



Mining and Energy

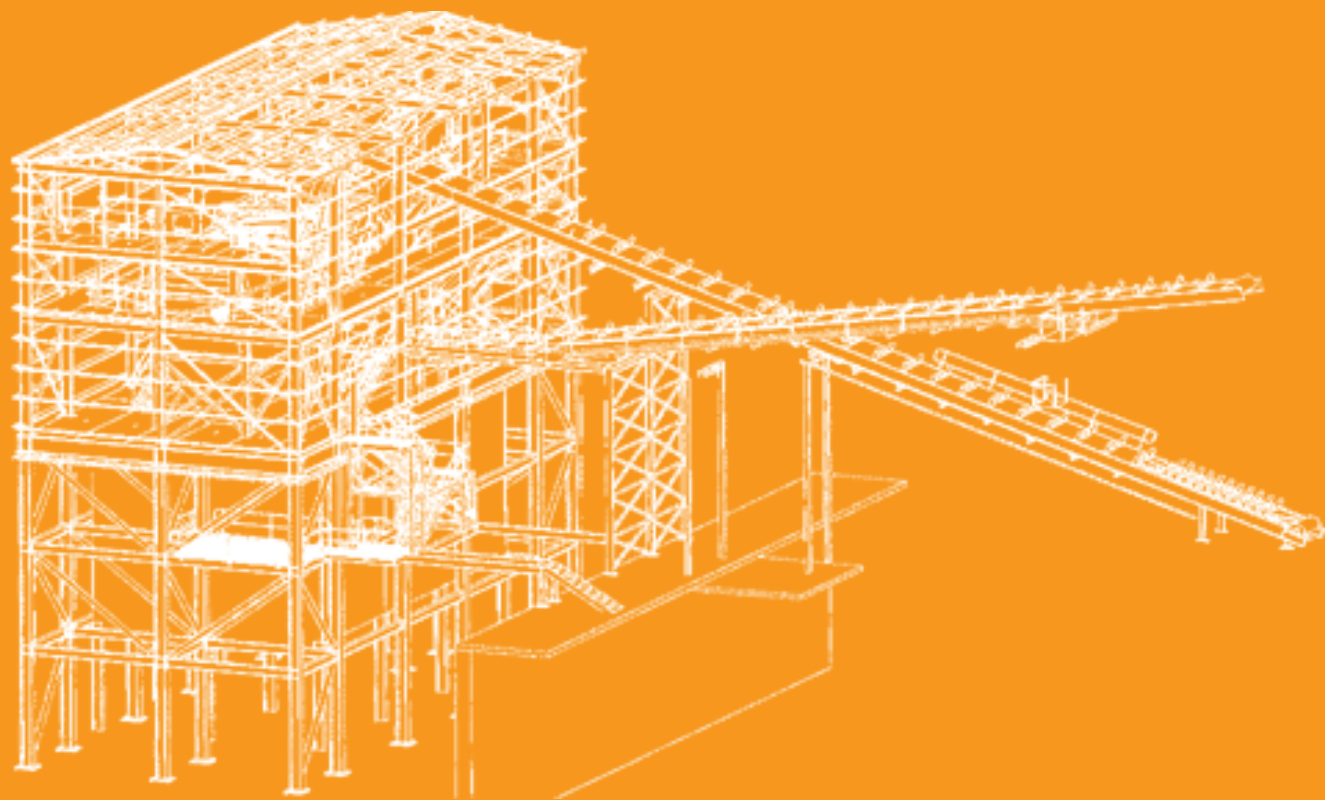
FMG Engineering can offer an experienced team of engineers and scientists able to provide engineering and environmental services to mining at any point in the resource development and operational life cycle.

SERVICES WE CAN OFFER

At the project conception stage, our **environmental scientists** can undertake: environmental assessments, soil investigations, surface water and groundwater investigations. Our environmental specialists can also assist with the preparation of environmental (operations) reports and compliance reporting to satisfy EPA and DMITRE, environmental monitoring, wastewater and waste management.

Our **structural engineers** can design and project manage construction of plant. Our **civil engineering** expertise is diverse enough to encompass airport civil works, campsite amenities, haul roads and rail roads, stormwater management and the design of retention ponds, tailings dams and waste rock embankments. Our **geotechnical engineers** can provide soil and erosion analysis and assess landform stability. In addition, our geotechnical laboratory **Research House** can provide on site compaction testing during plant construction phases. In the case of the unforeseen, we have a dedicated **forensic engineering** team capable of performing expert investigations for insurance claims.

At the end of the operations - our environmental scientists and civil engineers can offer assistance with mine closure planning.



FMG Engineering provided an integrated service in response to fire destruction of a screen house at the Hanson Construction Materials - White Rock Quarry.

HANSON CONSTRUCTION MATERIALS - WHITE ROCK QUARRY
MAGILL, SOUTH AUSTRALIA

The FMG Forensic Engineering team were engaged as a preferred supplier to provide a fire investigation report. Reinstatement of a new screen house involved collaboration between FMG Engineering civil, geotechnical and structural expertise. Project management for the screen house design was also provided.

Forensic - Fire Investigation Report

At FMG Engineering we have developed a highly experienced team available for diagnosis, assessment and remediation advice covering building damage of all types, including fire, earthquake and serviceability failures. We have had long associations with the legal fraternity, building owners and insurance loss adjusters, providing comprehensive reports on engineering failures causing structural damage.

Reinstatement of Structure

FMG Engineering provided geotechnical investigation of soils post demolition of the old structure; the civil team designed the new footings. Our structural department designed the new screen house and the new discharge conveyor housed within the screen house. We utilised Microstran modelling for analysis of the discharge conveyor. To bring the design elements together, FMG Engineering provided project management for design coordination.



Vibro dynamic compaction, turning wasteland into new communities...We developed it.

GLEN OSMOND QUARRY
ADELAIDE, SOUTH AUSTRALIA

Rehabilitation and redevelopment

Remediated and developed for medium density residential use. Compaction/stabilisation of rock fill up to 20m deep using FMG's vibrodynamic compaction (VDC) process.

RUTILE PROCESSING PLANT
WESTERN AUSTRALIA

Stabilisation of rock slopes up to 20m in height

Geotechnical investigation, pile design and quality of construction testing - 1,000 tonne pile load test Rutile Processing Plant construction, WA.



FMG Engineering has been involved over a number of years with site investigation and development of the township and mine infrastructure at Roxby Downs. Our involvement included the metallurgical plant, residential areas, water treatment plant, Decline Portal, tailings dam, evaporation ponds and a pipeline to Great Artesian Basin.

HONEYMOON URANIUM REPOSITORY

SOUTH AUSTRALIA

FMG Engineering was engaged to design and manage a Gypsum Slurry Repository for the safe disposal of gypsum slurry at the UraniumOne Honeymoon mine located approximately 450km north east of Adelaide, and 75 km north west of Broken Hill. A by-product of groundwater treatment for the mine is gypsum slurry. The slurry contains a low level of uranium and therefore has to be treated in accordance with a Radiation Management Plan satisfying both the EPA and DMITRE.

The repository designs contain a protection bund which is capable of managing stormwater. Once the slurry is dewatered, the repository is covered with clay. FMG Engineering was engaged to design two storage ponds. Two different dewatering methods were trialled to determine the most effective method of dewatering prior to installing a scaled up repository capable of managing gypsum slurry for the Life of Mine.

The trial project ran for 6 months, during which FMG Engineering trialled two separate repositories with 100m³ slurry capacities. FMG Engineering designed the repositories and, during their construction, our civil engineers along with Research House soil technicians undertook site inspections to confirm that the 'as built' were in accordance with design specifications.

BHP BILLITON OLYMPIC DAM MINE

ROXBY DOWNS

FMG Engineering was engaged by Ottoway Engineering to undertake an assessment and provide an engineering opinion regarding the structural adequacy of the existing concrete footings of three circular Sulphur tanks (100, 350, and 1000 tonne capacity) at the Olympic Dam Mine's Acid Plant.

The work involved visual observation and non-destructive testing of the current condition of the concrete footings of the tanks. An assessment of the structural adequacy of each structure was carried out to determine the strength, stability and compliance with relevant Australian Standards and building codes. The tanks form part of smelter No. 2 of the mine's acid plant and were installed around 1998 during an earlier Olympic Dam expansion. Constructed from steel plate, the walls of the tanks are supported on reinforced concrete ring beam footings.

The current mine expansion involves the replacement of the existing tanks which have now reached the end of their life. Tank replacement will be undertaken in a tight time frame in order to minimise interruption to the operation of the mine and its processing facility. Remedial works to the concrete footings will be required to be planned and undertaken in accordance with an exacting maintenance schedule.



Airport Civil Works

Runway pavement design and supervision ranging in scale from major work at Alice Springs Airport and Tindal and Woomera RAAF bases, to smaller strips at locations such as Marla, Coober Pedy and Goolwa.

IRON DUKE MINE IRON DUKE SOUTH AUSTRALIA

One Steel Mining in partnership with HWE Mining undertook expansion of their Iron Duke facility. Works included building pads for new hardstand areas, fuel storage pads, a tyre change bay and a new bituminised access road for improved efficiency and safety to the mine site.

As the access road and tyre change bay will have significant volumes of trafficable weight passing over them, it was necessary to undertake nuclear density tests underneath the bitumen and concrete to make sure the ground was properly compacted to handle such large loads.

FMG Research House worked closely with Leed Engineering and Construction who built the access road. FMG Research House advised the project managers and operators on site, to determine how much water to add to the stockpiled 20mm Quarry Rubble, thus allowing a much easier and more time efficient method of achieving the compaction that had been stipulated. FMG Research House was also based on site whilst backfill took place around a new spiral footings tower for a large conveyor belt. FMG Research House worked hand in hand with York Civil whilst they backfilled to approximately 1.5 metres in height.

The Project

- Spiral Footings Tower
- Fuel storage area
- Tyre changing bay
- Access road
- Hardstand areas
- Workshop pads
- Wash down pads
- Nuclear Density Tests AS1289 5.2.1

IRON DUKE TO IRON BARON TRAMWAY

FMG Engineering were engaged as consultants on a project to build a new 31km railway line to the crushing plant at Iron Duke. As well as carrying out site investigation for the plant, we were engaged to use our expertise to simplify construction of the railway line, which was essentially a “cut and fill” project.

We sampled the critical terrain areas and classified all soils and materials. We constructed a trial embankment using typical soils, and determined the most efficient method of building support roads and embankments. We also developed special compaction techniques for the rail bed, and devised simple control testing procedures for the contractor to carry out on site. The entire project was completed in a 12-month timeframe due to the on-site techniques increasing efficiency and allowing the contractor to proceed with certainty.



Land inspections for Tarong, Kuniwoon & Glen Wilga in Queensland. FMG Engineering utilised its multi-disciplinary skills involving its Environmental, Civil, Structural and Forensic Engineering departments.

TARONG ENERGY, POTENTIAL EXPANSION

REMOTE QUEENSLAND

FMG Engineering was able to respond to a project with a wide scope offering specific expertise and experience in the Environmental Sector combined with over 30 years consultation experience as a multi-disciplinary engineering consultancy.

Our Environmental department was able to produce a comprehensive Land Inspection Report encompassing the following information:

- Land suitability assessment
- Contaminated land identification and location mapping
- Inventory and condition of assets and liabilities
- Asbestos assessment and report
- Ecosystems mapping
- Identifying areas suitable for firebreaks
- Site sampling permits, soil and groundwater sampling
- Comprehensive reporting including methodology, QA/QC, recommendations, conclusions

AMDEL MINING LABORATORIES

TOWNSVILLE

When the time came to decommission this facility and dispose of the property, FMG Engineering carried out the necessary 'due diligence' and environmental assessments. Environmental remediation works were carried out under FMG Engineering's supervision. The property was satisfactorily decommissioned and certified for sale after treatment of heavy metal contamination.

Environmental Capabilities

Our Environmental capabilities include hazardous waste management and contaminated land management through high quality monitoring, sampling and remediation for groundwater, surface water and soil. A focus on resource efficiency and sustainability is applied to all contaminated site/hazardous waste projects.

Adelaide

PO Box 707
Kent Town SA 5071

42 Fullarton Road
Norwood SA 5067

P (08) 8363 0222
F (08) 8363 1555

Melbourne

Level 1, 2 Domville Ave
Hawthorn VIC 3122

P (03) 9815 7600
F (03) 9662 3879

Mt. Gambier

P 1300 975 878

Tanunda

49 Murray Street
Tanunda SA 5352

P (08) 8561 1022