








**xenith**  
know the way

We service the industry sectors required for global growth

-  Mine Planning
-  Specialist Design
-  Geological Services
-  Studies and Assessments
-  Governance Reporting
-  Mine Closure

## Building on Xenith's Expertise

We leverage the depth and breadth of Xenith's technical core to deliver the best solution to our client's complex problems.

-  Technical Mining Consulting
-  Exploration & Generative Studies
-  Due Diligence
-  Advisory  
*(Operational/Technical/Corporate)*
-  Land Access and Cultural Heritage
-  Environment and Approvals
-  ESG Solutions

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## Underground Coal Services

We have a proven history of excellence, offering premium, integrated underground coal services through multi-disciplinary technical teams.

With extensive experience in underground operations across various jurisdictions and environments, we enhance operational performance using our technical expertise. Our use of the latest technologies and innovative designs drives industry-leading mining solutions.

We create value throughout the entire asset lifecycle with our expertise across all stages of underground mining.



Xenith have expertise to assist your project in:

### Studies and Assessments

- Project studies (scoping/ concept, PFS, FS, BFS)
- Due Diligence and financial modelling
- Independent expert reports
- Operational and cost improvement reviews
- Operational benchmarking
- Risk assessment
- Project and strategic optimisation

### Specialist Design

- Longwall domain planning, scheduling and infrastructure
- Technology assessment – Scope 1 fugitive emissions abatement
- Ventsim ventilation design and modelling
- Thin seam mining design and equipment selection
- Fugitive emissions measurements and reporting

### Governance Reporting

- Reporting of Resource and Reserves in accordance with JORC and NI43-101
- VALMIN code reporting
- Fugitive emissions estimates and reporting
- NGRS reporting
- Tenement management and reporting

### Mine Planning and Scheduling

- Mine design and optimisation
- Equipment selection and benchmark modelling
- Spry reserving and scheduling
- Working section optimisation
- Site support

### Mine Closure

- Closure, rehabilitation and final landform planning
- Mine entry sealing

### Geological Services

- Geological modelling and resources estimation
- Mine geology
- Geostatistics
- Exploration planning and support

# Our Expertise

Driving global excellence in sustainable resource management

## Due Diligence

We undertook a high-level technical Due Diligence (DD) study for a client of two underground coal assets. An experienced team delivered the following work packages in a structured, final DD report:

- » Approvals and Environmental Review
- » Geology and Coal Resources Review
- » Gas Reservoir, Drainage and GHG Emissions Review
- » Geotechnical and Subsidence Review
- » Life of mine (LoM) Plan, Schedule and Coal Reserves Review
- » Mining Equipment and Services Review
- » CHPP and Coal Quality Review
- » OPEX and CAPEX Review

The client subsequently engaged us to undertake on-going reporting work including regular site visits to monitor performance versus plan.

## Longwall Future Domains

We supported an established longwall mining operation looking to investigate conceptual options for continued operation.

The study analysed the remaining coal resource and reviewed prior studies to develop the following three LoM cases, taking into consideration fundamental underground risks:

- » Extend the existing longwall panels in the current domain to provide an additional three panels (requires modification of consent);
- » Build upon the initial case with an additional domain;
- » A much larger expansion with another domain to maximise LoM Reserves, which required a new development consent.

The study also considered decarbonisation and management of emissions. This included a ventilation review to further improve ventilation and gas drainage through new access drifts and sealing off old mine workings.

## Lean Methane Abatement Technology Assessment

We were commissioned to investigate potential technology options for lean methane/high carbon dioxide composition drainage gas at a longwall mine. The following tasks were delivered:

- » An assessment of current and forecast drainage gas;
- » A review of current gas management infrastructure, approvals and constraints;
- » A global expression of interest to prospective technology providers;
- » Ranking of six potential technology options based on vendor responses;
- » A high-level risk assessment;
- » Preferred technology option with vendor presentation to the client.

A novel option was considered to combine the lean methane drainage gas with high flow ventilation air methane (VAM) from a nearby mine fan installation, abating the gas through a combined gas stream with thermal oxidizer technology.

## Mine Design & Preliminary Economic Assessment

We were engaged to develop a mine design and conduct a preliminary economic assessment of a large greenfield project. We delivered on the following tasks:

- » Development of a master schedule for all pre- and post-approval tasks including off-site, on-site and mine development. The schedule was optimised to reduce the post-financial decision development schedule from four to three years to enhance project NPV;
- » Develop LoM plans for a series of open cut and underground mines;
- » Develop LoM run of mine coal production schedules that consider the interaction between open cut and multi-seam underground longwall mining;
- » Specify surface infrastructure, mine access, ventilation, mining equipment and manning;
- » Product coal quality outputs and market specifications;
- » Revenue, operating and capital costs estimates.

GLENCORE

Whitehaven

BHP

YANCOAL  
克煤澳大利亚有限公司

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Peabody