

# CURRICULUM VITAE

## Alexander Nathan

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**Profile:** Qualified Surveyor working in shaft sinking approaching six years' industrial experience across mining, tunnelling, and shafts. A graduate from the Camborne School of Mines with an MSc in Surveying (Merit) and a BSc in Geology from the University of Hull (2:1), currently working towards achieving Chartered status with the Institute of Materials, Minerals & Mining.

### Employment

#### **April 2023 – Present**

#### **Secondment as a Surveyor with Redpath Deilmann, Woodsmith Mine**

Seconded to the main shaft sinking contractor Redpath Deilmann as a Surveyor, working as part of a team to aid the sinking of the service and production shafts down to 1,600m with the SBR shaft sinking method. Experienced in working under pressure on time critical jobs, I spend each shift working alongside the miners to set out and aid the installation of shaft services, set the curb, carry out excavation and concrete scans and creating subsequent asbuilt reports. Other tasks include setting primary control in the shaft i.e., laser brackets and steady brackets for the plumb lines, installing prisms, shaft tapes and transferring height across, assisting with probe drilling operations and setting out blast patterns for lateral workings.

I provide engineering support within my capabilities and work to solve problems I encounter while underground.

I am actively involved in the planning and preparation of scheduled works and creating drawings and documents to aid the surveying team to set out required infrastructure.

#### **June 2021 – March 2023**

#### **Shaft Technician at Anglo American's Woodsmith Mine, North Yorkshire**

Prior to Redpath's takeover of the shafts, I was employed as a Shaft Technician to aid the build up of site, setting out infrastructure in the collar buildings, winder houses, foreshaft, sub collar and in the pre-sink shafts. Regularly worked to IFC plans, creating AutoCAD drawings to derive coordinates. I was involved in creating and setting up the primary control in the three shafts, i.e., plumb lines and lasers.

Surface roles include: Working across all Anglo American sites to set up primary control using GNSS static observations, total station traverses and digital levelling with subsequent post processing in Leica Infinity to derive coordinates. Creation of secondary control across the Woodsmith site. Setting out and aiding installation of infrastructure, creation of asbuilt plans and reports. Capturing asbuilt information of the project's sites using RTK GPS to continuously update live maps, making use of line and point coding, with subsequent processing in Leica Infinity, AutoCAD and ArcGIS. 3D scanning using Leica P50 and RTC360, using Cyclone and 3DR for post processing.

#### **March 2020 – June 2021**

#### **Tunnel Surveyor at Strabag, Wilton Site, Redcar and Cleveland**

Underground roles include: Move-ups on the TBM using the VMT guidance system. Carrying out primary and secondary control surveys from the TBM to outbye existing control with post processing to calculate coordinates of new control points and update current tunnel alignment. Regular gyroscope missions underground with surface pre and post calibration. Installation and monitoring of triaxial nodes to assess ground movement. Levelling runs with subsequent processing. Asbuilt surveys, via use of the halo staff and when required, laser scanning. Summative reports from asbuilt operations utilising Amberg to create profiles of each measured ring.

Surface roles include: Setting out infrastructure and carrying out asbuilt operations. Installing additional control, levelling runs with subsequent post processing and production of reports as required.

Competent using Amberg and AutoCAD and am becoming familiar with Starnet. Regular use of Cyclone 3DR to process scan work. Continual usage of Leica's LS15 Digital Level, TS15, TS16 and TS60 instruments and the Gyromat 5,000.

During my employment, I worked as a team of two to level the 13km of tunnel from portal to face, averaging 1,000 rings in the allocated window i.e., 3km there and back. 13km in, the difference in actual height to design was 9mm.

**March 2020** **Mine Surveyor at ICL Iberia (Catalonia, Spain)**

Contracted by ICL over a period of a week to assist in the reinforcement and addition to an existing control network, the aim being to connect a surface decline under construction to underground workings some 800m below the surface. With the decline being near to completion, ICL called for the surveying team to undertake such works to ensure the successful breakthrough. Works included: Setting up and carrying out a traverse from the mine through to the ramp's current position, utilising stellar surveying to obtain an initial, significant baseline and GPS (calibrated to the coordinate system utilised in Spain). Performed multiple gyromat missions in collaboration with Dr Andy Wetherelt (University of Exeter) to check bearings on surface, underground in the mine and along the decline.

**September 2018 – March 2020** **Mine Surveyor at Cleveland Potash**

Responsibilities include: Updating control networks underground through regular traversing. Installation of tunnel alignment markers using theodolites to turn off angles and maintain planned centre line bearings. Setting out underground i.e., marking out the positions of proposed infrastructure, drill bays and their respective drilling hole locations. 3D scanning to record monthly mined progress with subsequent georeferencing to control points and further volume calculation of mined areas by cleaning and meshing the point cloud. Updating mine plans using the generated outlines from the meshed month end scans and joining them into AutoCAD's existing plans. Maintaining a 3D model of the working districts. Levelling runs to ascertain topographic profiles along advancing districts utilising the rise and fall booking method. Updating geological datum lines at the working face and setting out gradients for the miners to follow. Geological probing of the face to acquire product grade and coverage. Surface surveys around site, visual inspections, traverses, structural surveys, subsidence levelling and monitoring of tips piles. Quarterly stockpile surveys on site and external using scanners to collect point cloud data with post processing in Cyclone and Reshaper to overlay the meshes onto a base and calculate volumes. Bolt compliance auditing via scanning and measuring rows of bolts along sections of roadways. Bowties to map hazard risk management. Creation and updating of technical drawings across departments and design of proposed mining layouts every month across working districts.

Competent using the Leica TS16 & TS50, Leica P40 and RTC360, GeoSLAM's REVO and ZEB Horizon scanners, optical and laser plummets to set up over floor points and under roof stations, plumb bobs to translate points vertically downwards via the Weisbach principle. Have routinely undertaken work alongside other departments to increase my understanding of the how the mine operates. Regular overtime shifts with rock mechanics, overseers, safety department and pump lodge – increasing interpersonal and work skill sets; critical as a surveyor to gain full working knowledge of others' roles and responsibilities.

**December 2018 – March 2020** **Mines Rescue Service**

Fully qualified member of the Mines Rescue team and first aider, familiar with rescue procedures and working effectively as a team. Trained in confined conditions and firefighting, with firefighting training undertaken at Tees Durham Valley airport.

**July - September 2018** **Placement at Cleveland Potash Mine, North Yorkshire**

Participated on a paid 12-week summer placement, focussing mainly on working as a mine surveyor alongside conduction of research for my MSc thesis. Aspects of surveying such as scanning, traverses, establishment of control networks, insertion of roadway line markers and levelling were covered during my full-time work. Competent using Cyclone and 3D Reshaper to interpret scans performed with the Leica P40 and GEO Slam REVO to produce accurate volumetric calculations for mined outputs.

**2014 – July 2018** **Researcher at Nathan Associates Chartered Building Engineers**

When required, I assisted in compiling information about physical properties of a site, evaluating the risk the development has of being compromised by flooding, rainwater drainage and geological conditions. Making use of knowledge acquired during my Geology degree and Land/Environmental Management masters, I was able to provide clients with detailed analysis of the probability that their site will be compromised by physical factors and recommend what steps should be undertaken to mitigate their occurrence.

**May – June 2018** **Mine Surveyor at Winsford Salt Mine, Cheshire**

Contracted by Compass Minerals as paid employment for my MSc thesis research to scan and model an area of the mine due to be developed into Deep Storage. During the time of placement, the mine held some 2.5 million boxes,

but future predictions had showed demand will increase this to 5 million, hence the need for this survey to have been commissioned. An initial traverse was conducted from an established baseline through the room and pillar panel, installing control along the way and covered an area of 2 km. An overall error of less than 20 mm was achieved, leading to adjustments of 1.8" being made for each whole circle bearing. Subsequent detailing was carried out using a Leica TS16, post processed in LSS and outputted onto an AutoCAD drawing, with the intention of being used by engineers who will use the plans to aid construction of the shelving units. Additional 3D scanning was conducted through use of a Leica C10 instrument with 45 setups being carried out to provide the client with high resolution imagery of the area and post processed using Cyclone and 3D Reshaper.

## **Volunteering**

Coal miner at Ayle Colliery, Cumbria

## **Education and Qualifications**

**2017- 2018**

**Camborne School of Mines  
MSc Surveying, Land/Environmental Management**

Course accredited by the Chartered Institution of Civil Engineers and Royal Institution of Chartered Surveyors. Covered eight modules and dissertation, overall averaging 67% and attaining a distinction for the dissertation (71%). The dissertation focussed on optimising the creation of mine plans underground and calculation of mined volumes using 3D scanning (as discussed in Cleveland Potash employment). Modules studied were Health and Safety in the Extractive Industry, Land Surveying, Project Management, Advanced Surveying, GIS for Surveying, Soil and Water Contamination, Site Investigation Including Near Surface Geophysics, Mineral Property Management and Law.

**2014 – 2017**

**University of Hull      BSc Geology (Upper Second Class)**

A course accredited by the Geological Society of London. Relevant modules studied: Economic Geoscience, Advanced Sedimentology, Water Resources, Advanced Field Study. Produced a geological map and narrative of the Isle of Kerrera (Scotland) during six weeks of in the field research for the dissertation project.

## **Other Skills**

- Software: 3D Reshaper, Amberg, ArcGIS, AutoCAD, Cyclone & Cyclone Register 360, Microsoft Office package programmes
- CSCS Managers and Professionals Site safety card
- TSTS Tunnel safety card
- IPAF Powered Access License for type 3b MEWP (July 2020)
- Full, clean driving license since October 2012 and own a reliable car.
- Ability to compile various industrial reports and create plans.
- Strong communication skills – verbal and written
- Actively learning Russian and Polish.

## **Interests**

Swimming, scuba diving, gym, playing drums, retro cars.

***References available on request***