

# CAPABILITY STATEMENT

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SMG Consultants (SMGC) are **leaders** in the fields of geological and mine planning **consulting** and in providing advisory services to the global **minerals** industry.



## COMPANY OVERVIEW

SMG Consultants was is a company born out of Australia's leading role in global geological and mining software development in the 1966. In the 60s, SMGC was providing support and mining solutions using analytical tools developed by ECS, developers of the Minex software platform. In 2002, ECS, a division of ECS International, merged with Surpac Software International to form the Surpac Minex Group (SMG), an integrated software development company that also provided mine consulting services.

In July 2009, SMGC was founded in Indonesia as a centre to serve its client base across Southeast Asia. SMGC, headquartered in Jakarta, is an independent mining consulting group providing geological, resource evaluation, mining engineering, life of mine planning, JORC/KCMI/NI43-101/VALMIN reporting and mine valuation services to the resources, power, investment and financial services industries, project feasibility, due diligence studies, mine design and scheduling.

SMGC experience and clients falls across **Thermal Coal, Metallurgical Coal, Nickel, Gold, Manganese, Copper, Tin, Lead, Zinc, Bauxite, Limestone, Iron Ore and many others minerals**. SMGC also offers site-based services that include survey, drill and blast, pit design, geological exploration and production scheduling and simulation.

To ensure adherence to professional reporting codes such as the JORC/KCMI code and due diligence work, many of SMGC's consultants are recognised as "Competent Persons" and "Qualified Person".

## CORE VALUES

As a company we can trace our history back to 1966, we have experience from working in more than hundreds of projects both in Indonesia and outside Indonesia. We add value to our clients' projects by providing expert advice and practical.



PLACES EXCEPTIONAL VALUE ON CLIENTS, EMPLOYEES, AND TECHNICAL LEADERSHIP

Mining Services License Number  
NOMOR: 566.K/30/DJB/2012



# SERVICES

SMG Consultants services are accurate and timely in order to take advantage of vibrant international mining industry with unique combination of technical staff and mining software, such as : Minex, Surpac, Micromine, Talpac and others. SMGC is able to offer a broad range of services including the planning and management of exploration programs, geological modelling, JORC/KCMI Resource and Reserve Statement Report, project feasibility, due diligence studies, mine design and scheduling.

SMGC also offers site-based services that include survey, drill, blast, pit design, geological exploration and production scheduling and simulation.

To achieve ultimate results and precise estimations for its clients, SMGC regularly joins forces with specialist in field data review, environmental studies, soil and rock mechanics modelling, milling and washing studies and capex/opex estimation.

## **JORC/KCMI/NI43-101/VALMIN/Due Diligence**

SMGC is a leader in JORC, KCMI, NI-43101 and VALMIN compliant reporting. Several staff members currently hold “competent” persons status for several of these international reporting codes. SMGC teams with clients through all stages of prospecting to bring their property into compliance. Thorough Due Diligence studies demand the ability to examine in detail the essential factors that affect the final appraisal of a property. SMGC’s senior staffs have a wealth of experience to guide clients through the potential liabilities that they may encounter.

## **Exchange Listing: Competent Person Reports / Qualified Person Reports**

SMGC is competent in preparing Competent Person Reports and Qualified Person Reports for commodity exchanges globally. SMGC is supporting a number of clients in this role for their annual reporting requirements.

## **Data Collection**

Using Minex, Surpac and other mining software, SMGC is able to collect, manage and interpret the data required to build geological models. In partnership with our clients, the planning and supervision of drilling programs can be carried out using state-of-the-art software. Geological data can be enhanced by interpreting magnetics, gravity, radiometric and seismic data.

## **Mapping and Drilling Services**

SMGC has provided mapping services for many of its clients to assist in gaining a better understanding of the mineral deposits held in the concession prior to the commencement of the drilling program. SMGC has also run drilling programs for clients to assist in the process of collating data required to take the concession to JORC status.

## Geological Services

SMGC has experience in all aspects of exploration from greenfields exploration of provincial scale concessions to pre-production and grade control sampling. To produce sound geological models, SMGC uses variety of structural tools including wireframing, ore body geometry, seam or vein modelling and geostatistical skills. SMGC uses these models to provide technical advice relating to exploration and mining geology. Interpretation is the key to a valid geological model and resource estimate. To adhere to the JORC Code and meet finance industry requirements, comprehensive geological modelling is essential.

## Optimisation

SMGC's cutting edge pit optimisation techniques are able to incorporate all facets of the mine operation into true Life of Mine solutions. SMGC uses the Lerch Grossman and floating cone 3D pit optimiser to provide NPV-based LOM solutions that integrate full mine production scheduling. Whittle optimisation is another option that may be seamlessly incorporated. SMGC association with Whittle consulting allows optimisation to be extended to full Enterprise Optimisation should the client require it.

## Economic Analysis

SMGC provides a high-level economic analysis as the key first step in creating a mine reserve from a geological resource and assist in defining a strategic plan. Economic analyses are based on pit optimisation and block ranking methods which apply to surface mining.

## Mining Planning/ Life of Mine (LOM) Planning

SMGC provides mine design and scheduling in open cut and underground mines, with particular strength in stratiform and thin vein deposits. SMGC is actively engaged in planning from high level conceptual through to operational planning. We support both pre-production and operating mines.

## Specialist Services

SMGC works in collaboration with other specialists and consultants in the financial, legal, material processing simulation and with other services as required.

## Software Experts

SMGC is recognised as an industry leader in the use of Minex and Surpac software. SMGC is proficient in the use of a number of other software solutions Vulcan, Mincom, Xpac, Whittle, Talpac, MapInfo and Arc GIS.

## Geographic Information System (GIS)

On every GIS project, SMGC implement ongoing data quality control to ensure that coordinate databases, foreign source data, such as geological and topographic maps, GIS data attributes creates a truly seamless GIS mapping environment. A geographic information system (GIS) is a computer system for capturing, storing, checking, and displaying data related to positions on Earth's surface. By relating seemingly unrelated data, GIS can help individuals and organizations better understand spatial patterns and relationships.

## Drone Survey Services

SMGC has owned some drones that we always use for surveying and mapping when we are on site visit. When we do survey at the mining, it is possible to capture the entire pit and dumps in one detailed flight. This gives our engineers greater understanding of the work area to generate accurate dig and dump designs.

## Quality Assurance (QA) / Quality Control (QC)

SMGC experts have extensive experience in reviewing QA/QC data from all stages of the project. We help you ensure compliance with all contract specifications, mandatory regulations and quality standards, and are able to draw relevant conclusions, manage electronic data collection, validation, and QA/QC database management and make recommendations to clients to ensure compliance with international technical reporting codes.

## Mining Engineering

SMGC's geotechnical engineers calculate slope stability for mine embankments, and design roads to allow the mine's workforce and equipment to reach the ore body efficiently and safely. When we're mining, we're obviously removing large quantities of rock, and we have to determine what is a safe slope of an open pit mine, so that it does not suddenly and unexpectedly collapse. Obviously there are safety issues, but there are also production issues.



# CLIENTS

**We provide a variety of specialized services for the mineral resource industry. With our experience and capabilities, we are trusted to work with many clients not only in Indonesia but also outside Indonesia.**

## **SHORT LIST OF INDONESIAN CLIENT COMPANIES (not complete list)**

- Aries Capital Partners
- Awak Mas
- Buduk Gold
- Cilabang Gold
- Credit Suisse
- Deloitte (UK)
- East Asia Minerals Corp
- Essar Group
- Essar Mineral Holdings Ltd (Mauritius)
- Flame SA
- Geo Energy Resources Ltd
- IMR
- Korean Western Power Co. Ltd
- Macquarie Capital (Singapore) Pte Ltd
- Martabe
- Mentebah Gold
- Mt Muro
- Peabody Energy
- Petra Commodities
- PT Adaro
- PT Adimas Puspita Serasi
- PT Ancora Indonesia Resources, Tbk.
- PT Antam
- PT Asmin Koalindo Tuhup
- PT Astan Raya
- PT BCMP
- PT Bima Ferroindo
- PT Borneo Indobara/Sinarmas
- PT Borneo Prima Coal Indonesia
- PT Borneo Tiga Mandiri
- PT Bumi Modern Group
- PT Bumi Resources Mineral Tbk
- PT Bumi Suksesindo
- PT Cahaya Duta Fajar
- PT DBS
- PT Duta Bara Utama
- PT Dwi Putra Indo Bara
- PT Ernst & Young
- PT Gandang Garantung Mining
- PT GEO Energy
- PT Gunungbayan Pratamacoal
- PT Griya Sumber Setia
- PT Indexim Coalindo
- PT IPB
- PT Indo Rak Resources
- PT Indonesia Coal Development/Churchill Mining
- PT Kalimantan Energi Lestari
- PT Kapuas Prima Coal
- PT Kapuas Tunggal Persada
- PT Kutai
- PT Mangala Alam Lestari
- PT Mamahak Coal Mining
- PT MBL
- PT Multi Harapan Utama (MHU)
- PT Middle East Indonesia
- PT Multi Resources Indonesia
- PT Nusa Persada Resources
- PT Nusantara Thermal Coal Mine
- PT Omega Resources
- PT Pamapersada Nusantara
- PT Parna Raya
- PT Petrosea, Tbk
- PT PLN (Persero) Tbk
- PT Polytama Propindo
- PT Posco
- PT Raya Fortuna Mining
- PT Raja Kutai Baru Makmur
- PT Renaissance Capital Asia
- PT Samsung
- PT Skyland
- PT Stargate Pacific Resources
- PT Tekindo
- PT Titan Mining Indonesia
- PT TMU
- PT Toba Bara Sejahtera Tbk
- PT Trans Power Indonesia
- PT Weda Bay Nickel
- PT Wisma Benhil
- Sinarmas Energy and Mining Group (GEM)
- Standard Chartered Bank
- Straits Corporation Pte Limited
- Sumatra Copper and Gold
- Transpacific Group
- Yastra Energy
- Tujuh Bukit

## METALS

- Adelong (Gold)
- Auckland (Gold)
- Bamboo Creek (Gold)
- Broula King (Gold)
- Broula Iron (Iron)
- Century (Zinc)
- Chesney (Gold/Copper)
- Chipping Norton (Trace)
- Coolgardie (Gold)
- Cooljarloo (Mineral Sands)
- Dugald River (Lead/Zinc)
- Elura Mine (Base Metals)
- Granny Smith (Gold)
- Great Cobar (Copper)
- Golden Mile Super Pit
- Kanowna Belle (Gold)
- Marvel Loch Project (Gold)
- Mertondale (Gold)
- Cerro Corona, Peru (Copper)
- Chatree, Thailand (Gold)
- Chengmenshan, China (Cu)
- Dizon Mine, Philippines (Cu)
- Guyana Project, Guyana (Gold)
- Hercules Mine, Mexico (Iron)
- Jianchaling, China (Gold)
- Jordan Phosphate Mines (P)
- Junin Project, Ecuador
- King King, Philippines (Copper)
- Klondyke, USA
- Natal, Indonesia (Iron)
- Oman (Copper/Gold)
- Oslo Tar Sands
- PT Kaltim Prima Coal (AMD)
- Chinchilla Projects
- Clarence
- Collinsville Mine
- Coppabella Project
- Cumnock
- Dartbrook
- Drayton Mine
- Durali
- East Boggabri
- Eloura, Illawarra
- Hunter Valley West
- German Creek Mine
- Glendell
- Glennies Creek
- Grasstree Colliery
- Great Greta
- Greenfields
- Ivanhoe Colliery
- Kayuga Project (Anglo)
- Kilburnie
- Latrobe Valley
- Lemington Mine
- Millmerran
- West Wallsend
- Whitehaven
- Baukol Noonan, USA
- CDLC, Colombia
- Dynamic Acres, Indonesia
- El Cerrejon, Colombia
- Huajiahu Mine
- Holcim Phillipines, Inc Jacobs Ranch
- Julia Creek Project
- Mohamad Amin
- Muara Bakak
- Ombilin Mine
- Pama, Indonesia
- Paso Diablo
- PT Kaltim Prima Coal
- PT Utah, Indonesia
- PT Berau Coal
- PT Indominco Mandiri
- Petrovenkovskaya
- Mineral Hill (Base Metals)
- Mt Adrah (Gold)
- Mt Hutton (Magnesite)
- Mt Isa (Copper Pit)
- Mt Todd (Gold Optimisation)
- New Cobar (Copper/Gold)
- New Occidental Project (Gold)
- North Rand (Gold)
- North Trident (Gold)
- Panton Project (Platinum)
- Peak Gold Mine
- Plutonic (Gold)
- Rand (Gold)
- Ravenswood (Gold)
- Redross (Nickel)
- Shoe Project (Gold)
- Thalanga (Base Metal)
- Victory West (Nickel)
- Warroo Gold Mine (Gold)
- Westmoreland (Uranium)
- Woodlawn (Base Metals)
- Aroaima, Guyana (Bauxite)
- Az Zabirah, Saudi Arabia (Bxt)
- Bibiani, Ghana (Gold)
- Cemex, Mexico (Limestone)
- Review, Indonesia (Ni)
- Teseo Mine, Mexico (Iron)
- Weda Bay, Indonesia (Nickel)
- Woodlawn Mine (Copper Gold Silver Lead and Zinc)
- Yemen (Limestone)

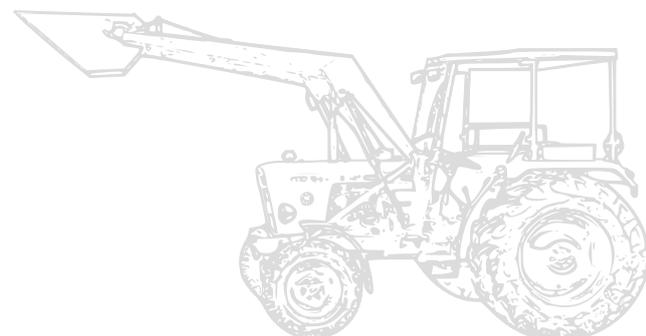


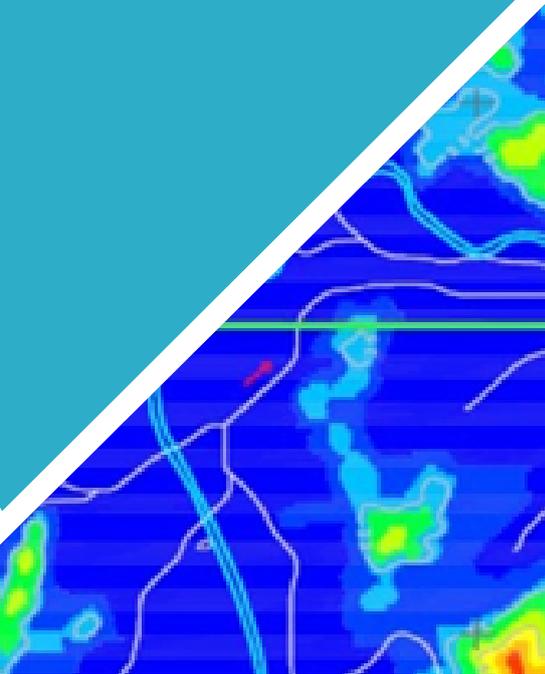
**COAL**

- Acland Project
- Anglo Coal
- Angus Place
- Anvil Hill
- Ashton
- Bayswater Colliery
- Bellambi Colliery
- Bengalla Coal
- Berrima Colliery
- Boundary Hill Project (Callide)
- Bulga Coal open cut
- Bulga Coal underground
- Bowens' Road North
- Callide Coalfields
- Camberwell Coal Project
- Capricorn Coal
- Carroona Project
- Carrington
- Charbon Colliery
- Chesthunt
- Moranbah North
- Moura Mine
- Mt Arthur North
- Mt Arthur North (LOM)
- Mt Owen
- Mt Pleasant
- Mt Thorley
- Muswellbrook Coal
- Narama Coal Project
- Newlands Project
- Nardell
- Newstan Colliery
- North Goonyella
- Oakleigh Project
- Pentland Project (MIM)
- Riverview
- Rixs Creek
- Saddlers Creek
- Saraji Mines
- Sefton Park Project
- South Bulli
- Springvale
- Swamp Creek
- Theodore North
- Thiess
- Togara North
- Ulan Coal Mines
- United Collieries
- Wandoan Projects
- Wambo
- Warkworth Mine
- Piparwar Coal Project
- Sasol, South Africa
- Selwang
- Senekin Project, Indonesia
- Socuy Project
- Ukraine Project
- Wujiata Project, China

**QUARRIES**

- Bombo Quarry
- Bringelly Clay Pit
- Dunmore Sand
- Klein Point Quarry
- Mt Flora Quarry
- Marulan Quarry/Mine
- Penrith Lakes
- Penrose Quarry





# PROJECTS

**We have done many projects for mining clients, this project covers the life cycle starting from the initial exploration stage through development, operation to closure.**

## **Recent ORE Projects (not under Non-Disclosure Agreements)**

### **PT Kapuas Prima Coal (Lead/Zinc)**

Produced KCMR Resource & Reserve Statements Reports for a Lead/Zinc concession located in Kalimantan, Indonesia.

### **PT Bumi Modern Group (Nickel)**

Produced JORC 2012 Resource & Reserve Statements for the Teluk Dalam nickel concession located in Sulawesi, Indonesia.

### **PT ASP (Nickel)**

Produced JORC 2012 Resource & Reserve Statements for the ASP nickel concession located in Halmahera, Indonesia.

### **Nickel, Indonesia**

SMGC is working on number of existing nickel concessions in Indonesia in developing operations in view of the existing government export policy in Indonesia.

### **Martabe Gold Mine (Gold)**

SMGC supported Martabe by providing a team of geologists/engineers to assist during their exploration program to observe core recoveries and monitor the QA/QC systems, update geological model, mine planning and optimizing ore recovery.

### **Gold Projects (Indonesia)**

Buduk Gold Mine, Sumatra Copper & Gold, Martabe, Tujuh Bukit, PT Antam, Awak Mas, East Asia, Mt Muro, PT Benhill, Cilabang Gold, Mentebah.

### **Oman (Copper/Gold)**

Geological resources were estimated for Mitsubishi Materials Natural Resources Dev. Corp (MRC) in five areas in Oman. Geological modelling involved wire-framing the deposits, a geostatistical study and block grade modelling. Classified JORC resources were reported and pit optimisation was performed.

### **Thalanga, Queensland - Australia (Base metal)**

Resources were estimated in the RGC Thalanga Mine from a geological block model created within a complex system of vein surfaces. Similar work had been performed in the past for the previous owner, Pancontinental.

### **Chatree - Thailand (Gold)**

SMGC estimated mineral resources of Akara Mining's (Kingsgate) Chatree gold deposit and JORC reported computerised modelling. Geological models were built using vein surfaces, faults and unfolding grade block modelling, and optimum pits were calculated in two areas where final pit shells were designed.

### **Chipping Norton, NSW - Australia (Trace - Contaminated Fill)**

SMGC aided the evaluation of a soil contaminated site by modelling the contaminants in several soil layers. SMGC also investigated the sampling density geostatistically to determine the adequacy of the soil sampling program.

### **JPMC - Jordan (Phosphate)**

Computerised mine planning was implemented at three existing phosphate mines. This entailed installing mining software, converting and collating existing data, geologically modelling all deposits, and setting up mine planning and scheduling practices.

### **Mt Hutton (Magnesite)**

Classified JORC resources were estimated and reported on SAMAG's Mt Hutton magnesite deposit in collaboration with Minarco. SMGC conducted geological modelling that involved applying layering and interpolation modelling methods to the steep dipping magnesite beds.

### **Panton, WA (Platinum)**

Platinum reef structure modelling was performed on the structurally complex Panton Project for Platinum Australia (PLA) with steep vein methods.

## Recent COAL Projects (not under Non-Disclosure Agreements)

SMGC has worked on a range of coal projects within Indonesia and Internationally. Recently in Indonesia the services that we have provided to our coal clients cover mapping, exploration, drilling, coal quality evaluation and concession valuation. We have provided full exploration support, mine optimisation, scoping studies, JORC 2012 Resource and Reserve Statements, due diligence reports through to production of bankable feasibility studies. SMGC has if required the skills to take over and manage all operations for a mining concession and has provided this service to two clients in the past. We have capability in both Thermal and Metallurgical coal deposits and have worked across Sulawesi, Java, Sumatra, Papua, Kalimantan and West Timor.

### Geo Energy

Produced JORC 2012 Resource & Reserve Statements and VALMIN Reports for coal concessions in Indonesia.

### PT Rinjani

Produced JORC 2012 Resource & Reserve Statements and VALMIN Reports for coal concessions in Indonesia.

### Sinarmas

Produced JORC 2012 Resource & Reserve Statements and VALMIN Reports for PT Duta Alam Cemerlang for coal concessions in Kalimantan and Sumatera.

### Tuhup Project – Indonesia

The Tuhup project is a new 5 Mtpa coking coal development in Centre Kalimantan. SMGC performed independent geological modelling, JORC resources statements and several levels of feasibility studies, up to and including, the bankable feasibility study. The project has required detailed analysis of IPC systems as an alternative to conventional truck and shovel.

### PT PLN Persero Tbk

PT PLN Persero is Indonesia's state power producer. SMGC was the technical consultant advising PLN on the Sumel 9 & 10 coal fired power projects. The scope of work progressed to advising PLN on the preparation and development of the RFP.

### PT KPC – Indonesia

PT Kaltim Prima Coal (KPC) is a large open pit truck and shovel operation in East Kalimantan. SMGC staff have been actively involved at KPC on many levels in the past. Projects at KPC include:

- Minex software installation and training some 75 national staff
- Dozer push study for Bintang operations
- NAF/PAF modelling
- Geological modelling
- Annual Life of Mine plans
- 5 year dumping strategy review
- In situ to ROM to Product mine modelling
- Conceptual studies, Bengalon deposit
- Pit designs and schedules
- Ongoing long term mine planning support
- Pit optimisation studies

### Callide, Queensland – Australia (DRAG-LINE)

Callide Coalfields in Central Queensland operate a 1350 dragline and an 8750 dragline in conjunction with truck-shovel pre-strip and coal mining fleets. SMGC have performed numerous projects at Callide including:

- Dragline design methodology review
- Boundary Hill detailed dragline design
- Kilburnie deposit feasibility study including dragline selection
- Review operating costs and recommendations for operating changes to achieve cost reductions
- Whole of resource strategic review
- Revise geological models to include new exploration and mining data
- Produce JORC compliant Resource and Reserve statements

### Dawson Project – Australia

SMGC was part of a large integrated project team involved in the \$1 billion expansion of the Moura Mine. SMGC's input to the project team included economic analysis, mining engineering, optimisation, dump designs, equipment assessment and costing and final landform designs.

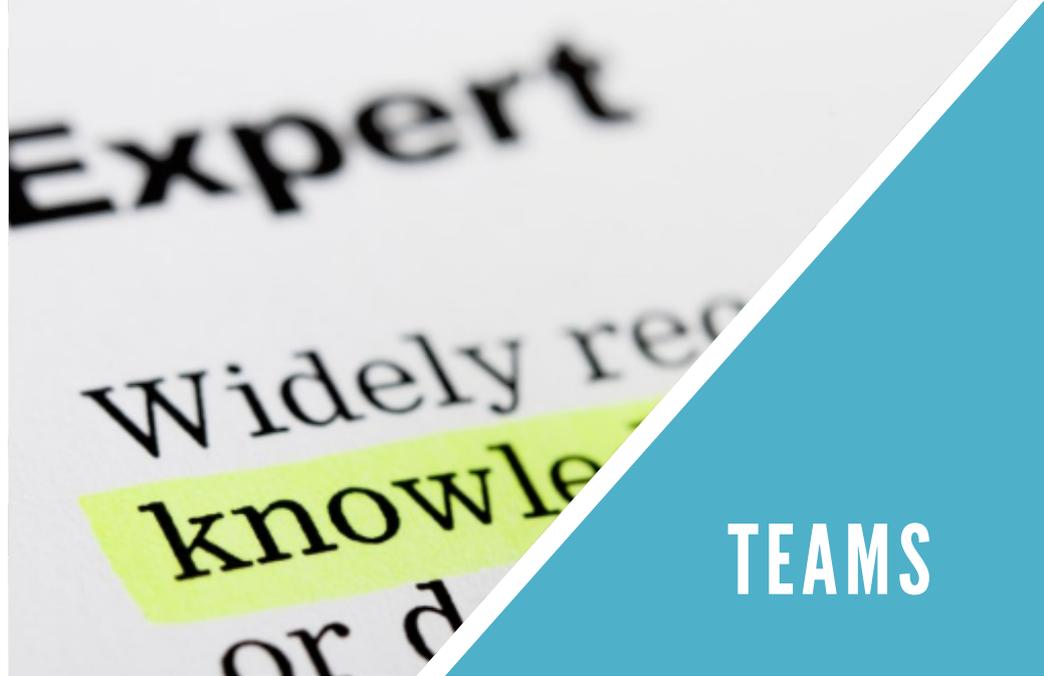
### Eloura, New South Wales – Australia: Roof Collapse

Careful interpolative surface modelling of a coal seam roof in an operating mine was successfully investigated to predict zones of probable roof collapse.

### Milmerran, Queensland – Australia

Milmerran is a large Walloon CM open cut truck and shovel operation west of Toowoomba. SMGC conducted a full feasibility study and contractor tender documentation for this deposit to supply a mine mouth power station. Additional projects include, several annual updates of geological models to include new exploration drilling, geophysics and coal quality





## TEAMS

**Our team has multidisciplinary expertise, global knowledge, and experience needed to maximize the success of your projects.**

- **Keith D. Whitchurch, Principal Mining Engineer (JORC/KCMI)**  
B.Eng. (Mining - Hons), M.Eng.Sc (Research)

Keith has more than 36 years of experience in open cut and underground mining. He holds a Master degree in geostatistics and resource classification and is a member of the AusIMM and a Registered Professional Engineer (Queensland).

Keith specialises in mine planning and his expertise includes geological modelling, reserves evaluation, pit optimisation, mine design, equipment selection, mine scheduling, backfill design and planning, project costing and economics. Keith has worked on projects in Australia, India, Japan, Jordan, Indonesia, and North and South America. He has recently worked on Natal Iron Ore, Tuhup Coking Coal and SLN Nickel and Asam-Asam/Mulia Thermal Coal.

Keith's work on resource classification predates the current JORC code and for the past 22 years, he has had continuous involvement in resource classification.

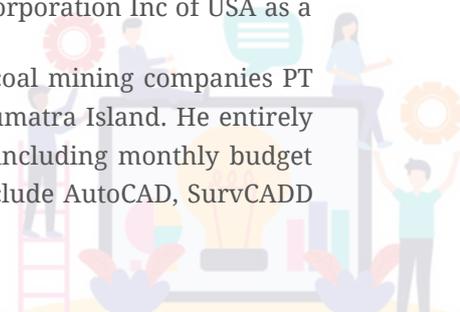
- **David Wyllie , Principal Mining Engineer (JORC/KCMI)**  
B.Eng. (Mining), Quarry Manager's Certificate of Competency (Western Australia), MAusIMM

David is a Mining Engineer with broad experience spanning more than 34 years across Australia, Indonesia and the Americas. This experience includes mine planning, operations, blasting services, site management, mining consulting and mine planning software implementations. Knowledge in these areas has been gained through positions held with Mining consultancies, Dyno Nobel blasting services, South Blackwater Coal, PT Kaltim Prima Coal and Hamersley Iron. Consulting projects have included due diligence reviews, market analyses, mine scheduling, cost ranking, truck and loader studies, dragline concept studies, cost modelling and training.

- **Joyanta Chakraborty, Principal Mining Engineer (JORC/KCMI)**  
B.Eng. (Mining)

Joyanta has over 18 years of experience in open cut coal mine planning and operation. He has worked with Indian private coal companies such as Integrated Coal Mining Ltd (ICML) and Electrosteel Castings Ltd (ESCL) in the planning department and has worked closely with Norwest Corporation Inc of USA as a consultant.

Since 2006 he has worked mainly as a site manager in-charge of Indonesian coal mining companies PT Core Mineral Indonesia and PT Bara Indah Lestari both have operations on Sumatra Island. He entirely looked after all direct or indirect activities related to an open cut coal mine including monthly budget preparation as well as controlling project costs. His computer skills mainly include AutoCAD, SurvCADD and MINEX.



- **Ruth Anggraeni Sitorus, Principal Engineer (KCMI)**

B.Eng. (Mining)

Ruth has 14 years' experience working in nickel and coal projects. She worked for PT Vale INCO in the Long Term Plan Section for 3 and a half years. Her range of skills at INCO and now at PT SMGC include reserve calculation, optimisation, mine design, mine scheduling, financial evaluation and equipment selection. Ruth's mining software skills include MINEX and Vulcan.

- **Tri Ratna Arum, Senior Mining Engineer**

B.Eng. (Mining)

Tri Ratna Arum is a mining engineer with over 15 years of experience in coal mining in Indonesia. Her experience includes, open cut mine planning and design, reserves evaluation, pit optimisation, mine scheduling, backfill design and planning, project costing and economics. She also has work on many sites including Kideco Jaya Agung, Kalitim Prima Coal and Straits Asia Resources Sebuku and Jembayan coal mines.

- **Debdutta Ganguly, Senior Mine Engineer**

B.Eng. (Mining), M. Tech. (Open Cut Mining)

Debdutta Ganguly is a mining engineer who has around 16 years of experience in the Mining Industry including 6 years of experience in Indonesia and 10 years of experience in India. In India, he has worked with Singareni Collieries Company Limited (SCCL), Tata Consulting Engineers (TCE) and SRK Consulting. Deb has experience in coal mining operation both in underground and open pit coal mines and geotechnical support for underground coal mine. He has worked for number of Reserve Reporting, Due Diligence, Feasibility and Pre-feasibility studies in Indonesia. His experience includes planning, implementation and monitoring of short-term schedule for an operating coking coal mines in Central Kalimantan, Indonesia. His expertise includes open pit optimisation, pit design, reserve estimation, long term and short-term scheduling, capital and operating cost estimation, financial model with probabilistic approach. He is also expert in flying DJI Drone for capturing 3D surface imagery data and processing through Sitiescan software to convert the captured imagery data to DTM/ DEM/ point cloud data. Deb was involved in feasibility study, due-diligence and techno-economic studies for coal and other minerals such as bauxite, iron ore, limestone etc while working with SRK in India. He has also done techno-economic analysis as part of CPR for granite (dimensional stone) projects.

- **Joshua Morgen Simatupang, Senior Mine Engineer**

B.Eng. (Mining)

Josua has been involved in the coal industry since 2010 and in the gold industry since 2015. He has interesting in Mining Engineering, Mining Equipment, Road and Drainage system, Environmental and Slope Stability, also Stability of the Underground Opening Hole. He has quite experienced in the Indonesia Coal and Gold Mining Engineering. He can used Mining Software tools such as Minex, Surpac, Talpac, Whittle, and so on.



- **Abdullah Dahlan, Principal Geologist (JORC/KCMI)**

B.Eng. (Geology)

Abdullah has 24 years of experience in the mining industry. His experience includes reconnaissance work through detailed gold exploration mapping on Halmahera Island, resource definition drilling of the Gosowong deposit. Management of the grade control system at Gosowong and Mount Muro gold mines and the Kencana underground gold mine. Abdullah has supervised coal exploration drilling and coal project development. His experience also includes monitoring coal production and pit reconciliation at the Satui coal mine on behalf of Thiess Contractors Indonesia.

- **Bambang Widodo, Principal Geologist / Manager Field Operations (JORC/KCMI)**

B.Eng. (Geology)

Bambang has over 19 years of experience in coal, metals, water resources and geothermal projects. His experiences ranges from exploration, geological modelling, long term mine design, coal quality control, reconciliation of resources, finding potential areas for new mining, and geo-technical investigation. His computer skills include Surpac, Minex and Autocad Land Desktop. Key projects : Geological Coal and Ore Modelling of IBU Coal Pakar Project, BAS Coal Project, Arahan Coal Project, SEM Coal Project, BSG Coal Project, RKBM Coal Project, Teluk Dalam Ore Project, Waimisi – Manuran Ore Project, Supervised and conducted geotechnical investigation for 19 water resources developments projects in Sumatra, Java and Kalimantan for Nippon Koei, Co. Ltd Consultant. Geological mapping and hydrothermal alteration study to find geothermal surface manifestation in the Darajat Contract Area, Amoseas Indonesia (Chevron Texaco).

- **Wahyudi Adhiutomo, Principal Geologist (JORC/KCMI)**

B.Eng. (Geology)

Wahyudi has been working in the Indonesia coal mining industry for over 12 years. He has significant experience in the field of exploration, geological modelling and resource assessment. He has worked for PT Borneo Indobara (BIB), PT Riau Baraharum (RBH), and new mine holding company PT Integra Infrastructure (Integra). During this time he has either managed or contributed significantly to numerous due diligence and mining studies related to the exploration, geological modelling, estimation and reports in accordance with the JORC Code for the companies. He also has knowledge covering mine-planning and pit/dump design for open cut mining. Key projects: technical due diligence of EJA project Bengkulu Indonesia (Aries Capital Partners Ltd), technical due diligence of HBI project Central Kalimantan Indonesia (Arsari Mineral Indonesia), involvement in the RBH Project to estimate the remaining resources, resource estimation of TKS project, Central Kalimantan, Indonesia (Sinarmas Energy and Mining), resource estimation of the Mamahak project in East Kalimantan, Indonesia (South Gobi Energy), Involvement in the BIB Project (Batulaki and Sebamban Block) from exploration thru to mine operation.

- **Joko Sumali, Geologist**

B.Eng. (Geology)

Joko has over 14 years of experience in coal and nickel exploration. His expertise includes, general survey mapping, validation data of coal outcrop, determine prospect area and geological modeling. He has performed consulting and training projects in Indonesia.

He is expertise in mapping for geology structure, monitoring roof – floor coal, documentation of all geological information, preparing cross-section update every coal expose, pick up coal survey every geology information with surveyor, pick up survey geology structure, coal sampling every coal expose every seam, reconciliation tonnage coal (manual procedure).

For coal and nickel exploration, his responsibilities covered general survey mapping, detailed field mapping, validation data of coal outcrop, determine prospect area, supervision of coal drilling to a JORC standard, planning bor-hole locations, field coordinator on well-site drilling and geological modeling and resource estimation using Minex and Surpac mining software. His computer skills include Minex, Surpac and Autocad Land Desktop.

- **Dirga Daniel, Geographic Information System (GIS) Specialist**  
B. Geographic and Environmental Science

Dirga is a geodetic engineer with about 5 years of experience in Geographic Information Systems (GIS). His expertise includes GIS, remote sensing and data management for exploration and mining operations. His highlights are Geographic information systems (GIS), data management for exploration and mining operations and particular strengths in ArcGIS, QGIS, ENVI, Google Earth Engine - eCognition, Postgre SQL, ArcCatalog Geodatabase, acQuire GIM Suite Database, AutoCad/Civil 3D and Adobe Illustrator

- **Asep Suryadi, Cartographer/Illustrator**  
B. Civil and Environmental Engineering

Asep possesses a broad range of software skills including Autodesk AutoCAD (2D and 3D), Autodesk Civil 3D, 3D Studio Max, Adobe Photoshop, Adobe Acrobat, and CorelDraw. He is highly skilled in the compilation of technical and illustrative figures of the varied work prepared by SMGC's team of consultants.





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