Mining and Minerals Solutions

Project-specific services across the entire life cycle from early-stage concepts and evaluations to turn-key projects and asset solutions.
Wood is a global leader in project delivery, engineering and technical services, providing efficient, integrated solutions across the asset life cycle in multiple sectors. We are proud of our rich heritage which underpins our unrivalled breadth and depth of capability. We employ people with the brightest minds and the sharpest skills, who use our leading-edge technology to help our customers succeed.

Our differentiators include our extensive range of services, the quality of our delivery, the passion of our people and our unique culture. True to our values, we work in an open and transparent way, a committed partner to our customers, supply chain and the communities we work with.

Our values set the tone for what is important in our business, they are the essence of our identity and fortify everything we do.

Care
Working safely with integrity, respecting and valuing each other and our communities

Commitment
Consistently delivering to all our stakeholders

Courage
Pushing the boundaries to create smarter, more sustainable solutions

“Each and every individual in our business has the ability to make a significant impact to our safety delivery. Safety is what we care about most and being safe means looking out for yourself and showing care for your colleagues. Keep safety at the heart of every conversation you have.”

Robin Watson,
Chief Executive
For over 60 years, we have been trusted to deliver some of the world’s most logistically and technically challenging projects. We add value from concept to closure across a diverse range of commodities with capabilities that support mines of the future.

A leader in global mining and minerals solutions from concept to closure

Wherever you are and whatever you mine, we deliver services across the entire life cycle of mining projects from front-end geology, process and environmental consulting, through to conceptual and detailed design, project management, construction, operations and mine closure. Our concept-to-closure capabilities provide continuity of support and knowledge synergy across the project phases.

We are an industry-recognised expert in every facet of mining project assessment, development and optimisation for all major commodities. In the early stages of project development, we use our skills in geology, mineral resource estimation, advanced geostatistics, mineral resource estimation, mine planning and metallurgical studies to add significant value to our customer’s projects.

Our systematic, scalable, globally proven approach to project delivery combined with our specialised technical expertise and strong project management capability reduces project risk and shortens execution. From small expansions to new builds, our global network of experts works in concert across the mining life cycle to consistently deliver projects safely and predictably, regardless of size, complexity or location.

Our capabilities include:

- Front-end services including exploration assistance, resource and reserve estimating, advanced geostatistics, mine planning and design, geotechnical services, and scoping, prefeasibility and feasibility studies
- NI 43-101, JORC and SAMREC reporting
- Engineering design and procurement
- Project and construction management
- EPCM, EPC, PMC
- Plant startup and commissioning
- Material handling
- Asset maintenance and support
- Mine closure and rehabilitation

Next generation mining

The next generation of mines will be marked by safer, more productive operations that are less subject to the constraints of geography and better positioned to make the most of capital expenditures. Leveraging best practices and expertise from other industries, we are focused on finding new and better ways to solve challenges and optimise your assets with digital and automation and controls solutions that transform the brownfield and greenfield projects today into mines of tomorrow.
Adding value and credibility to one of Canada's largest undeveloped gold deposits

Wood prepared consulting studies for the Côte Gold project, one of Canada’s largest undeveloped gold deposits and provided innovative and implementable solutions.

Since we began work on the project’s initial scoping study in 2011, we have been involved, on a nearly continuous basis, in every aspect of the project and were instrumental in the identification of more than $200m of improvements in net present value (NPV).

These and other opportunities have enabled increases to the plant throughput, while reducing the project’s total capital cost by more than $8m.

Financial modeling and risk assessment

We provide reliable, credible guidance relating to project costs, economics, trade-offs, risks, contingencies and valuations. Our estimating group is one of the largest, most experienced, and most trusted in the industry. We apply discounted cash-flow (DCF) analyses, Monte Carlo risk assessments and asset-based valuations, and real-options valuations to enable our customers to make informed decisions on developing or expanding their projects.
Mineral resources and project assessments

We add value and credibility through the due diligence review of mining projects and operations, economic evaluation of projects and independent review of feasibility studies and operations performance that mitigates risk and unlocks value to help you make informed decisions on developing or expanding projects.

Our resource estimators have extensive experience in a wide variety of commodities, deposits and estimation techniques. We use our strong knowledge of reconciliation to accurately predict the extraction of contained metal. We are pioneers in sampling theory and practice, and experts in multiple-indicator kriging, conditional simulation and other geostatistical applications for the reliable determination of mineral resources.

Due diligence
A trusted partner of mining investors, we employ sophisticated approaches in our due diligence reviews of development properties and operating mines that identify both the likelihood and impact of risks, as well as opportunities for adding value. Our capabilities in geology, mining, process engineering, financial analysis and environmental sciences enable us to conduct due diligence thoroughly and efficiently. We have supported most of the major mining companies in the world in their corporate governance functions, and preparation of technical reports for IPOs. Our expertise provides owners, financial institutions and potential shareholders with assurance that the highest level of professional standards and responsibility are applied to the projects we assess. This increases investor confidence and facilitates funding decisions.

We provide:

- World-class expertise and industry-recognition of 43-101 and JORC compliant technical reports
- IRR-driven solutions and financial analysis
- Geological modelling, surface and structural mapping
- Concept development, including value-driven trade-offs and optimisation
- Operational improvements and capital efficiency strategies

Providing value-driven, implementable solutions
Wood is an industry-recognised expert in every facet of mining project assessment, development and optimisation for all major commodities. Our world-renowned team of geologists, geostatisticians, open-pit and underground mining engineers, metallurgists, environmental scientists, cost estimators and financial analysts assess and provide value-driven solutions to maximise returns on orebodies, mining equipment and process facilities. We address the environmental regulations and requirements globally and perform audits, preliminary economic assessments, due diligence and reserve estimates on mineral deposits worldwide. Our multi-disciplined team delivers solutions tailored to your specific needs, for the right investment to achieve project goals.

Geology and resource estimation
We offer one of the industry’s most diverse talent pools in resource geology and geostatistics. We provide complete technical reporting resource estimation, drilling and exploration programs for virtually all commodities including precious and base metals, potash, lithium, coal, rare earths and diamonds.

Public reporting
We are unique among many large companies in that we offer full support of reporting requirements for public disclosure, from preliminary economic assessments through to detailed feasibility studies. Our experience and reputation in this area is unsurpassed having prepared hundreds of NI 43-101 technical reports and competent person’s reports. We fully understand and comply with international mining disclosure standards. Our teams have supported IPOs of significant mining assets and review of global mineral resources and mineral reserves for major mining companies.
Mine planning and design

We provide comprehensive mine and infrastructure planning and design for open-pit and underground mines to help you identify the best option for project development and make the most effective use of your capital.

A multi-disciplined team that unlocks value

Our worldwide team provides exceptional services for open-pit and underground mine planning, mining method and fleet selection, development and production scheduling, material handling, mine infrastructure design, backfilling, geotechnical engineering and cost estimating. We also offer a full range of expertise for environmental assessment, mitigation and monitoring, as well as mine closure, remediation and reclamation.

In the last decade, Wood has provided mine consulting services for projects globally ranging from less than 1,000 to more than 300,000 tpd and from concept to closure. Our mining studies are viewed as credible support documents for acquisition and project financing purposes.

We employ the latest mining technologies, methods and equipment fleets and have been the leader in shaft construction methods that employ ground freezing. We simulate ore and waste flow to identify bottlenecks in production, and to optimise development and production. The benefits of new technology such as automation and battery-powered equipment are included in tradeoff studies.

Our mining experts understand the complex interactions among mining methods, development and production schedules, and project financial performance. With a legacy of decades of experience on five continents and environments ranging from the tropics to the arctic, and at high elevation, we apply innovative solutions to maximise the value of our customers’ mines.

We provide:

- Open-pit and underground mine planning and infrastructure design
- Cut-off grade and phasing strategies to increase project value
- Block cave and stoping methods expertise
- Fleet selections and operations optimisation
- Blasting and fragmentation studies
- Geomechanics, ground support and pit slope stability
- Dewatering, filtered tailings and waste rock facilities
- Capital and operating cost estimates

Consulting studies for one of Canada’s largest underground gold mines

We completed a prefeasibility study, feasibility study, and NI 43-101 technical reports on an open-pit/underground gold project. Our scope included a geological audit and resource estimate; mine planning and design; ventilation network design and modelling. Numerous trade-off studies of mining, personnel movement and material handling systems were undertaken, which highlighted cost savings and optimisations that allowed the project to advance to the feasibility study. We then provided EPCM services for this 6,000 tpd mine.
Mineral processing and metallurgy

With industry-leading mineral processing and metallurgy expertise across a wide range of commodities, we develop metallurgical testwork programs to support conceptual flowsheet definition, through to detailed engineering and process plant optimisation to help you manage production risks and maximise economic returns.

Optimising value with specialised commodity and process experience

The mineral processing and extractive metallurgy required to develop new ore grades and sustain existing operations is growing increasingly complex as grades decline and locations become more remote. Widely recognised for our innovative use of concepts and technologies to investigate and provide solutions for a wide range of projects and commodities, we study what is in the ground then deliver designs engineered to extract the value, whether it be by physical separation, leaching, smelting or a combination of these processes. Our specialists apply operational knowhow with various technologies to deliver greenfield projects, plant retrofits, optimisation and expansions.

Our services include the development and supervision of metallurgical sampling and testwork programs, as well as interpretation of their results. We use a wide range of proprietary and commercial software for process modeling and simulation, optimisation, and advanced methods of capital and operating cost estimating.

World-renowned commodity and process experts

Metallurgical specialists in our team focus on development of flowsheets that achieve a balance between commodity recovery, operating costs, and capital costs based on the metallurgical test data available. Operational debottlenecking and plant improvements are key areas of focus. Financial models are developed in a connected manner with engineering studies as they advance, allowing assessment of the financial impacts of incremental changes in engineering.

Since 2006, we have provided geometallurgical modelling support for 15 exploration properties and operating base-metal and gold mines in Canada, Chile and Peru.

We provided environmental, geometallurgical, process, cost modelling, mine planning and other support for studies of a copper sulphide heap leach project in Peru for a leading global mining group. Our work included the prefeasibility study of a “starter case” project, addressing mining, processing, infrastructure, plant engineering, water management, geotechnical engineering, construction and conceptual closure planning, and cost estimating.
Engineering, design and project management

We deliver a full range of engineering, design, project management and project delivery services to ensure your most challenging projects are delivered safely, cost-efficiently and reliably with integrity.

Global expertise, customised local project delivery

We successfully deliver projects through our global reach, integrated project culture, experienced people, technical excellence and proven processes and systems. We can execute projects of any size almost anywhere in the world. A holistic view of each project is maintained across all disciplines at every stage of the project life cycle.

From remote locations and in extreme climate conditions, we have demonstrated our ability to meet technical, construction, operational and environmental challenges. Safe, capitaly aligned and designed, reliable projects and operations are achieved by integrating technology and data solutions globally with proven experience.

This is supported by global supply chain services that provide price certainty, quality control and meet expediting and logistics challenges.

We offer a full range of capabilities in both engineering and design to ensure the most efficient and economic plant including civil/structural, mechanical, piping, electrical and control systems.

Our experience includes engineering, procurement, construction and construction management (EPC and EPCM) project delivery as well as a variety of enhanced contracting models that provide commercial agility. We also have the expertise and experience to manage projects on your behalf, within schedule and allocated budget. Once complete, we can provide integrated solutions to sustain and optimise operating production facilities.

We provide:

- Systematic set-up; scalable from small to mega; globally-proven systems, processes and tools
- Integrated teaming to deliver optimised outcomes
- Agile approach to commercial delivery customised to each project

Solutions for geo-environmental and mine water treatment

Every mine requires unique tailings management solutions and Wood is a pioneer in this field. Our in-house testing lab optimises cement-based composite mix designs for paste-fill systems and alternative solutions that we design and build.
Delivering Saskatoon’s first greenfield potash plant in 40 years

As K+S Potash Canada’s design and project management partner, Wood led an integrated execution team tasked with delivering all aspects of engineering, procurement, construction and commissioning for the multi-billion dollar Bethune Mine in Saskatchewan. Applying our capital efficiency principles to the preliminary design of this multi-billion dollar project resulted in savings of 20% of capital cost.

Our approach to mining projects reduces social and environmental liabilities at the outset. We create innovative and safe solutions to mitigate acid rock drainage (ARD), and to manage cyanide use and recovery. Developing and implementing practical mine closure and reclamation plans, we partner with our customers to get their projects approved, permitted and built.

In addition, we are an industry leader in minewater treatment. In the last decade, we have designed and reviewed processes for nearly 200 treatment facilities around the world.

A focus on safe delivery in all we do

Wood’s relentless commitment to safety is deeply rooted in our culture and underpins everything we do. We have an industry-recognised safety record and comprehensive safety management system that forms the basis for the safety management program on every project.

Wood was awarded the prestigious CIM Mining & Minerals Project Development Safety Award for its outstanding project safety systems, culture and performance achieved during the project execution of K+S Potash Canada’s multi-billion dollar Bethune Mine in Saskatchewan, Canada. The project team achieved over 11 million hours without a lost-time injury to deliver the first greenfield potash mine in 40 years.

Our global technical expertise and project execution experience includes:

- Study and EPC for 2,050 ft. ventshaft – first application of its kind in Nevada, USA
- Study and EPCM of underground gold-silver mine, processing facilities & infrastructure in Canada
- EPCM of one of the largest gold projects in the world in Turkey
- Material handling EPC for one of the largest iron ore mines in Australia
- EPCM of largest uranium project in the world in Africa
- EPCM of largest and most modern greenfield potash project in the world in Canada
- EPC in joint venture for one of the largest undeveloped gold deposits in the world
- Material handling EPC for expansion efforts at a copper mine in Chile
- Integration contractor overseeing EPC for a leading global resources company in Chile
- EPCM for South America’s largest tin producing mine
We provide innovative material handling solutions and a complete range of services for all types and sizes of conveyors, crushing/screening stations, storage systems and stacking systems to improve production and efficiency and optimise your resources.

Improving production and efficiency
We provide innovative material handling solutions for surface and underground mines, including crushing plants, overland conveyors, stockpiles/silos, storage/reclaim facilities, ports, and shiploaders, as well as stacking systems for ore, waste, tailings and minerals.

Our subsidiary, Terra Nova Technologies (TNT) is a recognised supplier of innovative bulk material handling systems that focuses on three main areas.

Crushing and stacking of bulk materials
Crushing and stacking of materials includes gyratories, jaws, secondary and tertiary cone crushers, and sizers – complete plants or mobile systems to reduce materials to a size that can be conveyed and/or processed. Once sized, whether it be ores, waste rock or filtered tailings, TNT has developed and installed over 75 stacking systems worldwide, from the very small 300 tonnes per hour (t/h) gold heap leach pads using ‘grasshopper’ portables, to the largest stacking systems available for capacities greater than 10,000 t/h using our patented Super Portable® technology.

Overland conveyors
Overland conveyors have become longer, higher capacity and capable of incorporating vertical and horizontal curves, regenerative capability, and operating in series over very long distances. This overland technology is a major focus of many mining customers attempting to lower the haulage cost component of their mines.

In-pit crushing and conveying (IPCC)
In-pit crushing and conveying (IPCC) systems and other technologies convey from shovel to point of use. The combination of very flexible/mobile Super Portable conveyors linked to very large transportable ex-pit conveyors and overland conveyors allows for the reduction of haulage costs and improvements in productivity required by many operations.

We develop dynamic simulation models to mimic complex systems with variability considerations that help identify best design and operations improvement. Our models help demonstrate how a proposed or existing system will behave under certain conditions, which helps you make better-informed business decisions and optimises performance to maximise value generation.

Super Portable mobile stacking technology
TNT’s Super Portable System Technology is the result of years of innovative design work and a decade of system installations around the world that have revolutionised stacking systems. It allows fully independent movement of each piece of mobile conveying equipment on the stacking pad. This patented mobile stacking technology reduces scheduled down time, and increases system mobility and operational flexibility.

We provide:
- World-renowned Super Portable mobile stacking technology
- Design-supply and EPC of overland conveyors trippers, horizontal and vertical curves, regenerative power systems
- Multi-lift heap leach systems, in-plant conveyors and belt feeders, crushing plants
- Automation and technology-based material handling solutions

Innovative multi-lift heap leach stacking systems
TNT designed, supplied and installed three of the world’s largest mobile multiple-lift heap leach stacking systems (7,200, 6,000 and 8,550 t/h) for three copper mines in Arizona and Chile.

85%+
Supplied 85%+ of world’s multi-lift heap leach stacking systems

50+ km
Over 50km of overland conveyors operating worldwide
Our patented Super Portable technology allows fully independent movement of each piece of mobile conveying equipment on the stacking pad.
Wood is a global leader delivering technical, engineering and project services across the entire asset life cycle. We operate in more than 60 countries, employing about 60,000 people. We provide performance-driven solutions from development to decommissioning for a broad range of industries including all energy sectors, process and refining, power and utilities, mining and manufacturing.

For further information please go to:

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