour point cloud was created to derive a wide range of deliverables.

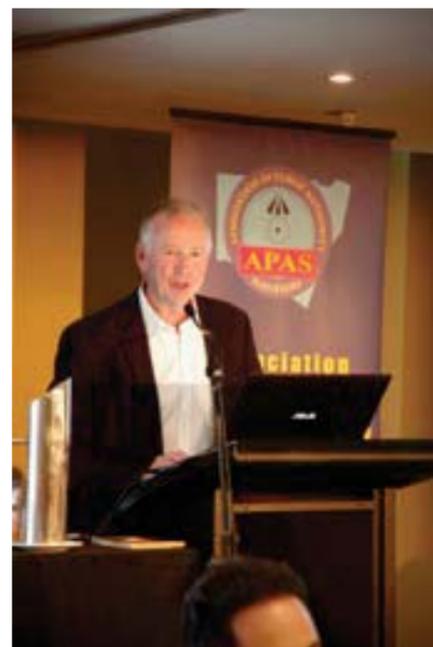
The Annual Dinner concluded the day with dinner speaker Greg Goodman (LandTeam) speculating on the future of the surveying profession – will it be a road less travelled? Looking back at the changes over the last 40 years and in light of continuing change in technology, shortages in qualified staffing and ongoing restructures in the public sector, it is clear that the future of our profession is uncertain. We need to adapt and market ourselves as the spatial data specialists.



Annual Dinner speaker Greg Goodman discussed the future of the surveying profession.



Annual Dinner.



Annual Dinner MC, Warren Thomas.

22nd March – Morning

The day's first session started with Greg Ledwidge (ACT Environment Planning and Sustainable Development Directorate) providing a temporal perspective on compensation for property improvements following compulsory acquisition in the ACT. Investigating a case that centred around the valuation of timber removal that occurred 100 years ago, he focussed on the effect of cold air drainage on the establishment of trees, the use of old portion plans to estimate historical tree densities and the use of mapping and aerial photography over the last 100 years.

Fred de Belin (City of Ryde) documented the successful re-creation of a disintegrating 1881 survey plan that created 125 portions and 51 suburban allotments, covering an area equivalent to one twelfth of the current area of Ryde. He was able to re-instate the original street pattern with reference to found original survey marks, showing that this Crown Plan 386.2030 is accurate to today's standards and able to be fully replicated and placed within the cadastre.

Thomas Casey (Casey Surveying and Design) outlined recent road acquisition surveys in the Unincorporated Area, addressing the problem of how to widen a road that was never surveyed. He discussed problems encountered with Legal Road Network plans and their use of coordinates to define road boundaries, and described the methods used to re-establish datum, mark and monument the parcels to be acquired for road (and of the old roads to be closed).

Case Bosloper (formerly DFSI Spatial Services) argued that the first absolute gravity measurements in New Zealand and Australia were not carried out in the 1800s but up to about 100 years earlier, in 1773 and 1788 respectively. He also examined some adventures of these first gravity field parties, such as the delay of a survey party by inclement weather and near loss of a survey vehicle, stolen survey equipment, a thief shot at, and field hands allegedly eaten by the locals.

At the beginning of the second session, Chris Wilcox (LPI) provided an update on the current state of play in the various jurisdictions that participate in the National ePlan Working



Presenters captivated the APAS2017 audience with a wide range of topics.

Group, and the vision for the future role of the group. Currently the main focus is to implement LandXML as the national standard for digital lodgement of cadastral plans, but future changes in technology, standards and regulations will need to be considered.

Dr Yincai Zhou (UNSW) discussed the potential of Unmanned Aerial System (UAS) technology, or drones, for surveying and mapping. This included UAS surveying project planning, UAS operations in Australian airspace, ground control point surveys, aerial image acquisition and processing, product accuracy evaluation, UAS photogrammetry applications, and how UAS technology is supporting teaching and research at UNSW.

Matt Greig (Monteath & Powys) outlined the use of such drone technology, also known as Unmanned Aerial Vehicles (UAVs), for a challenging (and award-winning) deformation survey of the Newcastle breakwalls. By combining the above-water and below-water data, seamless Digital Terrain Models (DTMs) were created for comparison and deformation analysis over time.

John Reddington (C.R. Kennedy) examined how to merge Light Detection and Ranging (LiDAR) data from terrestrial laser scanners and UAVs to achieve a combined dataset with coverage not possible from a single sensor. When merging the datasets, it is important to know how to control and verify the quality of the model and the source of the data, considering the limitations of each scanning capture method.



The technical exhibits provided plenty of opportunity to stay abreast of developments in state-of-the-art surveying technology.



22nd March – Afternoon

The last session commenced with Narelle Underwood (Surveyor General of NSW) describing initiatives being undertaken and innovations being implemented by DFSI Spatial Services to improve the preservation of survey infrastructure. This included the free 'NSW Survey Marks' app now available for mobile devices. These efforts are essential in order to manage and mitigate the organisation's risk and ensure that the integrity of the state survey control network and the cadastre are maintained.

Don Urquhart (City of Sydney) presented a brief history of the permanent survey mark network in the City of Sydney and related placement, replacement and coordination activities. He then outlined the development of a register and mobile capability in their corporate asset management system to enable effective permanent survey mark asset management, thus protecting this critical infrastructure into the future.

Armen Dervisevic and Ray Gilmour (RMS) provided an update of the actions and system developments undertaken by the RMS Surveying Section to ensure compliance with the preservation of survey infrastructure. This included the formalisation of a working group with DFSI Spatial Services, review of directions and specifications, new processes, and a suite of resources available for contractors, surveyors, designers and project managers.

Charlie Higgs (Geolyse) highlighted the creative nature of surveyors as problem solvers, providing a not-so-scientific look at some innovative, interesting and downright strange tools and gadgets invented by surveyors to solve problems that came their way. This included innovative solutions to surveying tasks involving rails, hidden points, hole centres, bolts, pointers, pulleys and pipes.

The successful conference concluded with a conference review and an open forum, allowing further consideration of issues presented during the conference. At the Annual General Meeting, the following APAS office bearers were elected for 2017/18: Wayne Fenwick (President), Thomas Grinter (Vice President), Nigel Petersen (Secretary & Public Officer), Michael London (Treasurer), Joel Haasdyk (Past President), Dr Volker Janssen (Publications Officer), Peter Nilon (Conference Manager), and Committee Members Jarad Cannings, Gavin Evans and Michael Waud (also ISNSW Representative).

The APAS2017 conference proceedings are available online from the APAS website (<http://www.apas.org.au/>).

APAS2018

APAS2018 will be held in Jindabyne on 9-11 April 2018. 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 APAS2018, please contact the APAS Publications Officer, Dr Volker Janssen at DFSI Spatial Services (Volker.Janssen@finance.nsw.gov.au).

Dr Volker Janssen,
DFSI Spatial Services



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A Surveyors' National Congress

Yarra Valley, March 2017

It must be 12 or 15 years since surveyors have attempted to get together, as surveyors, to talk about national points of interest. I cannot remember where the last one was, although I may well have been there.

Consulting Surveyors National was formed about 5 years ago with the thought that there were some issues of interest to surveyors, as against spatial professionals which were not being represented or investigated at a national level. They have had some level of success by instigating the BIS Shrapnel research into the issue of the "surveyor shortage" and raising it with the VET Taskforce to keep Surveying on the list of "threatened species" of skills. Recently they also commissioned PWC to report on the value and benefits of Registering Land Surveyors and showing their importance to the Australian Economy and the value of maintaining the integrity of the cadastre.

The latest step was to see if a National Conference would work.

Consulting Surveyors National is growing quickly with over three hundred and fifty member firms and membership in NSW, Victoria, Tasmania, Western Australia, South Australia and the ACT.

The Congress was held in the Yarra Valley over 3 days in conjunction with the Consulting Surveyors Victoria March Conference. I found the content very interesting, for myself, and I will tell you of a few interesting topics.

On Day One, after the opening, the Federal Minister for Small Business gave a very good 1-hour address on what the Government is doing to assist those of us

caught up in red-tape and complicated approval processes. I did not know we have a Small Business Ombudsmen available to assist in these matters.

Anthony Igra spoke on how to protect your business from losing money due to clients not paying, and also how to chase them to get paid. I have heard it before, but still the problem looms every so often.

We had a lawyer talk on the perils of social media in our workplace and its misuse in matters such as bullying. She recommended Social Media should be a vital inclusion in the Employee contract.

A proposal is being developed for the Limited Liability Scheme which we enjoy under the PSOA in NSW to be extended Australia Wide. In other professions it has been widely adopted. I cannot understand why surveyors do not recognise that most of the things they ordinarily do to safeguard their business operations can very easily be augmented and form the basis to protect their families and their assets from the liability of a Professional Indemnity Claim higher than the limit of their PI Policy. This proposal is well under way and will give all surveyors the opportunity to have that protection.

On Day Two, Tim Jarvis the Environmental Scientist, explorer and

an insight into ways we can transpose this into handling staff in our own lives.

Our next talk was on the comparison of how Victorian and New South Welsh surveyors handle Stratum/Strata subdivisions. Because a couple of NSW firms have been bought out by a Victorian team, they have sat down with a Sydney development and looked at how it would have been done down south. It gave rise to a lot of regret for the N-S-Welshmen in the audience because the Victorian approach is a lot simpler and easier to understand from a lay point of view, and from an on-going management perspective.

We did have talks on Rural Surveys in Victoria and PI Claims, which were not as relevant to me or I had heard it before. That is not to say that they were not interesting to many of the others in the room. But the national perspective of e-Plan as it is being applied in NSW, Victoria and Queensland, presented by the Titles Office officials from each state was very interesting. NSW is well ahead in the implementation but Victoria is WAY ahead in the rendering, it seems.

In Victoria they have a novel idea of each surveyor being able to nominate the local Councils with whom they deal for subdivision and planning matters for Municipal Excellence Awards. A great idea to promote better cooperation between the bureaucrats and the applicants. And it recognises that there are some good people in local government offices who actually assist in cutting red tape and providing solutions in the bureaucratic minefield.

Our last session on the day was a great panel presentation by the Surveyor-Generals from SA, VIC, TAS and NSW. The other states were unable to attend. They highlighted the difference in the registration processes in each state and around the rest of the country. Reciprocity was discussed and the problems it can cause due to the different examination topics and statutes for surveyors. It generated good discussion from the floor.