

AUSTRALIAN INSTITUTE OF MINE SURVEYORS **NEWCASTLE SEMINAR** NOAHS ON THE BEACH HOTEL

12 MAY 2023

Thursday 11 May

6:00PM Welcome Dinner Grain Store Newcastle, 64-66 Scott St, Newcastle East NSW 2300

Friday 12 May

8:00AM	Registration - Noah's on the Beach Hotel)
8:30AM	Coffee + Trade Display
9:00AM	Welcome Peter Sergeant
9:10AM	Phantom 4 RTK Terrain Awareness Jason Gray - Assistant Surveyor, Liddell Coal Operations
9:55AM	Mines beneath Newcastle Harbour Ed Tonks
10:40AM	Morning Tea
11:10AM	Sponsor Interactive Sessions Delegates to be split into groups and will rotate every 15 minutes CR Kennedy, Deswik, Emersent, GeoCue Australia, GeoSight, Hexagon Geosystems, Maptek, Position Partners, Riegl, UPG 4 rotations
12:30PM	Lunch
1:20PM	Sponsor Interactive Sessions continued CR Kennedy, Deswik, Emersent, GeoCue Australia, GeoSight, Hexagon Geosystems, Maptek, Position Partners, Riegl, UPG 3 rotations
2:20PM	Afternoon tea
2:50PM	Sponsor Interactive Sessions continued CR Kennedy, Deswik, Emersent, GeoCue Australia, GeoSight, Hexagon Geosystems, Maptek, Position Partners, Riegl, UPG 3 rotations
3:50PM	Conclusion & Drinks

CPD POINTS FULL ATTENDANCE

3 Mine Survey

1.75 Survey Practice



Presentation Abstract Newcastle

Phantom 4 RTK Terrain Awareness

Jason Gray - Assistant Surveyor, Liddell Coal Operations

This will be a two part presentation, first part will be a brief guide on how to setup, plan and carry out mission flights using the terrain awareness mode on a Phantom 4 RTK.

Part two will be a case study on the open cut mining survey I carried out for the purposes of my survey registration project using the terrain awareness mode, including an analysis on the accuracy of the results achieved.

Mines beneath Newcastle Harbour

Ed Tonks

This illustrated talk will give an overview of Newcastle area coal mining from the convict days of the early 1800s to the 1880s. The phase known as Delta Mining will then be examined with a look at the beginning of this phase with mining at Tighes Hill and the significance of the Inrush of 1886. The major mines of Wickham and Bullock Island at Carrington and Hetton Colliery, also at Carrington will be treated. Special focus will be given to Stockton Colliery and the 1896 Disaster which claimed the lives of eleven mine workers. It has a special place in the history of Australian coal mining.



How to Survey 250 hectares in 50 mins

For Open cut Coal Operations getting regular and accurate updates are key to delivering the proper the spatial service to the mine. Getting an accurate digital terrain model and detailed imagery to go with it adds to the value offering. We will explain how this can be done with the Wingtra and the expected results that can be obtained. Optimal flying heights, presence of predatory birds and typical wind speeds will add to the considerations for your site.



Data management is a common problem across mine sites. Departments are often acting independently, and this combined with high staff turnover creates uncertainty and low confidence in sharing data. Deswik's Mine Data Management tool (MDM) provides a one-source-of-truth solution and allows departments to standardise workflows and procedures. Tightly integrating with Deswik.CAD, Deswik.MDM provides a spatial database, standalone viewer, report generator and process workflow management tool for the entire technical services department. A single solution for data security and management.

Emesent will be looking at automated georeferencing and post processing point clouds in both underground and above ground mines.



GoeCue Australia will present our range of cutting edge Drone LiDAR and photogrammetry systems, and also other drone based offerings particularly UGCS .

UGCS is going from strength to strength, a drone management software that is capable of controlling drones for multiple tasks. We are excited to present more information on the range of payloads from SPH Engineering (UGCS) for Bathymetric Surveys, Water sampling, Methane detector and Ground Penetrating Radar. With emphasis on the Drone Cable bathy system we will look at how this system will enable you survey water bodies on site with greater safety, efficiency, ease and accuracy.



Scanning Voids 300-500 meters below the surface.

Scanning a cave at Carrapateena 500m below surface. This involved DGRT to supply the wireline and winch while GeoSight supplied a modified CMS and booms. A 500m long hole was drilled and cased. The void is 150m X 150m X 150m and filled with vapours. GeoSight also developed a CALS scanner (GSM-16) that can operate 300m below the surface. The GSM-16 uses 4 Mems Gyros and Dead Reckoning while recording video of the hole and void. GeoSight has also leveraged the same Mems Gyro PCB into a very inexpensive drill hole deviation tool (SCOUT).



HxGN MineMonitoring

Hexagon Mine Monitoring offers innovative, reliable and comprehensive solutions for proactive and reactive monitoring of slope stability in open-pit mines. Our technology provides the ideal solution for both known and unknown instabilities, from very slow movements to rapid displacements and rockfalls.

As a long-standing technology leader with more than 30 years of experience, Hexagon's complete technology portfolio for slope stability monitoring includes hardware (radar, GNSS, total stations, tilt sensors), software, 24/7 support and services. Combining all these available technologies into one holistic view of the mine is the basis for Hexagon's total monitoring concept



For more than 40 years, Maptek has delivered innovative, technically robust mine survey solutions to meet industry needs. Incorporating integrated 3D laser scanning, survey, and imaging systems, Maptek solutions provide the link between the mine survey, design conformance and stability monitoring processes for integration with mine planning and production schedules.

Our software and hardware technologies target open pit updates, stockpile volumes, and inter-ramp compliance applications, Systems are easy to learn and easy to use, ensuring mine surveyors can efficiently translate their data into actionable insights and communicate these throughout the mining operation.



The 3-1 Smart Surveyor is a photogrammetry tool that removes the need for additional hardware to conduct RTK quality RPAS missions. This RPAS multi tool is able to be attached to commonly used RPAS systems like the DJI Phantom 4, Mavic 3 E and even the Mavic 2 series. With a focus on the Mavic 3 E we have designed this system to attach via OEM locater screws atop the Mavic, the Smart Surveyor then logs GNSS data for PPK reduction with the photos captured in flight. This unit can also be used to conduct hand photogrammetry in areas you may not be able to fly and also can be used to locate your ground control points to help with QC and overall positional accuracy of your survey.



RIEGL Optimises Mining Data Capture

For years RIEGL has provided a range of high-performance, high-resolution 3D laser scanners which perfectly meet the demanding requirements of open-pit mining and tunnelling. With the recent advancement of the VZ-i series scanners, onboard mining applications can provide real-time data analysis for Monitoring, Slope Angle & Design Compare. Additionally, the recently released RIEGL VUX-160 enables mapping from long-endurance, high-speed winged UAV platforms. This new sensor allows mine sites to increase data capture frequency over large areas and in extremely high detail.



Using the Trimble TSC5 controller running the latest 2023 version of Trimble Access we will demonstrate the latest features of Access as well as showcasing the Trimble R12i GNSS receiver and how it uses the Pro Point technology to operate under difficult multipath environments. We will also show the IMU based tilt compensation technology as well as showing VRSnow v's RTX precisions

