



# CORPORATE PROFILE





# WE ARE MEC MINING

MEC Mining is a global technical consulting firm specialising in mining services capabilities across the project life cycle from early-stage exploration through development, mine planning, onsite management to mine closure and rehabilitation.

Since 2005, MEC has grown into one of the leading consultancy firms with an experienced team of consultants; specialising in both the open cut and underground mining for the coal and minerals sectors.

Through our teams' real-world experience, our people have an owner's point of view when executing a project.

We deliver high-quality work that enhances the value of our client's assets and our experienced team brings a diverse range of knowledge to each project.

We pride ourselves on a flexible approach to all services and will gladly tailor our services to meet individual projects or company requirements.

MEC MINING AT A GLANCE



**FOUNDED IN 2005**



**55 EXPERIENCED CONSULTANTS**



**17TH YEAR IN OPERATION**



**379 CLIENTS**  
MAJOR MINING HOUSES / MINE OWNERS / OPERATORS



**6TH YEAR IN GEOLOGY**



**3RD YEAR IN GEOTECHNICAL ENGINEERING**



**22 COMMODITIES**



**116,300 CONSULTING HOURS — METALLIFEROUS**



**1759 PROJECTS COMPLETED AND COUNTING**



**362,400 CONSULTING HOURS — COAL**

Executive Leadership Team .....	4	Geotechnical Engineering .....	16
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## EXECUTIVE LEADERSHIP TEAM



### SIMON COHN

BEng (Hons) (Mining), MAusIMM (CP), RPEQ 11902

Simon joined MEC Mining as a Director in May 2007 and was appointed Managing Director in 2011. Since commencing his career in the mining industry in 1999, Simon has worked in a range of open-cut and underground metalliferous and coal mines throughout Australia and overseas. He specialises in operations improvement, mine design and technical services team management.



### DANIEL CHIPPENDALE

BEng (Mining), BBus (Man), MAusIMM (CP), RPEQ 11901

Daniel founded MEC Mining in Mackay in 2005 after working in a range of open-cut coal mines in the Bowen Basin between 2001 and 2004. He is now based in MEC Mining's head office in Brisbane. Daniel has a dual degree in Mining Engineering and Business and specialises in operations improvement, mine design and technical project management.



### TED BOULTON

BEng (Hons) (Mining)

Ted graduated with a Mining Engineering degree in 1998 and worked in a range of open cut coal mines in the Bowen Basin before joining MEC Mining as a Director in 2006. After several years in MEC Mining's Mackay office, Ted is now based in Brisbane and specialises in innovative mine design, cost estimation and JORC reserve reporting.



### CHRISTOFER CATANIA | CHIEF EXECUTIVE OFFICER

B.Eng(Mining) MAusIMM 228366

Christofer Catania joined the mining industry in 2005 as a mining engineer and now has a depth of experience having worked in commodities such as Zinc, Iron Ore, Copper, Gold, Iron Sands and Coal. Chris has a high level of technical and operational expertise as well as project management and leadership experience in open-cut mining (coal) (metals). Chris demonstrates strong skills in short; medium and long term scheduling across a suite of software.



### JULIA COOPER | CHIEF FINANCIAL OFFICER

BBus (Acc) & LL.B

Julia joined MEC Mining in April 2012 as our Chief Financial Officer and has experience in accounting from 2004. She holds a dual degree in Bachelor of Business (Accounting) and Bachelor of Laws, CPA. In January 2015 Julia was appointed as the Commercial Manager, working closely with the Directors and General Manager. She forms part of our management team and displays skills in finance, time management and leadership.

## MANAGEMENT TEAM



### ERIN SWEENEY | GENERAL MANAGER - EAST

B.Sc (Geology), M.Eng.Sc (Mining Geomechanics) & MBA

Results focused and experienced mining professional who has worked across a broad range of commodities including gold, base metals, iron ore and coal operations. Her background lies in geotechnical engineering, designing, modelling and implementing cost effective, innovative mine solutions in both site based and in consultative roles. Erin has leveraged these skills into project management and then leadership roles with a focus on adding value, ensuring safe sustainable cash flow and growth through technical influence.



### ANDREW DITTMANN | GENERAL MANAGER - WEST

BEng (Mining)

Andrew is responsible for spearheading the growth into Western Australia of one of Australia's leading mining consultancies. Andrew manages the day to day of the Western Australian business operations by developing client relationships, mentoring and growing the WA team, drawing on his technical expertise to lead projects, and expanding the success of the MEC brand's capability of offerings in this geographical sector.



### GRANT MALCOLM | HEAD OF TECHNICAL

BEng (Mining)

Grant joined the mining industry in 2007 and brings a depth of experience to his role as a Principal Mining Engineer. He manages the MEC Mining East Coast team which comprises over 35 mining engineers. His team operates across numerous clients and commodities both domestically and internationally. Grants team includes the Brisbane based studies team and the site-based engineers. Grant is an expert in drill and blast, with sub-specialties in through seam blasting, coal protection, and electronic blasting. Grant is also adept at a truck & shovel planning mid-term design for open cut coal mines.



### MICHAEL ATKINSON | GEOLOGY MANAGER

B.Sc (Hons) Geology & Physical Geography, MAIG

A professional geologist with more than nine year's experience in the mining and exploration industry. Demonstrated leadership capabilities, both in the field and within a corporate environment. A passionate individual with a history of productive stakeholder relationships, whilst delivering projects with integrity, on time and within budget.



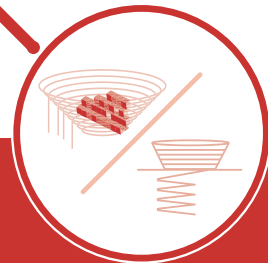
### JULIANNE ARMSTRONG | MANAGER OF GEOTECHNICAL SERVICES

B.Eng (Geological), MAusIMM

A proactive and practical geotechnical professional with 19 years' experience in open pit, underground and civil tunnelling projects. Julianne has worked operationally for 17 years, also accumulating extensive design and leadership experience. Exposure to all stress conditions, various mining and construction methods, various commodities, ground supporting elements and backfill types. Julianne's strengths are in geotechnical risk and ground control management; through effective design and review, and value-driven systems. Julianne is creative and proficient in investigation, improvement and feasibility design, backfill and QAQC.

## FEASIBILITY

- Mining scoping, pre-feasibility and feasibility studies
- Optimisation and margin ranking
- Mining method selection
- Reserving and scheduling
- Equipment selection
- Capital and operating cost estimation
- Project financial modelling



## OPERATIONAL READINESS

- Detailed operational mine designs and schedule
- Planning process development
- Operational systems implementation
- Contractor engagement, management, tender preparation and evaluation
- Provision of professional and supervisory personnel
- Project management
- Due diligence reviews
- Equipment benchmarking
- Engineering training
- IP development

## MINE CLOSURE

- Landform planning
- Closure liability minimisation planning
- Pit and dump re-profiling design
- Rehabilitation cost assessment
- Rehabilitation scheduling

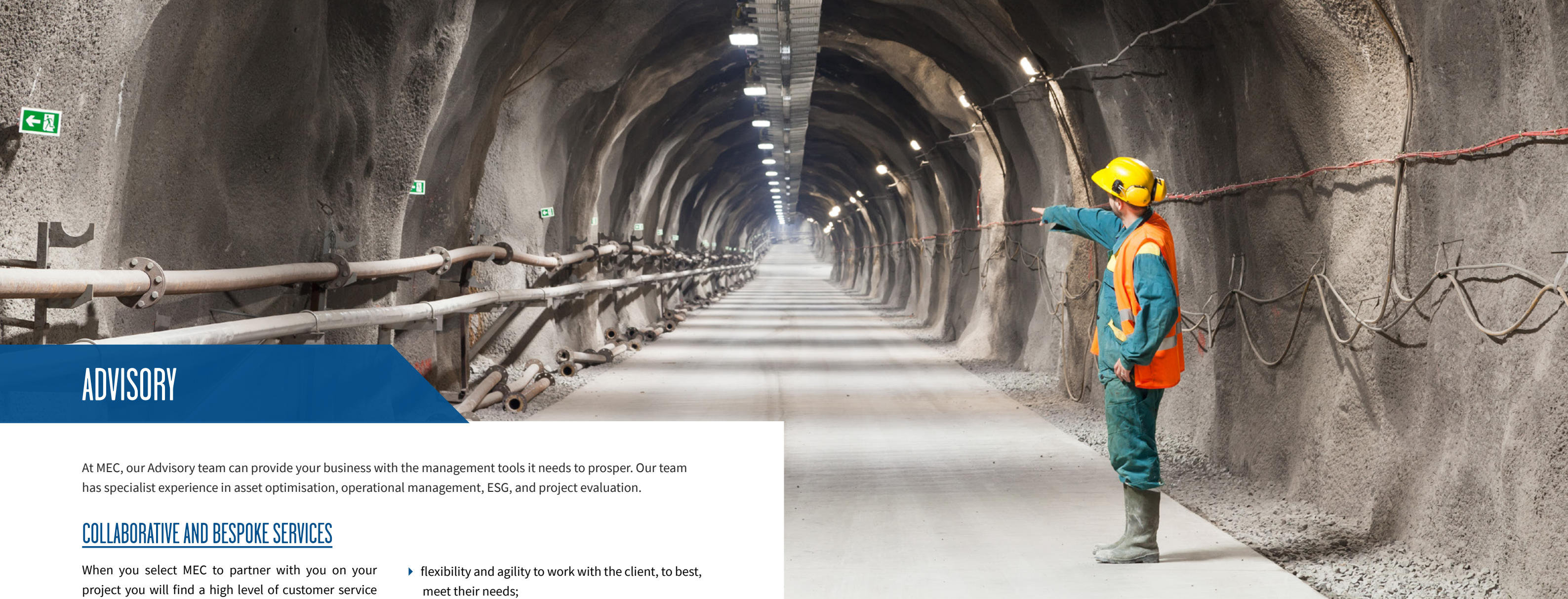


## OPERATIONS

- Underground Coal - Longwall, Room and Pillar Haulage Optimisation
- Operational design and planning
  - Ore/coal reconciliations
  - Stope/access design
  - Grade control/blending
  - Drill and blast
  - Scheduling
  - Truck and shovel
  - Ventilation
  - Dragline
  - Dozer push
- Medium to long term operational planning
- Innovative mining methods
- Engineering training and development
- Technical audits - business scorecard
- Operational improvement
- Loss and dilution minimisation strategies and reconciliation







## ADVISORY

At MEC, our Advisory team can provide your business with the management tools it needs to prosper. Our team has specialist experience in asset optimisation, operational management, ESG, and project evaluation.

### COLLABORATIVE AND BESPOKE SERVICES

When you select MEC to partner with you on your project you will find a high level of customer service and bespoke outcomes for the objectives of the project.

We deliver the outcomes that will give you the confidence and direction to move forward and achieve your internal goals. At MEC we pride ourselves on:

- ▶ flexibility and agility to work with the client, to best, meet their needs;
- ▶ providing quality client outcomes as defined by the client;
- ▶ the experience of MEC Advisory's personnel and their ability to support the full life-cycle of mining projects.

### ENVIRONMENT, SOCIAL & GOVERNANCE SERVICES

- ▶ Tailing management and governance guidance
- ▶ Decarbonisation scenario assessments
- ▶ Carbon neutral transition plan
- ▶ Environmental Assessment and Management Plans
- ▶ Water Management Plans and Project Management
- ▶ Closure planning and reviews
- ▶ Climate Change assessments
- ▶ Environmental Policy Change assessments

### OPERATIONAL MANAGEMENT

- ▶ General management secondment
- ▶ Business improvement and change management
- ▶ Training and mentoring of mid tier management levels
- ▶ Greenfields start up assistance
- ▶ Specialist short term project management
- ▶ Productivity improvement evaluations and audits
- ▶ Peer reviews and audits
- ▶ Operational readiness, planning, design and scheduling

### ASSET OPTIMISATION

- ▶ Opportunity Assessments
- ▶ Equipment evaluation, selection and procurement
- ▶ Specialist experience with:
  - › Dragline
  - › Ultra class fleets
  - › In pit crushers and conveyors
  - › Shovel/excavator
- ▶ Development and review of asset management strategies
- ▶ Peer review of capital purchases, investment decisions and major/minor contract decisions
- ▶ Contract framework development and review
- ▶ Tender evaluation, preparation and review
- ▶ Cost modelling and estimation
- ▶ Shadow estimates for contract evaluation

### PROJECT EVALUATION

- ▶ Mergers and acquisitions
- ▶ Resource, reserve and operational evaluation and review
- ▶ JORC resource and reserve reporting
- ▶ Due diligence and project valuations
- ▶ Feasibility and pre-feasibility studies
- ▶ Strategic review
- ▶ Peer review of infrastructure, mining operations and planning decisions



## HITACHI

### HITACHI | LOCATION: WESTERN AUSTRALIA

MEC was selected to participate in an innovation investigation process run by Hitachi Construction Machinery across several mining operations to develop an energy power-draw estimation and map against the mine schedule by assessing various waste and ore mining and transportation assets mixes. Fleet analysis was completed on an 'energy agnostic' basis, informing energy intensity models across the Life of Asset. This was then used to understand variability in emissions and how to optimise the schedule where traditional mobile fleet assets were interchanged with fast charge placements and trolley track lines. Furthermore, these assessments were modeled to optimise for pit infrastructure position and asset value impact.

The project deliverable was an emissions-focused schedule that featured the best fit of low power draw waste and ore mining assets for the site given the constraints of the remote locations and the availability of green energy options.



### NEWCREST MINING LIMITED | LOCATION: PAPUA NEW GUINEA

A steady and consistent client of MEC, Newcrest utilised the expertise of our Business Improvement Team to work with the team locally in PNG to innovate a mine operations asset productivity improvement project that systematically tackled bottlenecks and constraints in the system to return 70% above target improvement.

The project team was formally recognised as drivers of a high-performance culture at Lihir when they won an internal Living our Values award for the step-change in productivity and throughput.

MEC doubled down on this success in later months with a study to further improve haulage efficiencies where we were commissioned to conduct a study and project manage a dozer push trial to replace truck haulage in difficult environmental and geotechnical conditions.



### BMA | LOCATION: CENTRAL QUEENSLAND

BMA challenged MEC to assist them in assessing lower emission material transport options, and a future-fit mine design approach to support this. This was undertaken by profiling and assessing their carbon emissions footprint associated with the operations mining cycle and in particular the mobile fleet used across their extensive strip mine operations. MEC created a baseline mining emissions-focused schedule from current operations and then trialed a mix of alternative technologies suited to the constraints of mining in a strip mine. Factored into the consideration was altering mine designs, pit phase schedules, and most impactfully more technologically advanced and sophisticated continuous conveyor systems and modular crushing units to remove diesel-related emissions that created an opportunity for a step-change in the BMA business ESG goals without reducing throughput.



### WHITEHAVEN COAL – TRANSFORMATIONAL REVIEW | LOCATION: NEW SOUTH WALES

MEC Mining was engaged to conduct a full transformational review of the assets of a large coal mining company. The purpose of the review was to identify and quantify the value of business improvement initiatives and innovative mining solutions which improved productivities and reduced operational costs. The areas which were examined included: mining operations; mine planning / technical services; equipment mix; coal product strategy and management (including CHPP operations); mobile equipment maintenance. As a result of this project, MEC Mining identified approximately \$100M of value improvements across our client's business.

## BHP

### BHP | LOCATION: WESTERN AUSTRALIA

BHP contracted MEC to assist them in undertaking an opportunity assessment to identify options to enable a step-change in carbon emissions to meet their net-zero 2050 target across their WAIO Operations. MEC developed a baseline, life of asset emissions model to understand the opportunities presented by In-Pit Crushing and Conveying, Excavator Electrification, Trolley Assist, and the revolutionary Small Autonomous Battery Electric Truck Fleet or SWARM Principal to directly abate emissions and enable the early capture of "Green Electrons". Utilising our expertise in this field MEC was able to present elegant solutions to the practical and pragmatic application of each technology to not only achieve significant reductions in emissions but simultaneously maintain or improve BaU production and quality, operational productivity and reduce strip ratios through reduced waste mining while increasing ore recovery. The study found a reduction in mine operations emissions opportunities of up to 50% from the baseline across the technology options.



### ANGLO AMERICAN | LOCATION: AUSTRALIA

MEC conducted XPAC model consolidation of Three UG operations. This involved the transition and consolidation of mining equipment, production and schedule into an optimised XPAC model. The project deliverables entailed production assumptions, XPAC models, sensitivity analysis and asset optimisation.



### MMG | LOCATION: LAOS

With world class assets across the globe, MMG is one of the largest mining houses in the world. MEC has been selected as one of MMG's preferred consultants and has engaged MEC on a number of different projects including onsite operational support, operational improvement, pit optimisation, the life of mine planning and to complete a number of feasibility studies. MEC has also provided project management support for a number of Sepon Mine studies.



### METRO MINING | LOCATION: QUEENSLAND

MEC completed a bankable feasibility study for Metro Mining's flagship project – The Bauxite Hills mine worth \$2B. The study consisted of a life of mine plan, schedule optimisation and CAPEX / OPEX cost modelling.



### MOTION METRICS | LOCATION: GLOBAL OPERATIONS

MEC has partnered with Motion Metrics to help develop and understand the business improvement opportunities that can be exploited by utilising the motion metrics ecosystem of vehicle, stand-mounted, and process installed units. The hardware, network-integrated via the bespoke AI cloud-based technology, is utilised across the production cycle for tracking material size and characteristic issues. MEC was commissioned by Motion Metrics to identify further opportunities for this technology beyond its original intended purpose. MEC found significant advantages in refining and tracking particle distributions and material characteristics across the site to get step-change improvements in throughput from the dig-face to mill output. MEC used data analytics to optimise dig rates, material tracking for reduced rehandle, payload maximisation and carry back reduction, crusher optimisation, mill-rate and ball dosing and significant cost benefits found in the regrind or HPGR risk management and throughput maximisations. The project successfully demonstrated the strength of MEC's ability to seek out latent value by exploiting new technologies, delivering significant cost and emissions improvements.



### GOLD FIELDS | LOCATION: GHANA

In its objective to reduce its carbon emissions footprint Goldfields selected MEC mining to undertake an options study and assessment of the transition plan for their Tarkwa and Damang sites to compare new asset mixes including mobile crushing and conveying systems, Trolley Line and retrofitting diesel trucks with Liquid Natural Gas. The site had unique challenges to overcome with jurisdiction over the source of power adding urgency to the success of the project. MEC's reputation for adding value to projects was validated with findings of further savings for the site in refining the mine sequence to best utilise the new mine operations asset mix.





## ENVIRONMENT, SOCIAL & GOVERNANCE

### PROJECTS AND GOVERNANCE

MEC provides projects, project management and governance for technical services across the mining sector. The advantage of having MEC apply their governance and project management expertise to your operations is that we work to a framework for the rules, relationships, systems and processes that impact the cohesiveness and effectiveness of your technical services and operational teams. Establishing cascading and dovetailing systems allows greater transparency and accountability for delivering results and managing systems. MEC Engineers apply this know how to a wide range of projects to address environmental, rehabilitation and closure planning needs. We have established Progressive Closure and Rehabilitation Plans for many of our clients in strict adherence to government policy factoring in drainage and final landform requirements. MEC will work with owner teams or contractors to achieve the best overall outcome for the site.

Services include:

- ▶ Business Planning Governance
- ▶ Technical and Operations Systems Improvements
- ▶ Water Management Plans and Project Management
- ▶ Environmental Policy Change assessments
- ▶ Provision of professional and supervisory personnel

### DECARBONISATION

MEC Mining assists mining organisations in meeting the demands of decarbonisation whilst ensuring continuity of operations, maintaining productivity and delivering for all parties (governments, shareholders and an increasingly informed public) who demand due diligence for a decarbonised future.

Our services include:

- ▶ Carbon neutral transition plan
- ▶ Detailed operational mine designs and schedules
- ▶ Planning process development
- ▶ Operational systems implementation





## ENVIRONMENT, SOCIAL & GOVERNANCE CAPABILITY

### MULTICOM PRCP ASSISTANCE

Multicom Resources engaged MEC to undertake the progressive rehabilitation and closure planning study for their St Elmo project. The study centred around the comprehensive material movements of project across its life of mine from undisturbed topography to final landform. MEC assessed material types into blocks to simulate a strip sequence of mining to waste dumps and then material rehandle requirements for reshaping to final landform. The assessment factored in major topographical changes that would alter drainage across the site and where possible made design allowances to mirror the original drainage lines to stabilise the cadence of water flow through the system to pre-mining levels. Furthermore the study considered hydrological and hydraulic modelling to assess the impact of a probable maximum precipitation flood event on the site and local catchment factoring in the most recent climate change data.



### PRCP MINERAL PROJECTS – DIANE COPPER MINE

MEC Mining was engaged by Mineral Projects Pty Ltd (MP) to assist with the waste dump and surface diversion drainage design as part of the progressive rehabilitation and closure planning (PRCP) requirements for the Dianne Copper Mine. MEC conducted a review of the available waste characteristic data to assess suitable encapsulation designs on site. The study also included backfilling a settling dam so that it would comply with final landform design; and rehabilitation of the existing waste rock dump to blend with original topography and a geotechnical closure compliant assessment of all final waste rock landforms. A key outcome of this project was the creation of surface drainage profile designs that diverts and maintains separation of clean surface water so that it can continue to run off site as part of the natural ecosystem without the requirement of treatment or capture.



### BHP – STEP CHANGE

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### PLANNING GOVERNANCE AT BHP QUEENSLAND

MEC was approached by BHP to assist in establishing guiding systems and processes in the coal business planning unit to ensure best mine engineering and planning practice was being applied across the coal division. The team had oversight of the long-term planning and budgeting process and ensured the system could dovetail across to medium and short term planning. The result was a process that defined how the remote corporate team will coordinate activities in mine planning across the business and particularly with sites to sustain value along the planning cycle.



### HITACHI – INNOVATION INVESTIGATION PROCESS

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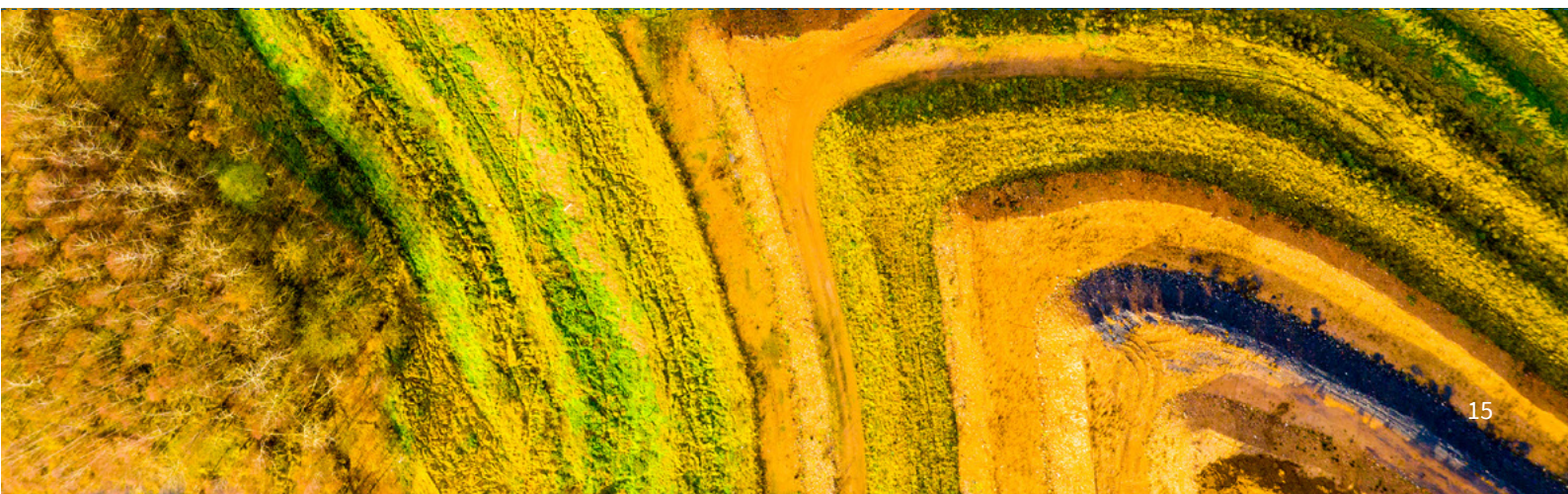
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# GEOTECHNICAL ENGINEERING

## OUR GEOTECHNICAL ENGINEERS

Commonly, ambiguity or a low level of detail in Environmental Authority agreements means that the rehabilitation concept is not always clear. MEC Mining can assist by optioneering the landform design to quickly evaluate various landform criteria options to understand landform shape and the cost of constructing a variety of options. This allows efficient decision making and enables more productive engagement with regulators.

## OUR GEOTECHNICAL ENGINEERING EXPERTISE

The MEC Mining geotechnical engineering expertise include:

- ▶ Site Secondment
- ▶ Geotechnical Management Plans
- ▶ Geotechnical Design Performance and Evaluations
- ▶ Geotechnical Staff training and mentoring
- ▶ Studies (Bankable, Feasibility etc)
- ▶ Independent technical audits

- ▶ Independent expert reports
- ▶ Pit slope stability analysis and design, including numerical modelling
- ▶ Geotechnical reviews and audits
- ▶ Stability assessment of natural slopes and waste dumps
- ▶ Ground awareness and geotechnical hazard training
- ▶ Geotechnical data collection training including Brown and Greenfields drilling program management
- ▶ Closure design
- ▶ Monitoring Implementation and Recommendations

## OUR GEOTECHNICAL CAPABILITIES SPAN ACROSS

- ▶ Open Pit Coal
- ▶ Open Pit Metals
- ▶ Underground Coal
- ▶ Underground Metals

## LANDFORM OPTIONEERING AND OPTIMISATION

Commonly, ambiguity or a low level of detail in Environmental Authority agreements means that the rehabilitation concept is not always clear. MEC Mining can assist by optioneering the landform design to quickly evaluate various landform criteria options to understand landform shape and the cost of constructing a variety of options. This allows efficient decision making and enables more productive engagement with regulators.

## INDEPENDENT EXPERT REPORT (QLD)

## ESTIMATED REHABILITATION COST CALCULATOR

MEC Mining provides independent expert reports (shadow tenders) for material movement rates to replace default rates in the Estimated Rehabilitation Cost Calculator. In many instances, the default rates in the calculator are based on small quantities and not representative of the cost advantages achieved when large volumes of material movement are involved. MEC Mining will calculate and provide rates that can be used in the calculator and are accepted by the regulator.

## PROJECT MANAGEMENT

MEC Mining provides project management for rehabilitation on active mine sites. The advantage of having MEC Mining manage the rehabilitation execution is that it provides integration between the operations team and the advanced power of the optimisation software to provide designs and plans that are more cost-efficient, meaning lower cost rehabilitation. MEC Mining personnel stationed on site will monitor progress to provide surety around compliance to plan which minimises cost. We have a dozer push training package which is crucial for educating dozer operators on how to work efficiently and prevent costly rehandle. MEC Mining will work with owner teams or contractors to achieve the best overall outcome for the site.





## GEOLOGY SERVICES

### GEOLOGICAL SERVICES

We provide geological services, designed to get our clients the best value from their tenement land holding.

- ▶ Project evaluation
- ▶ Development of exploration strategies
- ▶ Program design, planning and budgeting
- ▶ Data compilations and target development
- ▶ Exploration database development and management
- ▶ Resources modelling and estimation, code compliant reporting and competent persons
- ▶ Project management and implementation
- ▶ Production geology for open pit and underground



### ADDITIONAL SERVICES

MEC geology can also support exploration and field works in ensuring industry-standard health and safety systems/ documentation for your project, including:

- ▶ Exploration field services packages
  - ▶ Soil sampling crew
  - ▶ ATV
  - ▶ Logistical support
- ▶ Provision of cloud-based safety and quality management systems
- ▶ Procedural documentation
- ▶ Environmental, heritage application and approval
- ▶ Compliance and audit

### SOFTWARE

- ▶ Mapinfo
- ▶ QGIS
- ▶ Surpac
- ▶ Micromine
- ▶ Leapfrog
- ▶ IOGas

### MINERAL RESOURCE ESTIMATION

The MEC Mining Mineral Resource estimation group is comprised of consultants that are expert in data management, QA/QC, geostatistics, geological modelling, resource modelling, risk assessment, and report writing. MEC specialise in the delivery of Independent Technical Reports that can be reported to JORC, NI43-101, or similar standards. MEC understands the importance of timely delivery of the ITR for the client's business. The technical reports may be utilised inhouse, or used for external announcements, and be included within scoping, prefeasibility, or feasibility studies.

### OUR MINERAL RESOURCE ESTIMATION SERVICES

- ▶ Review of data collection techniques
- ▶ QA/QC analysis and audits
- ▶ Statistical analysis and variography
- ▶ Grade estimation and validation
- ▶ Risk analysis
- ▶ Resource reporting and classification
- ▶ JORC and NI 43-101 compliance reporting

- ▶ Reconciliation studies
- ▶ Audits and fatal flaw studies

### REVIEW DATA COLLECTION TECHNIQUES

- ▶ Data management procedures
- ▶ Design and implementation
- ▶ Data capture and transformations

### QA/QC AUDITS

- ▶ Quality control protocols and assessment of analytical data including assay precision, assay bias, standards, blanks, recovery, specific gravity determinations, and survey data
- ▶ Risk analysis

### STATISTICAL ANALYSIS

- ▶ Classical statistical analysis
- ▶ Geological cut-off grade determination and domain decisions
- ▶ Geological Interpretation
- ▶ Geological Modelling





## GEOLOGY CAPABILITY



### PROJECT: MCINTOSH, KIMBERLEY WA | COMMODITY: NI-CU-PGE

#### Early-stage green fields exploration management

Managing all aspects of exploration activities including holding statutory position with DMIRs, target generation, planning, budgeting, safety, permitting through to on ground exploration activities within the limited field season and identifying as CP in ASX releases.



### PROJECT: LIVINGSTONE PROJECT, MURCHISON WA | COMMODITY: AU

#### Exploration management

Managing all aspects of exploration activities including holding statutory position with DMIRs, target generation, planning, budgeting, permitting, safety through to on ground exploration activities.



### PROJECT: WEEBO PROJECT, GOLDFIELDS WA | COMMODITY: AU

#### Drill program management

Managing 5000m RC/AC program which included all on site safety, personal and logistical support.



### PROJECT: LIVINGSTONE PROJECT, MURCHISON WA | COMMODITY: AU

#### Green fields exploration management

Managing all aspects of exploration activities from target generation, planning, budgeting, and permitting through to on ground exploration activities, with in the limited field season.



### PROJECT: JAURDI HILLS, GOLDFIELD WA

#### Project review & exploration recommendations

Compilation and review of project data and recommendation during due diligence for project acquisition.



### PROJECT: MCINTOSH, KIMBERLEY WA | COMMODITY: NI-CU-PGE

#### Exploration field services

Management and acquisition of 5200 high quality -2mm soil samples over rugged terrain utilising modern All-Terrain Vehicles (ATV's).

## GEOSTATISTICAL ANALYSIS

- ▶ Modelling anisotropy and variography

## GRADE ESTIMATION AND VALIDATION

- ▶ Linear and Non-linear grade interpolation methods
- ▶ Mineral Resource estimation
- ▶ Block model validation

## RESOURCE REPORTING AND CLASSIFICATION

- ▶ Mineral Resource classification
- ▶ Economic cut-off calculation
- ▶ Mineral Resource reporting
- ▶ Sensitivity analysis and grade tonnage analysis
- ▶ Mineral Resource reviews and audits

## JORC AND NI 43-101 COMPLIANCE REPORTING

- ▶ Statutory reporting
- ▶ Technical advice Project Review
- ▶ Evaluation
- ▶ Design and review drilling programs and data density
- ▶ Mineral Resource estimation
- ▶ Site visits and lab visit performed by the CP/QP

## RECONCILIATION STUDIES

- ▶ Reconciliation of Mineral Resource estimate with actual (mill)
- ▶ Reconciliation of grade control models with actual





## OPEN CUT COAL

### CONSULTING SERVICES

- ▶ Studies-conceptual, pre-feasibility and bankable feasibility
- ▶ JORC resource and reserve reporting
- ▶ Scheduling model builds
- ▶ Life of mine planning, long term planning and optimisation
- ▶ Design and scheduling
- ▶ Cost modelling and project optimisation
- ▶ Due diligence
- ▶ Tender / contract management

### METHODOLOGIES

- ▶ Conventional open cut
- ▶ Strip mining
- ▶ Terrace mine
- ▶ Dragline
- ▶ Dozer Push
- ▶ Truck shovel
- ▶ In-Pit systems (i.e. IP Crusher Conveyor)

### ONSITE OPERATIONAL SUPPORT

- ▶ Lead productivity improvement
- ▶ Technical mentorship and leadership training
- ▶ Technical services teams for full project support
- ▶ Operational design, planning and scheduling
- ▶ Operational review, cost modelling and operational improvement
- ▶ Training and mentoring of on-site personnel and systems development and review
- ▶ Short to medium term design, planning and scheduling solutions
- ▶ Relief role coverage from technical services engineers, geologists and surveyors through to management positions such as Senior Engineer and other Statutory roles

### SOFTWARE

- |             |             |             |
|-------------|-------------|-------------|
| ▶ Deswik    | ▶ XERAS     | ▶ XPAC/XACT |
| ▶ Vulcan    | ▶ Minescape | ▶ Minex     |
| ▶ ArcGIS    | ▶ DataVis   | ▶ Surpac    |
| ▶ Minesight | ▶ AutoCAD   | ▶ Spry      |

## OPEN CUT COAL CAPABILITY

### FUTURA RESOURCES | LOCATION: QUEENSLAND

Futura Resources owns two adjacent world-class hard coking coal projects in Bowen Basin, Queensland – the Fairhill and Wilton projects. MEC Mining was asked by Futura Resources to complete JORC Reserves and to compile pre-feasibility studies for both of these projects.

### UNDISCLOSED CLIENT | LOCATION: QUEENSLAND

MEC Mining was involved in a major pre-feasibility study for a coal mine where the project value was worth \$2B. The project involved open cut-transition to underground coal resources. The project deliverables involved mining and coal processing, and leading an owner's team to undertake supporting study work packages.

### RIO TINTO | LOCATION: QUEENSLAND

Prior to the mines sale to Glencore, MEC Mining was engaged by Rio Tinto to assist with the feasibility study of the Eastern margin at Hail Creek. The study management involved mining, geology, geotechnical, costing and valuations authorship.

### SOJITZ BLUE | LOCATION: QUEENSLAND

MEC Mining has helped Sojitz Blue with due diligence works on its Gregory Mine located near Emerald in Central Queensland. Works involved life of mine plan reviewal, project evaluation and closure.

### SHANDONG ENERGY AUSTRALIA LIMITED | LOCATION: QUEENSLAND

Shandong Energy Australia engaged MEC Mining to conduct a pre-feasibility study of its Hillalong Coal Project located in the northern Bowen Basin of Queensland. MEC Mining was involved in full study management including mining, operations and transport authorship. The study works incorporated a full mining and valuation study.

### TIGER REALMS COAL | LOCATION: RUSSIA

Amaam & Amaam North collectively known as the Amaam Coal Project is located in Chukotka, Far East Russia and consists of both Metallurgical and Thermal Coal. Tigers Realm Coal engaged MEC Mining on this project for both Pre-feasibility and bankable feasibility studies. The mining study was in relation to the greenfields open cut (moderately steep dip) and underground coal mine for this project.

### BRAVUS MINING AND RESOURCES | LOCATION: QUEENSLAND

Bravus Mining and Resources engaged MEC Mining to do a feasibility study on its Carmichael Mine located in Central Queensland. The feasibility study entailed scheduling and haulage modelling for the 8-year open cut plan including landform and scheduling of alternate operating scenarios.

### BARALABA COAL COMPANY | LOCATION: QUEENSLAND

Baralaba Coal Company approached MEC Mining to do a bankable feasibility study on its Baralaba North mine located in the Bowen Basin, Queensland. The study comprised of detailed mine planning, cost modelling, JORC reserve statements, operational support and implementation to support the mine's PCI coal production.





## UNDERGROUND COAL

### CONSULTING SERVICES

- ▶ Studies - concept, pre/feasibility and bankable feasibility;
- ▶ JORC Resource and Reserve reporting;
- ▶ Mine design, reserving and scheduling model builds;
- ▶ Contract and tender evaluation;
- ▶ Life of Mine planning, scheduling with long term planning and optimisation.
- ▶ Cost modelling and financial evaluation;
- ▶ Project Management;
- ▶ Value Improving Practices and Trade-Off Studies;
- ▶ Mineability Assessments;
- ▶ Value Driver Tree Analysis;
- ▶ We offer services outside of mining engineering through our consortium of industry partners.

### METHODOLOGIES

- ▶ Longwall Mining – Conventional, Longwall Top Coal Caving Punch and Plow
- ▶ Hydro Mining
- ▶ Bord and Pillar
- ▶ Highwall Mining and Mechanised Augering
- ▶ Value Driver Tree Analysis

### ONSITE OPERATIONAL SUPPORT

- ▶ Technical services teams for full project support;
- ▶ Operational design, planning and scheduling;
- ▶ Operational review, cost modelling and operational improvement;
- ▶ Training and mentoring of on-site personnel and systems development and review;
- ▶ Ventilation and Gas Drainage Capability;
- ▶ Short to Medium term design, planning and scheduling solutions;
- ▶ Relief role coverage from technical services engineers, geologists and surveyors; through to management positions.

## UNDERGROUND COAL CAPABILITY

### ANGLO AMERICAN | LOCATION: AUSTRALIA

MEC Mining conducted XPAC model consolidation of three underground operations. This involved the transition and consolidation of mining equipment, production and schedule into an optimised XPAC model. The project deliverables entailed production assumptions, XPAC models, sensitivity analysis and asset optimisation.

### PEABODY | LOCATION: AUSTRALIA

MEC Mining provided operational support to revise mining plans, production and schedule into an optimised XPAC model for a client. The project was to provide life of mine, budget and longwall justification. Deliverables for the project were to develop XPAC models, sensitivity analysis from both a production and financial perspective.

### UNDISCLOSED CLIENT | LOCATION: CENTRAL QUEENSLAND

MEC Mining completed open cut and underground due diligence for a client with project value \$500M. The project consisted of data room review, alternative mine designs, production and financial analysis. Deliverables included due diligence report, production and cost models as well as sensitivity analysis.

### UNDISCLOSED CLIENT | LOCATION: AUSTRALIA

A client engaged MEC Mining to complete pre-feasibility study for a project (value \$406M) which involved managing PFS activities for a steeply dipping, multi-seam metallurgical coal deposit. MEC Mining acted as mining lead with multiple scope of work packages.

### UNDISCLOSED CLIENT | LOCATION: AUSTRALIA


MEC Mining provided operational support onsite for a project worth \$2.9B in value. The mining engineering support was to optimise operational planning and scheduling and involved collaboration with multiple stakeholders.



# GLOBAL EXPERIENCE



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