KNOW YOUR COAL.
MANAGE QUALITY.
CAPTURE VALUE.

Laboratory testing and analytical solutions for every stage of your coal chain.
Coal is critical in the production of 40% of the world’s electricity, 70% of the world’s steel and most of the world’s cement and aluminum. ALS Coal is proud to be involved in an industry servicing these fundamental building blocks of society.

ALS Coal is the leading coal-focused laboratory group with a geographically and technically diverse service offering. We deliver quality technical outcomes supported by a highly skilled and motivated management team, well-trained technical staff, a commitment to capital investment for ongoing improvement of technical services and a total commitment to client service.
WELCOME

ALS is a global leader in the provision of analytical laboratory and technical services to international energy, mineral, life sciences and industrial markets.

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CORE VALUES

Our Core Values are clear and we incorporate these in our daily operations, never forgetting the foundations of our success:

› Honesty and Integrity
› Exceeding Client Expectations
› Belief in our Ability
› Hard Work and Continuous Improvement
› Doing it Better
› Celebrating Success
› Safety as a Priority
As one of the world’s largest and most diversified Testing, Inspection and Certification (TIC) companies, ALS has sites strategically located around the world to provide accurate and timely services. We have operations in more than 400 locations, in 65 countries, and on six continents. We have teams of experts around the world available to provide specialised business solutions that align with client needs. Major hub facilities are located in Australia, Asia, North America, South America, Europe, the Middle East and Africa.

Our company can trace its origins to 1863 when Peter Morrison Campbell first established a soap making business in Queensland, Australia. After listing on the Australian Stock exchange in 1952, the modern era of the company began in 1981 with the acquisition of Australian Laboratory Services Pty Ltd and a shift to becoming a highly regarded international testing, inspection and certification company employing in excess of 12,000 staff.

Irrespective of our size, we have always retained a uniqueness that has allowed us to truly understand the industry, encouraging innovation and an entrepreneurial spirit that creates strong links between our global business operations.

We are focused on delivering superior services through four main divisions: Life Sciences (Environmental, Water Resources, Monitoring and Technical Services (MATS), Food, Pharmaceutical, Consumer Products, and Electronics); Minerals (Geochemistry, Metallurgy, Mine Site and Inspection); Energy (Coal and Oil & Gas); and Industrial (Asset Care and Tribology); and offering a broad range of technical services to our clients that is unrivalled.

Map represents global Coal locations.
The ALS Coal business was established in 2007/08, initially as a greenfield initiative. In October 2007, ALS acquired the assets of ACIRL and ACTest in Australia. In December 2007, ALS acquired the Witlab business in South Africa. Both of the acquired businesses were profitable at the time of purchase but were lacking access to investment capital, a global footprint, and sufficiently scalable data management systems. ALS Coal was made into a standalone Division in April 2008. In June 2012, ALS acquired Stewart Group and this business’ coal services in Mongolia were allocated to ALS Coal.

It is noteworthy that ACIRL has a history in Australia stretching back 70 years. Originally known as the Australian Coal Industry Research Laboratories, it’s focused was centred on coal testing for resource evaluation, mining engineering and coal end-use (combustion, coking, hydrogenation etc). In 1999, ACIRL moved into port services including sampling and analysis with the start-up business called ACIRL Quality Testing Services, also known as ACTest. These business are now the premier coal testing company in Australia.

The ACIRL and ACTest businesses are in the process of being re-branded such that they are recognised as ALS Coal.
BORECORE & EXPLORATION

Developing a coal deposit is a complex process. ALS Coal is recognised globally for its expertise in managing coal testing and analysis resource evaluation programs. The heterogeneous nature of coal needs to be well understood and managed to deliver bankable information on coal breakage behaviour and potential product quality from a deposit. Working with our clients, we strive to identify all the strengths and weaknesses of your potential products and provide coal quality management guidelines and solutions. With over 65 years of resource evaluation experience and having developed many of the borecore analysis techniques currently in use, ALS Coal has the experience to provide superior technical services.

**Services include:**
- Raw sample analysis,
- Coal breakage behaviour in the drop-shatter test,
- Coal breakage behaviour in the wet and/or dry attrition test,
- Float and sink testing for coarse and/or fine coal,
- Froth flotation testing, and
- Analysis and validation of fractional samples, and Preparation and analysis of simulated product composites using an extensive range of coal analytical procedures.

ALS Coal is recognised globally for its expertise in managing coal testing and analysis resource evaluation program.

SUPERINTENDING & CERTIFICATION

Coal is a valuable resource and ALS Coal is fully aware of the commercial imperative of preparing timely and accurate certificates.

ALS believes the meeting of its safety and environmental obligations is essential. Annually, ALS Coal superintends and certifies quality on over 220 million tonnes of export coal around the globe, 24 hours per day and 365 days per year. ALS Coal provides accurate, independent cargo sampling and analysis and quality determinations with the integrity and accuracy expected from the world’s leading service provider. We invest heavily in skilled and capable sampling and analysis employees who are available as and when required. Our operations cater for all your shipping needs no matter what the time or day. Trust ALS with your shipping services every time.

**Services include:**
- Representative sampling and analysis of ships and trains,
- Certificate of weight, certificate of sampling, certificate of analysis, certificate of origin, certificate of hold cleanliness, certificate of inspection,
- Draft survey report,
- Umpire sample analysis, and
- Spontaneous combustion propensity testing.
It has been a seamless transition from your competitors. The accuracy, timeliness and excellent customer services are at the level we need.
COALFIELD PRODUCTION

The capabilities of your team and plant in delivering both sustainable and marketable products and brands drives the success of your company.

ALS Coal partners with clients to provide coalfield-based regional laboratories and mine-site based facilities. Whether you require analysis of in-pit drilling samples, validation of on-line analysers or recovery of coal or environmental samples, ALS Coal provides a focused service using trained and motivated operators.

"We congratulate ALS for their tailored solution to suit mine site needs."

COAL PREPARATION

ALS offers a comprehensive suite of coal preparation plant sampling services to our clients. We have a team of expert consultants with vast industry experience along with strategically placed facilities to be able to offer sampling services including comprehensive plant audits, metallurgical investigations and routine quality control.

Interpretative reporting and consulting services for sampling and metallurgical performance monitoring is also available. Using our unique pilot-scale coal preparation plant we are able to prepare a simulated product for the generation of marketing samples and/or feed material for pilot scale coking and combustions studies. Also, ALS Coal can provide metallurgical support for your operation, from borecore data interpretation to plant optimisation and anywhere in between.

Services include:
- Sampling from coal preparation plants,
- Production sample analysis,
- The ability to roll out modular laboratories,
- Channel and strip sampling, and
- Environmental sampling and monitoring.

Services include:
- Sample plant inspections, maintenance, auditing, precision and bias testing,
- Pilot-scale coal preparation services for generation of samples using dense medium cyclones, classifying cyclones, spiral separators, mechanical flotation cells, reflux classifiers, in-line pressure jigs and screens,
- Metallurgical investigations, equipment evaluation and plant performance improvement projects,
- Due diligence and feasibility studies, design verification, production scheduling and process simulations, and
- Specialist handleability tests such as Transportable Moisture Limit (TML), Durham Cone test and Edinburgh Cohesion test.
ALS’ unique pilot-scale coal preparation plant capability is a great tool for developing bulk marketing samples of new products.
COAL COMBUSTION

ALS Coal is internationally recognised for our expertise and unique facilities in evaluating thermal coal combustion behaviour and optimising the coal combustion processes.

Our pilot-scale coal pulverizer and boiler simulation furnace provide comprehensive assessment and benchmarking of the combustion performance of coals and coal blends as they would perform in industrial applications. Further, historical data allows high-resolution modelling of a coals potential performance in combustion and milling processes. ALS Coal combustion experts are also available to witness trial burns in powerstations to ensure that coal is fully and fairly evaluated.

**Services include:**
- Testing and evaluation of thermal coal utilisation performance including handling and stockpile behaviour, milling performance, combustion/burnout efficiency, slagging and fouling behaviour, turndown, stability, propensity for formation of NOx and SOx, precipitability of ash, and Fly Ash Disposal and Utilisation.
- Performance ranking of combustion behaviour.
- Troubleshooting and expert witnessing of coal combustion performance in powerstation applications, and
- Technical evaluations of coal supply tenders for power utility companies and other coal users.

ALS can provide deep understanding of a coals’ combustion performance and benchmark these parameters against a range of globally traded coals.

COAL CARBONISATION

Our coke-making technicians understand the value of your coking coal. ALS Coal is recognised as the world’s leading expert in coking coal, coke testing and commercial research.

Using pilot-scale coke ovens, bench-scale coke ovens and a range of coke test apparatus, ALS Coal can determine the coke quality of your coal. As a result of extensive testing and research experience, ALS Coal can provide guidance on the value in use of a particular coke relative to a range of globally traded coals. ALS Coal experts are also available to assist you with technical issues relating to coke-making and PCI issues.

**Services include:**
- Pilot-scale and bench-scale coke-making,
- Coke tests including CRI and CSR, ASTM Stability and Hardness, Micum, Irsid and JIS drum tests,
- G- Index and Y- Index determination,
- Technical evaluations of coking coals,
- Technical evaluations of PCI coal, and
- General consulting on metallurgical coal issues.
With 30+ years’ experience in performing and evaluating coking coal performance, ALS is well positioned to provide clear understanding of a metallurgical coal’s coke quality.
CoalView – Internet Based Reporting COMING SOON!
CoalView is an internet based application that provides clients with the opportunity to access their data on-line. It also allows clients to sort, trend over time, and report both historical and new data. Connection to the ALS Coal database is made through a secure read-only connection. Initially available for borecore programs, this tool will be expanded to other service lines and develop additional features as it is developed.

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Coal8 – Data Capture
Coal8, pronounced ‘collate’, is the newest addition to the ALS’ laboratory information systems. For a client’s perspective, it improves productivity and limits errors when analyzing coals. It is specifically designed and built for the complexities of coal analysis. Most laboratory functions are managed through Coal8. It manages work order initiation, generation of unique samples numbers for each sample and sub-sample, barcode scanning of batches and sample labels, allocation of reference material to batches, and automatic data capture from balances and other analytical equipment. Duplicate results which are outside repeatability limits are automatically flagged and require repeat analysis prior to closing out a work order. Reference material that does not replicate is also flagged and requires re-analysis of the entire batch.
SUPERIOR LABORATORY COMPANY

Proficiency Testing
ALS Coal laboratories participate in the monthly internal proficiency program. Individual laboratories also participate in a range of resource company, national and international proficiency programs e.g. CANSPEX. Ongoing accreditation for individual laboratories is dependent on the facility achieving acceptable results in these proficiency programs.

Data Review – Validation
Our clients expect reliable and accurate results and this is a fundamental principle on which we have built this business. Further, our unrivalled reliability and accuracy in sample and data management brings with it efficient and rapid turnaround of results for our clients. To achieve this, data validation is performed at various stages in coal analytical processes. Validation of sizing and float/sink curves is performed within Coal8. Validation of rank indexes and caking indices is performed in proprietary validation spreadsheets.

Process Improvement – Innovation & Research
ALS Coal invests heavily in internal technical innovation programs in the quest for faster, more accurate and safer processing of your coal and data. Some of the areas where this has been effective include drop/shatter testing, attrition testing, float/sink testing, data capture and management. Further, our renowned senior researchers have a collaborative and innovative approach to their work and provide clients and industry sponsors with effective and commercially oriented solutions.

Process Improvement – The Wedge
Over 100 coal-focused current best methods (CBMs) have been established and implemented across our laboratory network as the only methods used within the laboratories. These are also embedded into the LabSkills competency based training program. CBMs are validated by process improvement teams and external auditors to ensure that they adhere to the relevant international and national standards and that they are safe, efficient and accurate methods. CBMs are regularly reviewed by standing technical committees to ensure their ongoing relevancy, accuracy and efficiency.

Accreditation
ALS Coal hub laboratories and superintending laboratories are accredited to ISO 17025 by approved national accreditation organisations such as NATA, SANAS and MNAS. ALS Coal production laboratories are accredited to ISO 9001 by similar organisations.

Training – LabSkills
ALS Coal has the most comprehensive internal training program in the industry. Training of employees and recognition of competency is achieved through the extensive internal ALS Coal training program. This is known as LabSkills. Typically under the LabSkills program, an employee must undertake a written examination of their theoretical knowledge of a test or task, demonstrate skill and safe working practices, and operate at a benchmarked productivity level to be deemed competent to perform a specific task. Labskills is the talent incubator for the world’s coal industry. The competency and multifunction excellence that Labskills instills in our staff forms the foundation for our growth.

Safety and Compliance
ALS Laboratory Group Health, Safety, and Environment Program ensures that we are providing the safest work environment for our employees. Everyone involved at ALS Coal must partake in safety programs and be aware of all safety aspects of the laboratory, at the mine and at the port. By planning safety considerations into all work activities, ALS Coal actively works to prevent incidents which could result in injury to employees, impact to the surrounding community and environment or damage to property and equipment.

Lost Time Injuries (LTIFR)
ALS continually tracks and strives to improve safety performance. Data is tracked by site, business, group and division regionally and globally with key information reported to staff and discussed at meetings Current data for the Coal group: [below]

Positive Performance Indicator including leadership
The Positive Performance Indicators (PPI) System is designed as a proactive mechanism to continually improve safety culture. Current data for global activities: [right]
ALS Coal regularly provides training courses in managing coal quality through the coal chain.

Services include:

- Our world renowned 3-day Coal Quality Course examines, in depth, the issues affecting the quality of your end product, its attractiveness to potential clients and its impact on the environment. The course is presented by recognised experts in the field of coal quality for both thermal and coking coals, who offer practical advice on world’s best practice for the management of coal quality and its environmental impacts.
- Other training courses include an introduction to coal preparation, coal sampling, coal sample preparation and analytical tests, coal and the load-port, coal use in power generation, and coal using in steelmaking.

Course dates, information brochures and booking requests can be made online.
alsglobal.com/cqc

Since having our operators undertake your training program our plant utilisation has increased to 96%, and our product quality and staff morale have improved.
SUPPORT SERVICES

Environmental – Monitoring, sampling and testing.
ALS provides a full range of environmental sampling, analytical testing and monitoring services. Our analytical services include chemical, biological, physical, radiological and microbiological testing. These capabilities cater to a number of distinct sectors including drinking water, water quality, acid mine drainage, air quality, dust, occupational hygiene and stack testing.

Complementing the analytical service ALS Monitoring and Technical Services team design, install, operate and maintain a wide range of environmental monitoring systems. Mine clients utilise these to monitor physical and quality parameters using real time data on weather, water levels, dust and flows to support business, quality and compliance decisions.

Industrial – Asset integrity for the mining industry.
ALS is a leading provider of asset reliability and integrity services. Services and solutions assist clients to maximise production, extend asset life and ensure safe and reliable plant operation.

Our approaches asset health from a holistic perspective, considering both asset reliability and integrity. Starting with an engineering approach – seeking to understand client asset management or maintenance issues first – the right package of services and solutions to improve and sustain asset health is then delivered.

With a proven track record in the power, oil & gas/petrochemical, minerals processing, mining and water and infrastructure industries we are able to provide the right solutions for your business.

Tribology – Oil and fuel analysis for your fleet.
Tribology is the science and study of friction, lubrication and wear.

Whether to reduce costly repairs, limit unplanned downtime, increase equipment availability, extend oil drain intervals or evaluate product performance, ALS provides the testing solutions to help improve maintenance practices. ALS operates as a totally independent oil, fuel, coolant, and metalworking fluid analysis service with the largest global laboratory network in the industry.

More details about these services are available online.
alsglobal.com/enviro
alsglobal.com/industrial
alsglobal.com/tribology
**GLOBAL HEADQUARTERS**

**Australia, Brisbane**  
+61 7 3713 8400  
ALSCoalRichlands@alsglobal.com  
478 Freeman Road  
Richlands, Queensland 4077

**South Africa, Witbank**  
+27 13 692 8000  
ALSCoalWitbank@alsglobal.com  
1 Grysboek Street  
Tasbet Park, Witbank 1035

**LABORATORIES**

**Australia**

**Newcastle**  
+61 2 4014 2600  
ALSCoalNewcastle@alsglobal.com  
2 Spit Island Close (Steel River Estate)  
Mayfield West  
New South Wales 2304

**Mackay**  
+61 7 4963 9300  
ALSCoalMackay@alsglobal.com  
5 John Vella Drive  
Paget, Queensland 4740

**Gladstone**  
+61 7 4971 5600  
ALSCoalGladstone@alsglobal.com  
46 Callemondah Drive  
Clinton Queensland 4680

**Mongolia, Ulaanbaatar**  
+976 11 343882  
ALSCoalMongolia@alsglobal.com  
1st & 2nd Floors Armono Corporate Building, Chingis Avenue, Khan-Uul District Ulaanbaatar 210136