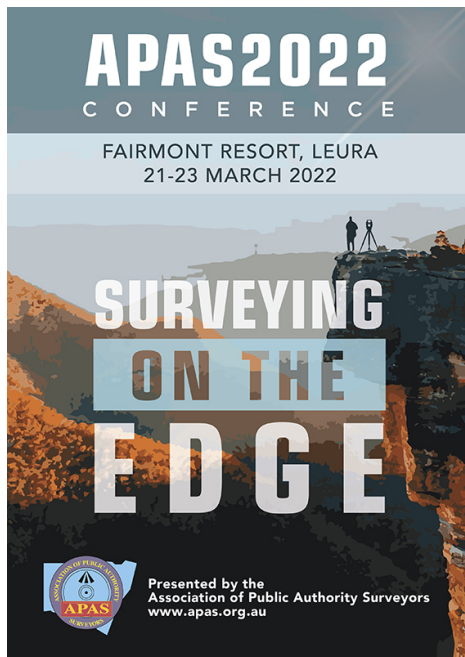
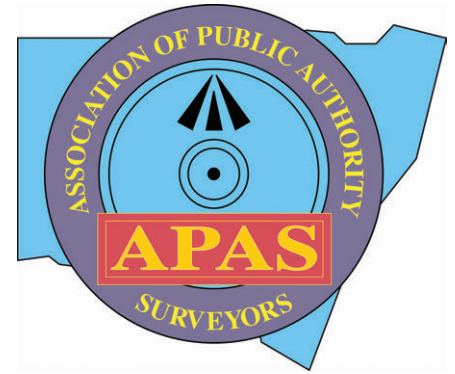


Surveying on the Edge APAS2022 Conference



Dr Volker Janssen, DCS Spatial Services

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, focused 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.

For two years in a row, in 2020 and 2021, the APAS conference had to be cancelled due to the COVID-19 pandemic and was replaced by the APAS Webinar Series. This year in 2022, we were finally able to return to the traditional face-to-face mode and celebrate our 25th conference. Nevertheless, online participation was also available through a live stream.

The APAS2022 conference was held in Leura

in the Blue Mountains on 21-23 March 2022, with the theme “Surveying on the Edge”. As we settle into a new decade and continue to battle the COVID-19 pandemic, the surveying and spatial information profession is evolving to deliver and utilise an ever-increasing amount of digital data and innovative processes.

APAS2022 included 7 sessions with 20 presentations, more than half of which included a full paper. Continuing the tradition of being a practically oriented conference, a wide range of topics relevant to our profession was covered. This year’s key topics included the NSW survey control network, cadastral surveying, updated legislation and guidelines, digital survey plans, complex surveying tasks and how modern technology can be used to our advantage. There was also plenty of opportunity for networking and exploring the newest developments at the technical exhibitors’ booths.

APAS2022 was a highlight on the CPD calendar and attracted 200 delegates (including 30 via the live stream) from New South Wales and interstate, with 47% of delegates from private industry. A great vibe and immense energy was clearly noticeable during the conference as delegates were overjoyed to come together in person again. As usual, the conference kicked off on Monday afternoon

with the annual APAS team building event (golf tournament).

22nd March – Morning

The first session started with Dr Volker Janssen (DCS Spatial Services) providing a practical guide to AUSPOS, Geoscience Australia’s free online GPS processing service. He outlined the desire and requirements for industry-observed AUSPOS datasets to be submitted to DCS Spatial Services for potential update of SCIMS and inclusion in the growing GDA2020 state adjustment, also offering practical tips related to the all-important antenna height measurement, metadata capture, observation data recovery and AUSPOS cluster processing.

Tom Bernstein (DCS Spatial Services) investigated three options to include Network Real-Time Kinematic (NRTK) observations and their Positional Uncertainty (PU) in the GDA2020 state adjustment. He showed that the automatically computed GNSS baselines between NRTK observations and their Virtual Reference Station (VRS) can be used to create a connected network that can be adjusted like a static GNSS network, thereby allowing a rigorous computation of PU while maintaining the quick and easy nature of NRTK positioning.



Keynote address by Thomas Grinter, A/Surveyor General of NSW.



Jonathon Smith (DCS Spatial Services) described how a new, publicly available interface was used to retrieve AHD heights for all SCIMS marks from the state-wide Digital Elevation Model (DEM). After confirming the stated accuracy of the DEM, SCIMS was updated with sub-metre DEM-derived AHD heights for survey marks with existing Class U or null values to yield a homogeneous dataset of known provenance and verifiable quality, enabling the calculation and reporting of the Combined Scale Factor (CSF) with confidence at virtually all survey marks in NSW. For this contribution, Jonathon later received the Keith Haddon Memorial Prize for the best conference paper.

The Official Opening took place at the beginning of the day's second session, starting with an Acknowledgement of Country. Keynote addresses were then given by Sarah Redshaw, Deputy Mayor of Blue Mountains City Council, Thomas Grinter, A/Surveyor General of NSW, Paul Digney, President of SSSI, Michael Spiteri on behalf of ISNSW President Bill Hamer, and Jarad Cannings, President of APAS.

After the official opening, Ruth Ward (Registered Surveyor) outlined the importance of cultural competency when dealing with native title and places of significance to Indigenous Australians, based on selected historic events relating to Indigenous Australians and their connection to land. She emphasised that a different understanding of a topic can be gained when looking at material created from an Indigenist perspective, which can help change one's standpoint and improve cultural competency.



Top: Presenters captivated the APAS2022 audience with a wide range of topics.
Above two photos: Technical exhibitor demonstrations.

Fred de Belin (City of Ryde) explored some of the interesting and fascinating questions related to the cadastre of Little Cattai Creek. He re-established the original Crown grants using plans of survey that were not survey

accurate and relying on the scant chain of subsequent subdivision plans and re-definition plans. For example, this revealed issues related to the original intention of the Crown grants and managing remnant slivers of land.



Top: Gala Dinner: MC Thomas Casey and speaker Dr Craig Roberts.
Right: Gala Dinner.

22nd March – Afternoon

The first afternoon session began with Dr Anna Riddell (Geoscience Australia) discussing recent upgrades to the Australian Geospatial Reference System (AGRS) and current activities for further improvement related to datum, heights, models and standards. She focused on the Australian Vertical Working Surface (AVWS) as an alternative for those requiring higher-quality physical heights and how airborne gravity surveys contribute to significantly increasing the accuracy of the AVWS.

Dr Carl Wang (Geoscience Australia) outlined how the GNSS Analysis team continues to enhance the accuracy and reliability of positioning across Australia through innovative technology and services. Apart from being the International GNSS Service (IGS) Analysis Center Coordinator, this includes the provision of Regulation 13 (Reg 13) certificates for CORS stations, GNSS antenna calibrations, the AUSPOS service and Ginan, a multi-GNSS open-source software to operate a real-time positioning correction service enabling Precise Point Positioning (PPP) for the surveying industry and other users.

This was followed by several technical exhibitor presentations, showcasing new advances in technology and surveying instrumentation and how these can be used in practice for a wide range of applications.

Practical demonstrations gave delegates the opportunity to appreciate and evaluate the capabilities of these instruments in practical scenarios.

At the beginning of the afternoon’s second session, Adrian White (DCS Spatial Services) and Daniel Griffin (NSW Land Registry Services) presented an overview of the transition to digital survey plans in practice, following an extensive process of stakeholder consultation. The implementation of new digital survey plan services, which are being released through NSW LRS Connect, enable surveyors to generate digital survey plans more easily and reap the benefits resulting from this workflow.

Les Gardner (DCS Spatial Services) outlined the key changes proposed in the new Surveying and Spatial Information Regulation for implementation in September 2022 (or potentially 2023)2023. These changes include that all surveys adopt an accurate MGA orientation, that surveyors connect to three established survey marks or bring their own



accurate MGA coordinates using an approved GNSS method, place less permanent survey marks, preserve survey infrastructure, provide a survey report for all water boundaries, and the review of survey certificates.

The Gala Dinner concluded the day with dinner speaker Dr Craig Roberts (UNSW) testing the collective wisdom of the room with hindsight, backsight and foresight relating to all things surveying and geospatial in an entertaining, engaging, competitive and interactive forum. This exchange of knowledge and innovation included revision of past practices, reflection on new adopted practices and reaching forward to propose new techniques, challenging Continuing Professional Development (CPD) as we know it.

23rd March – Morning

The day's first session kicked off with Sam Ebert (TAFE NSW) discussing the evolution of surveying at TAFE NSW to meet the needs of industry during the COVID-19 pandemic and beyond, following structural changes and improved online teaching and learning facilities. He demonstrated that TAFE NSW can meet the evolving demands of industry while working with and better utilising that industry.

John Brock (Brock Surveys) showcased an incredible number of examples featuring surveyors on banknotes, coins and stamps. Nearly 100 countries and territories have chosen our profession to adorn their monetary and stamp products for many assorted reasons and to honour some of the world's greatest individuals who just happened to be surveyors.

Brady Rengger (Geodata KODA Australia) reported on the development of a unique One Person Levelling method to fulfil client requirements and satisfy resource constraints for accurately measuring and detecting ground settlement from tunnelling activities. Based on the EDM heighting technique, it allows a single surveyor to deliver results in a highly productive and time-efficient manner. Brady's undergraduate thesis on this topic recently received the 2021 EISSI University Student Project Award.

John Read (Emeritus Surveyor) revisited the 1970s ground distance vs. grid distance dimension dispute in NSW prior to the introduction of the 2°-zone Integrated Survey Grid (ISG) from a cadastral perspective. He concluded that the current Australian practice of using only ground distance dimensions and only 6° UTM (MGA) survey and mapping coordination is probably the best surveying, cadastral and coordination system in the world and should be promoted as such.



Jonathon Smith accepts the Keith Haddon Memorial Prize for the best conference paper from outgoing APAS President Jarad Cannings.

At the beginning of the second session, Jerom Vanderstappen (DCS Spatial Services) presented on the recent updates to Surveyor-General's Direction No. 12 (Control Surveys and SCIMS). Following extensive internal and external reviews, DCS Spatial Services released a new version last year in 2021, which also introduces the 'Technical Specifications for NSW Secondary Control Surveys' to provide more detailed guidance.

Alecia Goodrich and Michael Dunn (Transport for NSW) offered practical tips for the Preservation of Survey Infrastructure (POSI). Noting that many small and large surveying consultancies are being engaged to undertake POSI projects on infrastructure projects, they highlighted critical aspects of the process, including the POSI strategy, the timing and extent of POSI site activities, and the importance of early consultation and involvement of The NSW surveyors.

This was followed by a demonstration and discussion forum on digital survey plans. Adrian White (DCS Spatial Services) and Daniel Griffin (NSW Land Registry Services) returned to demonstrate step-by-step how surveyors can prepare and lodge digital survey plans using the new NSW LRS Connect services. The open discussion forum covered topics such as 'data before drafting', industry benefits and the appropriate use of digital data.

23rd March – Afternoon

The last session commenced with Thomas Casey (Casey Surveying and Design) describing

the trials and tribulations of surveying in the desert for the initial sealing of the Silver City and Cobb highways in Far Western NSW. Field crews endured drought, 50°C heat, rain and dust storms, snakes, emus and even wild camels to ensure the successful and smooth running of the entire project, which recently received the 2021 EISSI Award for Infrastructure & Construction.

Michael Dunn (Transport for NSW) and Shaune Coates (Linke & Linke Surveys) highlighted the processes involved in LiDAR surveys using drones (measuring hundreds of thousands of points per second) and their advantages in time, cost, safety and environmental impacts. They showed that it is possible to achieve TfNSW Specification G73 tolerances for natural surface, batters, trees, overhead non-utility cables and natural surface drainage in heavily vegetated environments.

The conference concluded with Fred de Belin (City of Ryde) returning to trace the incredible life story of George Hedgeland, an Alignment Surveyor with the Lands Department from 1874 who became a colossus of roads. Being a 21st century man living in the 19th century, he had five distinct and rather diverse occupations: Artist, stained-glass artist, pastoralist, land surveyor and fruit grower!

At the Annual General Meeting, the following APAS office bearers were elected for 2022/23: Nigel Petersen (President & Conference Manager), Micheal Kocoski (Vice President), Wayne Fenwick (Secretary & Public Officer), Joel Haasdyk (Treasurer), Jarad Cannings (Past President & ISNSW Representative), Dr Volker Janssen (Publications Officer), and Committee Members Alex Burrridge, Alecia Goodrich, Thomas Grinter and Michael Waud.

The APAS2022 conference proceedings are available online from the APAS website (<https://www.apas.org.au/>).