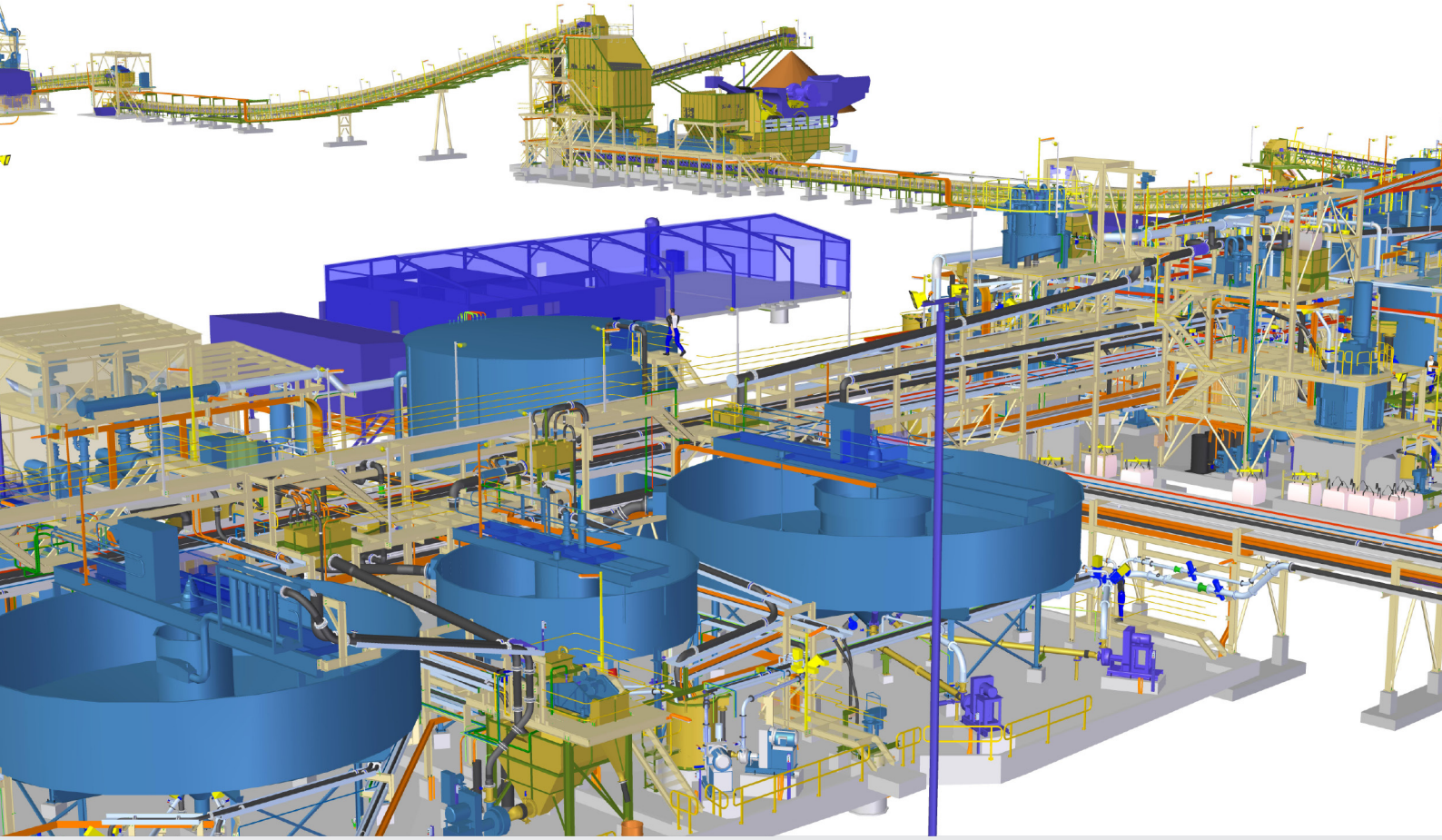
GR ENGINEERING SERVICES
ENGINEERING CONSULTANTS AND CONTRACTORS

FEASIBILITY STUDY PREPARATION

GR Engineering has extensive experience in undertaking the full range of feasibility studies across all major metalliferous and mineral commodities.



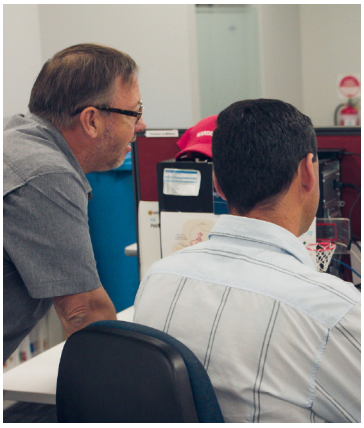
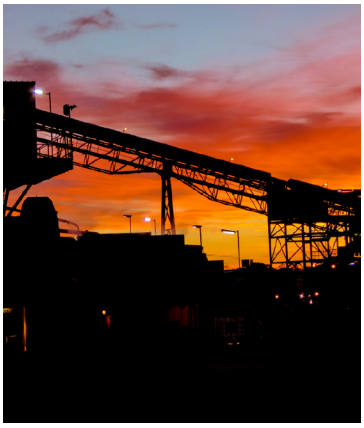
A proven track record for the successful completion of resource sector studies.

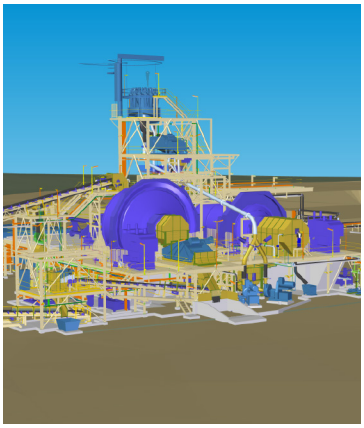
GR Engineering Services Limited (GRES) specialises in undertaking feasibility studies for resource sector projects. The majority of these studies include major infrastructure and services. GRES has an extensive in-house database from previous projects, scopes of work, equipment, schedules, costs and specifications that ensures the efficient and effective completion using relevant data.

The study reports produced by GRES are highly regarded by leading financiers and lending institutions. GRES has completed a large number of bankable feasibility studies which have enabled our clients to move forward with successful project developments. In many cases GRES has been retained as the lead engineer or constructor for the delivery phase.

GRES can perform the full range of feasibility studies from scoping studies through prefeasibility or optimisation studies to full bankable feasibility studies.

GRES has extensive experience in undertaking studies in most metalliferous and mineral commodities or mine related infrastructure.


GRES Study Managers generally have in excess of 20 years of industry experience. GRES will tailor study teams to the commodity under study. We have personnel available with operations and design experience in most mineral commodities and this depth and experience sets us apart from our competitors.

GRES offer the following study work and services,

- Feasibility studies
- Front End Engineering Design (FEED)
- Operations and process optimisation
- Due Diligence reviews
- Asset Management System development and monitoring
- Risk evaluation and Hazard / Operability studies
- Technology evaluation and trade-off studies
- Refurbishment assessments

We strive to assist our clients to build viable mining projects.

Standard Compliance

GRES' development, review and submission of study work is based on the Australian JORC Code of Practice. Where requested by clients, study methodology can comply with the American Association of Cost Engineers (AACE) guidelines or the Canadian National Instrument guidelines (NI-43-101).

Study Type (JORC)	AACOE 18R-97 Equivalent*	NI-43-101 Equivalent
Engineering and Cost	N/A	N/A
Scoping Study	Class 5	Preliminary Economic Assessment
Prefeasibility Study	Class 4	Technical Assessment
Feasibility Study	Class 3	Feasibility Study
Definitive Feasibility Study	Class 2	N/A
Bankable Feasibility Study	Class 2	N/A

GRES have an extensive in-house database on previous projects, scopes or work, equipment, schedules, costs and specifications, that ensures the efficient use of personnel and relevant data.

*American Association of Cost Engineers (AACE), Cost Estimation Classification System - As Applied in Engineering, Procurement and Construction for the Process Industries .

Study Options

Engineering and Cost Study

An engineering and cost study is an examination of a project's design and cost estimate with outcomes indicating potential for success. The goal is to determine whether the project is designed using the correct or optimum process route, and the engineering detail is sufficient and robust to support the claimed outcomes. These studies can sometimes be critiques of work done by other engineering houses.

Scoping Study

Scoping studies are based on testwork and information, which is taken from previous studies or current programmes that are preliminary in nature, which traditionally produce a CAPEX and OPEX with ±30 to ±40% accuracy limits.

Prefeasibility Study

Prefeasibility studies are based on more detailed information such as ore composition, comprehensive testwork and site selection. They traditionally produce a CAPEX and OPEX with ±20% to ±30% accuracy limits.

Feasibility Study

Feasibility (FS), Definitive (DFS) or Bankable quality (BFS) studies are based on finalised process design for which most elements have been defined. The studies may have up to 30% of the engineering definition completed and traditionally produce a CAPEX and OPEX with ±10% to ±15% accuracy limits.

The ability to proactively work with our clients to develop and implement solutions will promote optimisation wherever possible.

Project Study Track Record

A summary of GR Engineering recently delivered feasibility studies leading to project funding and delivery.

2020

Mardie Salt and Potash Project

BCI Minerals Limited
Definitive Feasibility Study and
Front End Engineering Design

Manono Lithium and Tin Project

AVZ Minerals Limited
Definitive Feasibility Study

2019

Ar Rjum Gold Project

Ma'aden Gold Company
Definitive Feasibility Study

Abra Lead Project

Abra Mining Limited
Definitive Feasibility Study

West Musgrave Nickel Project

Musgrave JV - Cassini Resources Limited & OZ Minerals Limited
Prefeasibility Study

Windumurra Redevelopment Project

Atlantic Vanadium Pty Ltd
Definitive Feasibility Study

Northern Wellfield Project

Oz Minerals Carrapateena Pty Ltd
Front End Engineering Design

Thunderbird Minerals Sands Project

Sheffield Resources Limited
Front End Engineering Design

2018

Mt Morgans Gold Project

Dacian Gold Limited
Definitive Feasibility Study
Funded, GRES constructed

Epanko Graphite Project

Kibaran Resources Limited
Definitive Feasibility Study

Syama Oxide Expansion Project

Resolute Mining Limited
PFS and DFS
Funded, GRES constructed

Hemerdon Tin / Tungsten Project

Wolf Minerals Limited
PFS and DFS
Funded, GRES constructed

2016

2014

2013

Woodlawn Pn / Zn / Ag Project

Heron Resources Limited
Feasibility Study
Funded, constructed

Sunrise Dam Ultra-fine Grinding Project

AngloGold Ashanti Australia Pty Ltd
PFS and DFS
Funded, GRES constructed

Deflector Copper / Project

Mutiny Gold Limited
Definitive Feasibility Study
Funded, GRES constructed

Study work performed by GR Engineering has enabled many of our clients to secure funded development.

About GR Engineering

A leading process engineering, design and construction organisation that strives to provide workable, cost effective solutions and quality services to the global resource and mineral processing industry. GR Engineering has a proven track record of delivering turn-key projects in over 20 countries.

The company guarantees integrated, efficient and practical designs whilst maintaining a high level of safety and operational performance.

Personnel at GR Engineering have the capability and track record to undertake projects from the initial evaluation and study phase through to design, construction, commissioning, operational support and asset management.

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