

# Adjusting for the Future: APAS Webinar Series 2021

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.

Unfortunately, the APAS2021 conference had to be cancelled due to the ongoing COVID-19 pandemic. Instead, and just like last year, APAS organised the APAS Webinar Series 2021.

The theme was “Adjusting for the Future”, focussing on the Australian Height Datum, drone surveys, cadastral surveying including riparian boundaries, complex surveying tasks and how modern technology can be used to our advantage. As we enter a new decade, the surveying and spatial information profession is evolving to deliver and utilise an ever-increasing amount of digital data.

The APAS Webinar Series 2021 took place from 24 March to 30 June and was hosted by the University of Southern Queensland (USQ). It consisted of 18 pre-recorded presentations (and questionnaires for those requiring CPD points), most of which included a full paper. The event attracted 157 delegates, with 48% from private industry.



APAS Webinar Series 2021.

In the first webinar, Dr Volker Janssen (DCS Spatial Services) celebrated the 50<sup>th</sup> anniversary of the Australian Height Datum (AHD), including its achievements and longevity but also its shortcomings. He described the datum maintenance and modernisation efforts undertaken by DCS Spatial Services to not only preserve but improve access to AHD, while also providing a solid foundation for the Australian

Vertical Working Surface (AVWS) across the state. Acknowledging that there can be only one legal vertical datum, there are currently no plans to replace AHD. AVWS provides an alternative for those who need it.

William Steer (University of Southern Queensland graduate & APAS USQ Student Project Prize 2020 winner) delved into the world of using multi-constellation GNSS for static surveying. He showed that significant benefits are gained from using all available GNSS constellations for observation sessions of less than 6 hours in length, including a large decrease in the number of solutions failing to resolve phase ambiguities to an integer value.

Dr Craig Roberts (UNSW) presented a challenging project undertaken by students to provide a densified vertical control network to 10 mm accuracy supporting groundwater studies at Thirlmere Lakes. Students were exposed to a vast array of techniques and concepts including digital levelling, leap-frog EDM height traversing, simultaneous reciprocal trigonometric levelling, UAV-based photogrammetry and LiDAR, GNSS, AUSPOS and PPP. The project not only achieved its goal but also provided rich education for everyone involved. For this contribution, Craig later received the Keith Haddon Memorial Prize for the best conference paper.

Stewart Folley (DCS Spatial Services) outlined the development and implementation of a practical, fit-for-purpose Work Health and Safety (WHS) system for survey teams within the organisation. Platforms such as Survey123 by ArcGIS, SharePoint and Microsoft Flow were crucial in planning, communicating, reporting and reviewing WHS considerations to ensure a practical solution. This resulted in a comprehensive, innovative and purpose-built WHS system.

John Brock (Brock Surveys) traced the life of Japan's most famous surveyor, Ino Tadataka, who is responsible for the iconic 1821 map of Japan. He described the Edo Period of Japanese history along with the techniques and surveying equipment utilised by Ino and his survey teams to collect the measurements required to produce the first accurate delineation of the coasts of their nation. Impressively, this precise mapping was achieved during a time long before GPS, drones, aerial photogrammetry and satellite-based remote sensing.

Next, Jeff Hosken (DCS Spatial Services) demonstrated that 3D reality models can be used to inspect, measure and manage historic buildings, showing that innovative new techniques can be implemented to enhance the millennia-old trade of stone masonry. Drones, LiDAR, automated ground control points and structure-from-motion software were employed to create highly detailed, spatially accurate 3D digital representations of Fort Denison and the Hartley Historic Courthouse.

Erik Birzulis (Landair Surveys) compared drone surveys and manned aircraft surveys in regard to image capture capabilities, data preparation and the data products generated. Manned aircraft sensors capture few, lower-resolution, calibrated images, while drones capture many, higher-resolution, uncalibrated images. Both can produce orthorectified mosaics and point clouds. Like all tools, one is not necessarily better than the other, and the user should determine the most appropriate technology for each project.

Fred de Belin (City of Ryde) discussed weird things occurring in the name of the NSW cadastre. Examples included the curved road boundary with a radius of 21 km, the party wall that supports only one building, and the primary application that does not include all the land within its boundaries. These examples highlighted the need to sometimes investigate further back than the most recent deposited plan or the current title.

Thomas Casey (Casey Surveying and Design) reinforced these sentiments, demonstrating that sometimes the surveyor has to go the extra 8,000 links. In a recent acquisition survey, he found himself following a rabbit hole through old field notes and correspondence at State Archives, to the early days of BHP, a disgruntled property owner and a man's early demise in a Melbourne coffee emporium to help relocate the boundaries.

Les Gardner (DCS Spatial Services) provided a sneak peek at some of the changes that are currently being considered during the review of the Surveying and Spatial Information Regulation for 2022 implementation. The review process requires a substantial amount of time and input from many sectors. An online survey was distributed to the industry in March 2021 for comment, and there will be further industry consultation during this process.

Fred de Belin (City of Ryde) returned to examine a proposal to upgrade the spatial accuracy of the cadastre so that it can meet the expectations of all users, while remaining within the current legal framework for land tenure and survey regulations. An extensive land subdivision from 1882-1885 was tied to the modern survey control network (SCIMS) and showed that the discrepancy between true boundary positions and the Digital Cadastral Database (DCDB) boundary can be reduced with this method. It is hoped that this may eventually end the current notion of leaving all the cadastral discrepancy within the road reservation.

Then, Geoff Songberg (formerly Crown Lands) presented various components that have created the state of the uncertain realm for riparian boundaries. This included inconsistencies and confusing wording in relevant legislation along with difficulties to comply with legislation in practice. He pleaded to consider adjusting the way in which riparian boundaries are dealt with to avoid even greater uncertainty and loss of integrity in the surrounding cadastre.

Daniel Golenia (Hunter Valley Surveyors) discussed a recent subdivision case involving a riparian boundary. This raised interesting inconsistencies between a land title based upon a registered plan and Land Registry Services (LRS) records based upon Supreme Court judgement. As a surveyor, one always assumed that a riparian boundary is determined by and moves with the bank of the watercourse, whereas in this case it appears that the boundary moves by the judgement of the court.

Wayne Fenwick (DCS Spatial Services) outlined the process of reviewing Surveyor-General's Direction No. 6 (Water as a Boundary), which has been in its current form since 1993 with only minor updates to accommodate legislation changes. This review has gone back to basics and asked difficult questions in order to consider the fundamental principles of water boundaries. The answers found will indeed require an adjustment into the future in consultation with industry.

Next, Daniel Griffin (Land Registry Services) provided an overview of the revised approach for transitioning from paper to digital survey plans in NSW, following significant stakeholder engagement. The outcomes from the published Delivery Plan cover a broad spectrum of activities along the journey of survey plans from creation through to registration, relating to greater flexibility in data formats, improvements in data management practices, adoption of digital signatures and enabling concurrent consent gathering.

Narelle Underwood (Surveyor-General of NSW) explained the Board of Surveying and Spatial Information (BOSSI) complaint, investigation, discipline and prosecution process through the use of case studies. This included the investigation of complaints against registered land and mining surveyors and implementing disciplinary action which may arise as a result of these investigations.

Robert Lahood (Office of the Registrar General) presented background information, examples and statistics on survey audits and amendments. The audits aim to assess compliance with legislation requirements, improve the quality and consistency of deposited plans and the LRS plan examination process, educate surveyors and establish a mechanism for referring complaints to BOSSI.

Last but by no means least, Stephen Bishop (Association of Consulting Surveyors) outlined the Consulting Surveyors National Professional Standards Scheme. A key focus of the scheme is to promote professionalism and ethics by encouraging surveyors to behave appropriately and gaining recognition for their performance. Through its focus on ongoing training in risk management, the scheme aims to improve standards and reduce the risk of error or negligence as well as the losses arising from them.



Dr Craig Roberts received the Keith Haddon Memorial Prize for the best paper, here pictured at TS10736 MAROUBRA.

APAS would like to thank USQ for hosting the APAS Webinar Series 2021 (special thanks to Jessica Smith, Lecturer in the School of Civil Engineering and Surveying) and all presenters for their time and effort in contributing to this event during these challenging times. The proceedings of the APAS Webinar Series 2021 are available online from the APAS website (<https://www.apas.org.au/>).

At the Annual General Meeting, held online in May, the following APAS office bearers were elected for 2021/22: Jarad Cannings (President & ISNSW Representative), Nigel Petersen (Vice President), Michael Armstrong (Secretary & Public Officer), Michael Waud (Treasurer), Thomas Grinter (Past President), Dr Volker Janssen (Publications Officer), Peter Nilon (Conference Manager), and Committee Members Wayne Fenwick, Alecia Goodrich and Micheal Kocoski.

Let's all work together, support one another and do our part to overcome the COVID-19 pandemic. Hopefully we'll be able to enjoy each other's company again, without any restrictions, at the next APAS conference.

## **APAS2022**

APAS2022 will be held in Leura on 21-23 March 2022. 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 APAS2022, please contact the APAS Publications Officer, Dr Volker Janssen ([Publications@apas.org.au](mailto:Publications@apas.org.au)).

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