



WorleyParsons

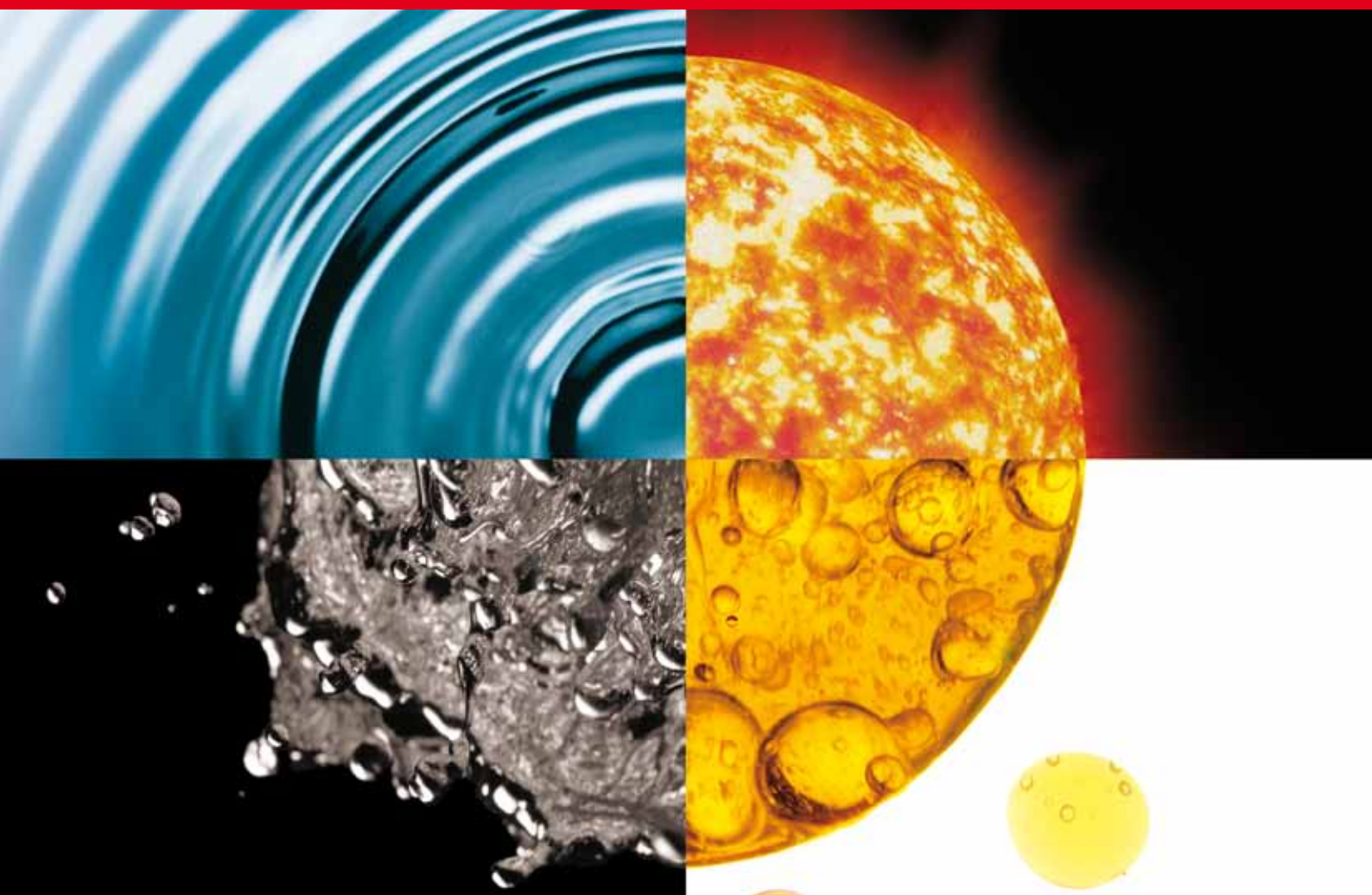
resources & energy

EcoNomics™

Select

Specialist Front-end Division of WorleyParsons

Capability and Experience





WorleyParsons

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“There is no task so important or so urgent in our business, or our customers’ businesses, that it overrides the need to work safely...”

John Grill, WorleyParsons CEO

Zero Harm is our corporate vision for health, safety & the environment (HSE).

We are committed to our vision; it applies to all of our operations, at all times, in all locations, and at all levels of responsibility.

We will actively work to align our expectations and behaviors with those required to achieve our vision through a dedication to continuous improvement.

The launch of our HSE framework, OneWay™, enables us to further align and consolidate our global systems and procedures and continue to work with our personnel to reinforce a culture that underpins our drive to achieve our corporate differentiator of industry leadership in the HSE performance.

OneWay[™]
to zero harm

Corporate Overview

WorleyParsons is a leading global provider of professional services to the resources & energy sectors, and the complex process industries.

We cover the full asset spectrum, both in size and lifecycle, from the creation of new assets, to services that sustain and improve operating assets.

Our business has been built by working closely with our customers through long term relationships, anticipating their needs and delivering inventive solutions through streamlined, proprietary project delivery systems. Strong growth continues to characterize our performance both through organic development and through strategic acquisition as we strive to provide tailored services wherever our customers need us.

- Hydrocarbons
- Minerals & Metals
- Power
- Infrastructure & Environment

37
countries

114
offices

31,700
personnel

EcoNomics[™] Delivering profitable sustainability

EcoNomics™ is our range of services and technologies that profitably embed environmental, social and financial sustainability into project delivery, across the asset lifecycle. It is a seamless extension of our established project delivery capability in the key areas of Assessment, Efficiency and Treatment & Mitigation.

We are committed to working with our customers to turn their sustainability objectives into good business practice.

WorleyParsons *Select*

Select is a specialist business line of WorleyParsons, focused on project viability assessment and development concept selection. *Select* supports decision making on critical front-end planning issues that enhance our customer's ultimate business objectives.

WorleyParsons operates in all five phases of an asset's lifecycle with our tailored business lines, *Select*, *Deliver* and *Improve* responding to our customers' individual needs in each project phase. *Select* brings real world experience into the front-end value adding phases to maximise investment return and underlying confidence. *Deliver* converts the highest potential value option identified by the *Select* division into a fully defined and successfully executed project. *Improve* supports and enhances customers' assets throughout the operating lifecycle.

Select, through its focus on the critical early phases of projects:

- Adds technical definition to reduce technical risk
- Optimizes the opportunity and maximizes the inherent value
- Creates the business case and assesses the probable life cycle costs
- Assists the customer in securing the necessary approvals and prepares for the *Deliver* business line

Through *Select*, we advise asset owners, operators, investors, financial institutions and governments on the best path forward by combining the niche specialist skills required within the front-end of projects with WorleyParsons' extensive, practical experience in total project delivery and plant operation. *Select* utilizes a global database of major capital projects to enable customers to make strategic investment decisions with accurate and reliable planning data, significantly increasing their confidence that the critical planning decisions will underpin their ultimate business objectives.

Our specialists have a thorough understanding of the total business value chain including market analysis, financial modelling, technology selection, Greenfield site selection, approvals management, new plant configuration, existing plant optimizations and the development of the detailed project realization methodologies. The combination of strategic front-end planning skills integrated with extensive project execution capabilities, together with WorleyParsons' technological and commercial neutrality, differentiates *Select* in the consulting market as a market leader.

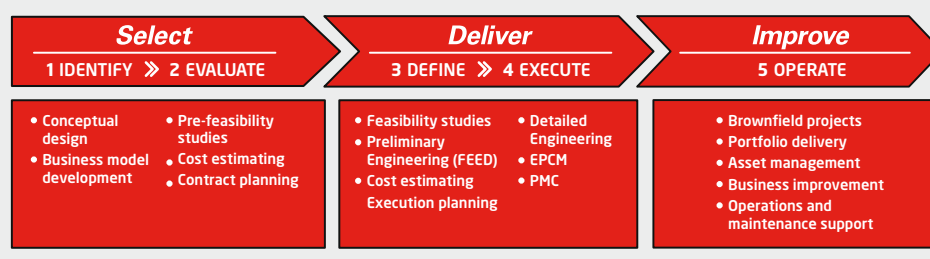
Technological and commercial **independence**

Cost estimates for projects from

20k-20b
total installed cost

2,500+
studies per year

WorleyParsons' Project Phases



WorleyParsons' experience covers all five phases of the asset lifecycle. In each one of these phases we understand the critical issues and apply our specialist business lines, *Select*, *Deliver* and *Improve* to enable our customers to achieve their business objectives.

Our phased approach enables consistent project delivery worldwide and WorleyParsons' project systems are fully aligned to this process.



Services

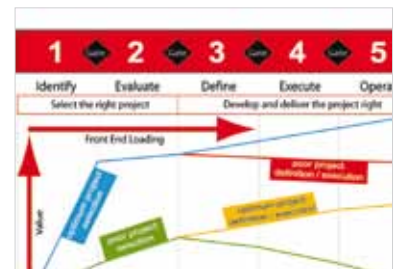
Technical Development

Through the course of a *Select* study, specialist engineering staff add technical definition to the development concepts identified within the initial framing workshops. Traditionally this technical definition is constrained by the lack of data available on which to base a design. *Select* makes use of the extensive database of current design projects and archives of existing facilities to gain the analogues from which to quickly assemble the concepts for screening. Technology selection studies are undertaken from the company's stated position of technology neutrality, to provide our customers the information they require to compare the 'tried and tested' with the risk weighted 'new and emerging'.



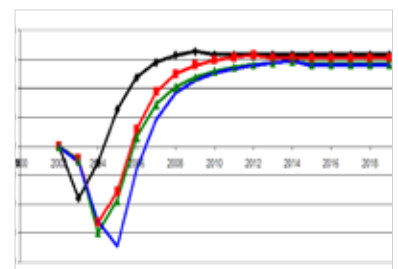
Value Adding

Phases 1 and 2 (Identify and Evaluate) are recognized as the value adding phases. It is within these phases that the opportunity to find the up-side of the development cases is found. *Select* works best by forming an integrated team with the customer's staff bringing technical development in line with operational know how to identify the areas of value enhancement. *Select* makes use of formalized Value Improving Practices to ensure our customers achieve the maximum possible front-end loading within the constraints of the development schedule and budget.



Business Model Creation

Select assists in the creation of the required Business Models in a number of ways. Firstly, by the creation of the Capital Expenditure (CAPEX) estimates using propriety in-house tools designed to quickly assemble building block style estimates validated from past projects using up-to-date base rates. Secondly, *Select* typically works with our customers to build the ongoing Operating Expenditure (OPEX) models to enable the life cycle cost comparisons between competing development options to take place. Lastly, *Select* can provide risk based Net Present Value modelling using the EcoNomcis™ DELTA tool. This modelling can include additional externalities (such as carbon taxes) for customers seeking to future proof their businesses by analyzing a broader range of possible futures.



Project Planning

The forming of the Decision Support Package (DSP) is the closing phase of *Select's* work and provides the beginning foundation for the *Deliver* phase. The DSP contains all required information upon which the decision to proceed with the project is made. The project execution planning skills of the broader WorleyParsons organization are made available through *Select*, giving our customers access to detailed planning engineers, senior procurement staff and field construction personnel. This enables *Select* to provide services such as Execution Strategy formation, long lead item identification and construction logistics planning by staff expert in these fields.



Customer Sector Groups

Hydrocarbons

WorleyParsons provides full-scope project delivery in deepwater, floating, subsea and conventional structures, topsides, onshore oil and gas, pipelines, LNG, refining, petrochemicals and sulphur management. Our local presence at all major international oil and gas centers ensures that *Select's* specialist personnel are familiar with the challenges posed by both Greenfield and Brownfield developments – including those in remote, hostile and logistically demanding environments. Local knowledge, combined with extensive international experience, ensures that development options are reviewed at both a technological and practical level, and the opportunities, costs and risks are carefully evaluated at the concept selection stage.



Power

WorleyParsons delivers services to all segments of the power market including: renewable energy; advanced coal; nuclear, gas turbine/combined cycle; transmission and distribution networks; and retrofit project solutions from pre-feasibility to asset operation and maintenance. Our *Select* services range from feasibility and site selection studies to power system analysis through to due diligence and financial modeling for the sale of assets. These services assist governments and private enterprise in quantifying risk and financial value to provide a clear picture of what is required to make each project a reality.



Minerals & Metals

WorleyParsons has had particular success integrating multi-discipline engineering expertise and experience with licensed technology and operational know-how to deliver innovative solutions to customers. Using this knowledge *Select* chooses technologies that complement our customer's needs while eliminating or reducing interface difficulties during detailed design and construction. By drawing upon our Power and Infrastructure and Environment capabilities we deliver comprehensive 'mine to market' projects and solutions in base metals, alumina, aluminium, coal, iron ore, steel, chemicals and ferrous metals around the world.



Infrastructure & Environment

The Infrastructure and Environment group has the proven ability to deliver technically outstanding, cost effective solutions to some of the most challenging projects in the world. Our comprehensive engineering capabilities, hands-on knowledge and experience, understanding of project issues and our customer focus have formed the foundation of project success. *Select* contributes to these achievements by including the key attributes of safety, constructability, operability and sustainability into the project evaluation criteria to choose the best possible long term solution from the outset. This early consideration of key attributes increases the value returned to our customers.





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Hydrocarbons

Select delivers value to our customers by providing independent expert advice on project assessment and selection, drawing upon over 60 years of experience in the global hydrocarbons industry.

Hydrocarbons *Select* accesses in depth cross industry experience to provide oil and gas commercialization studies, pre-feasibility assessment, and facility location and pipeline route assessment. To align with our customers requirements we understand the importance of being able to quantify risk and economic value at this early stage.

Greenfield development: The *Select* service leverages the experience of WorleyParsons global operations on recent Greenfield projects across all phases. These projects provide updated information on schedule, execution requirements and costs. This information is fed back into *Select* projects to design optimum solutions that consider technical specifications, geographical conditions, local contractor preferences and schedule requirements resulting in project assurance for our customers. The expertise of the hydrocarbons *Select* team has been further enhanced by the recent acquisitions of INTEC and Sea Engineering forming INTECSEA. With these acquisitions WorleyParsons can deliver the full scope of services to the hydrocarbons industry including subsea, floating and deepwater services.

Brownfield optimization: Through our *Improve* service we are involved in over 60 hydrocarbons long-term and integrated service contracts that engage our engineers in the operation and maintenance requirements of onshore and offshore hydrocarbon facilities. Consequently, we have first hand experience in the varied requirements of different facilities and the demands placed on operators, who are required to balance aging assets with a need to increase production whilst maintaining or improving safety and environmental performance. By using the lessons learned from these contracts the *Select* service evaluates project options considering the impact to operators and the facility and endeavours to provide solutions that minimize the impact on the operating facility.

Strategic planning and financial analysis: *Select* is a trusted source of independent strategic advice and support to owners, operators, partners, investors and governments. This enables our customers to be confident that the advice we provide reflects the best interests of their business – whatever the challenge.

60+

years oil and gas experience

500+

debottlenecking and optimization studies performed annually



Project: North Slope Renewal Program**Customer: BP Exploration Alaska****Phases:** IDENTIFY >> EVALUATE >> DEFINE >> EXECUTE >> OPERATE

Alaska

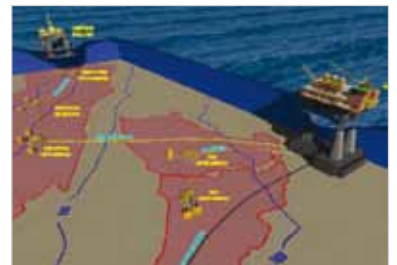
BP Exploration Alaska (BPXA) established the Alaska North Slope Renewal Program to determine the facility and infrastructure requirements for the next 50 years of operation for its Greater Prudhoe Bay (GPB) and Milne Point (MPU) assets.

Select studies performed by WorleyParsons included a high level holistic condition assessment of GPB processing facilities and infrastructure, to create a baseline against which renewal development options can be compared. High level cost estimates for conceptual 'cost blocks' for the required modifications and expansions were developed enabling a small team to evaluate a large number of potential development scenarios very quickly and report results clearly to the BPXA project team.

**Project: Wheatstone Concept Selection Study****Customer: Chevron Australia Limited****Phases:** IDENTIFY >> EVALUATE >> DEFINE >> EXECUTE >> OPERATE

Australia

The study involved concept narrowing and selection for all upstream onshore and offshore facilities to process gas from the Wheatstone and Lago gas fields. Activities included the technical evaluation of a comprehensive range of development scenarios, the development of cost estimates, execution schedule, and basis of design development as well as supporting the Chevron team to meet its toll gating and internal approval requirements.

**Project: Mexilhao Gas Export Pipeline****Customer: Petrobras S.A.****Phases:** IDENTIFY >> EVALUATE >> DEFINE >> EXECUTE >> OPERATE

Brazil

Petrobras engaged INTECSEA, the deepwater division of WorleyParsons, to provide the front-end engineering design, installation feasibility analysis, stability analysis and the specification for the construction for the new 34 inch, 130 km long pipeline that will be installed in water depths from 170m to shore. The pipeline will connect the Mexilhao fixed platform with the gas treatment facilities in Caraguatatuba, currently under construction.

**Project: Singapore LNG Terminal****Customer: PowerGas****Phases:** IDENTIFY >> EVALUATE >> DEFINE >> EXECUTE >> OPERATE

Singapore

To increase the security of Singapore's domestic gas supply, PowerGas is constructing the nation's first Liquefied Natural Gas (LNG) regasification terminal on Jurong Island. WorleyParsons is providing PowerGas with a Basis of Design and Front-End Engineering Design. Key activities also include the development of the EPC contractor tender documents with their subsequent evaluation and recommendations for contractor selection. PowerGas' relationship with WorleyParsons spans over 15 years, during which we have provided a range of specialist engineering services.





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Power

We understand what it takes to choose and integrate new power plants into existing power infrastructure, provide standalone power requirements for our hydrocarbons and Minerals & Metals customers, and carry out due diligence for the sale of private and government assets.

WorleyParsons ability to successfully undertake these tasks is built on our comprehensive range of professional services provided to the power industry for the last 100 years. WorleyParsons *Select* is technology neutral and excels when projects require flexible solutions or involve many interfaces. *Select* provides strategic planning support, concept development and technology selection advice for meeting future electrical demand.

Strategic planning and financial analysis - Our access to current cross industry experience and a global database of major capital projects enables our customers to make strategic investment decisions with accurate and reliable planning data. The combination of providing a front-end 'think tank' with access to senior technical staff differentiates our *Select* offering from others within the front-end consulting market.

Meeting future demand for electricity - Our in-depth working knowledge of the available options in power generation technologies, current environmental regulations, carbon constraints and sustainable operational characteristics enables WorleyParsons to assist our customers in selecting the best solution for future power generation.

Existing plant optimization - Our experience gained through long-term asset service agreements, together with Brownfield plant upgrades (managed through the WorleyParsons' *Improve* business), enables our customers to effectively maintain and enhance the value of aging assets. *Select* combines this operational know-how with innovative engineering solutions to improve our customers' plant efficiency, increase output, improve environmental performance, and thus improve the bottom line. Our in-house air quality control capability also enables us to offer environmental compliance strategy development and planning.

100+

years power industry experience

192,800+

total MW of power capacity



Project: ZeroGen Project**Customer: Queensland Government****Phases:** IDENTIFY > EVALUATE > DEFINE > EXECUTE > OPERATE

Australia

This is the first power plant in the world to combine Integrated Gasification Combined Cycle (IGCC) and Carbon Capture and Storage (CCS) technology to produce low emission base load electricity.

WorleyParsons has completed the pre-feasibility phase and has initiated the FEED phase for this advanced coal power demonstration project. We are assisting the ZeroGen project to meet its goals to create clean power and to demonstrate the viability of integrating coal-based gasification combined cycle, carbon capture and storage, creating deep cuts in carbon dioxide (CO₂) emissions. Our design includes the potential to reduce emissions in excess of 75 percent, which can be scaled up to 90 percent in full-scale commercial plants.

**Project: Ivanpah Solar Electric Generating Station****Customer: BrightSource Energy Inc****Phases:** IDENTIFY > EVALUATE > DEFINE > EXECUTE > OPERATE

United States of America

WorleyParsons is the owner's engineer for BrightSource Energy Inc. Three central receiver solar thermal power plants will deliver 400MW of renewable generating capacity. When the project is complete, it will be the first commercial solar central receiver system in the United States. We are providing engineering support for the California Energy Commission (CEC) Application for Certification, conceptual design of the power block, solar tower, high voltage transmission interconnections, and technical analyses including far field noise and air emissions modelling.

**Project: Belene Nuclear Power Plant Project Feasibility Study****Customer: Natsionaina Elektricheska Kompania (NEK)****Phases:** IDENTIFY > EVALUATE > DEFINE > EXECUTE > OPERATE

Bulgaria

WorleyParsons developed the Environmental Impact Assessment (EIA) for the Belene site and a technical and economic feasibility study for the completion of Belene Units 1 and 2. The feasibility study, considered the technical and life cycle economic impacts, from initial construction through plant operation and nuclear radwaste disposal. WorleyParsons gained detailed and specific knowledge of the Belene site and plant and is now serving as Architect/Engineer and project manager for the project execution.

**Project: Senoko Power Station Stage 1 Repowering****Customer: BrightSource Energy****Phases:** IDENTIFY > EVALUATE > DEFINE > EXECUTE > OPERATE

Singapore

WorleyParsons performed owner's engineer services for this project at Senoko Power Station in Singapore. Three 25 year old 120 MW condensing steam turbines were repowered into 360 MW multiple shaft combined cycle power units based on Alstom Power GT26B gas turbines. Each combined cycle block had a configuration of 1GT+1HRSG+1ST. The gas turbines have dual-fuel (natural gas and diesel oil) capability, and were designed and optimized to fire natural gas from two sources.





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Minerals & Metals

Each project has its own unique requirements and solutions, ranging from community engagement, environmental impacts, site conditions, logistics, through to the complexity of the plant. WorleyParsons' depth and breadth of experience enables us to provide tailor made solutions to meet our customers' needs.

Select specializes in providing pre-feasibility and feasibility studies for Alumina, Aluminium, Base Metals, Chemicals, Coal, Iron Ore and Ferrous Metals facilities. Our capacity to deliver these services is based on a combination of experience in some of the resource sector's most challenging and complex projects.

Strategic investment decision support: Local and regional industry experience enables *Select* to access relevant project data to provide advice that is both accurate and dependable, and supports our customers strategic investment decision making. Our services include, site selection, technology selection, environmental impact of options, community impacts rapid 'order of magnitude' cost screening, CAPEX estimating and OPEX modeling, economic analysis and cost and schedule risk analysis.

Opportunity and risk management: Key to maximizing value and returns on investment through successful implementation of projects is the identification of project risks, bounding the downside, while continuing to add value through identification of upside opportunities. WorleyParsons has a number of tools to assist our customers to minimize project risks and maximize the value of a project early in the development process.

Seamless project realization: We have the proven systems and technical capability to successfully bring together the experience and knowledge gained in all phases of project development to provide our customers with a complete project implementation solution. Offering single point solutions to our customers simplifies the management tasks and aids in reducing the engineering costs associated with taking a project from inception to completion.

Mine to market solutions: The successful delivery of major Greenfield resource developments involves the completion of numerous interrelated project elements into a safe, environmentally sustainable, fully integrated and cost effective production operation. Our expertise in the Minerals & Metals, Infrastructure, Environment and Power sectors enables us to provide customers with a project delivery capability that spans all of the project elements.

45+

years mineral & metals experience

500+

major greenfields and asset optimization studies performed

1,000+

brownfield performance enhancing projects globally



Project: Varennes Greenfield Plant
Customer: Titanium Metals Corporation (TIMET)
Phases: IDENTIFY > EVALUATE > DEFINE > EXECUTE > OPERATE

Canada

WorleyParsons Select is providing engineering, environmental permitting support and project management services for a scoping study for a new Titanium sponge plant.

All areas of the existing sponge plant facility, including magnesium recovery, vacuum distillation, crushing and shearing, and gas handling were analyzed for streamlining opportunities. Following completion of the scoping study, additional activities included geotechnical services, basic engineering and final structural engineering for the main process building and a capital estimate for the new plant. As part of the design process, a computerized model was used to verify the plant layout and to determine bottlenecks. Value improvement practices streamlined the plant operations and for future consideration on the final design. In addition, we applied resource utilization concepts to identify savings in utility usage and to decrease the facility's impact on the environment.



Project: Bozymchak Cu/Au Mine Definitive Feasibility Study
Customer: Kazakhmys
Phases: IDENTIFY > EVALUATE > DEFINE > EXECUTE > OPERATE

Kyrgyzstan

The Bozymchak mine is planned to supply copper concentrate to smelters in neighboring Kazakhstan, with gold contained as a significant by-product. Kazakhmys engaged WorleyParsons to prepare the early feasibility studies to permit fast-track design, construction and commissioning of the mine and processing plant. The objective is to optimize the design of the mine and location of the process plant and associated infrastructure situated in difficult mountainous terrain. The feasibility study will provide details beyond those required for local approvals to satisfy the lending criteria of international banks. Our *Select* team employed risk management techniques early in the project to rapidly identify, understand and manage design, safety, cost and schedule risks.



Project: Rio Tinto Aluminium Yarwun Formative Stages
Customer: Rio Tinto Aluminium
Phases: IDENTIFY > EVALUATE > DEFINE > EXECUTE > OPERATE

Australia

Our involvement with Rio Tinto's Aluminium Yarwun refinery project spans more than 17 years. Following pre-feasibility and bankable studies WorleyParsons was engaged to investigate alternate refinery locations and new process and configuration options to take the production rate to 1.4 Mtpa. We worked closely with Rio Tinto Aluminium to further improve process design, optimize plant layout and identify innovative business improvement ideas resulting in cost improvements that significantly contributed to the project approval in 2001. WorleyParsons led the refinery engineering function from the formative stages through to project sanction and continue to support the operations in the areas of process, engineering and implementation of sustaining projects.



Project: Various Chemical Projects in China
Customer: Various
Phases: IDENTIFY > EVALUATE > DEFINE > EXECUTE > OPERATE

China

Having executed over 200 projects in China, and with a growing portfolio of overseas projects, MaisonWorleyParsons' *Select* division provides expertise in the early phases of project development, particularly the preparation of basic engineering packages and definitive cost estimates. As a holder of the required in-country Design and Consultant licenses and with well-established IP protection systems and processes, *Select* also provides strategic advice and front-end design services to potential external investors in China. In providing this roadmap through the permitting and project application process, *Select* assists in achieving timely completion of the preparatory steps required to reach full project sanction.





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Infrastructure & Environment

WorleyParsons is committed to engineering environmentally and financially sustainable projects. *Select* begins this process by selecting the optimal solution from the outset.

We deliver infrastructure solutions to customers within both the Resource and Urban Infrastructure markets, via the four subsectors of: Coastal & Marine; Water & Wastewater; Transport; and Environment. Across these subsectors we offer the following services:

Master Plan Development – Large geographical projects with a high degree of complexity have numerous interfaces that need to be coordinated. WorleyParsons key strength lies in our capability to assemble multidisciplinary teams led by experienced master planners capable of integrating all aspects of these projects reducing contractor interfaces, working in a cohesive manner to provide a systematic way forward.

Supply Chain Solutions – *Select* provides high level strategic planning and concept development for the entire supply chain from the resource to the market. We offer a single point of contact coordinating all facets of the supply chain, delivering the best business outcome in the shortest possible time, while keeping the design flexible enough to accommodate changes in the business environment.

Water Cycle Management - Our team of water professionals can identify and deliver the optimum solution to the supply of water for process and daily operations over the lifetime of a project, combined with a long term strategy for managing liquid waste streams. The *Select* team works collaboratively with customers in the critical early stages of a project - providing planning, project identification, options analysis, business case development, conceptual designs, and pre-feasibility and feasibility studies.

Site Selection and Approvals Management - Regulatory approvals for major developments are often complex and may pre-determine the rate of progress of a proposed development. *Select* provides an integrated site selection and approvals management service to provide customers with an efficient path through the regulatory maze.

Construction Logistics - WorleyParsons is critically aware that each project has its own logistical drivers, and that these need to be comprehensively analysed and understood during the *Select* phase if the most cost effective execution strategy is to be realised. Having construction management input early in the concept development stage allows our customers to address topics such as early works and temporary infrastructure; overall workforce logistics strategy and the use of high value project delivery techniques.

50+

years experience
in infrastructure

3,000+

personnel engaged in
the delivery of resource
infrastructure projects

Master planning
projects to the value of

\$70b+



Project: Pilbara Iron Ore and Infrastructure Project**Customer: Fortescue Metals Group****Phases:** IDENTIFY >> EVALUATE >> DEFINE >> EXECUTE >> OPERATE

Australia

In May 2008, the ambitions of Fortescue Metals Group to establish a new iron ore operation were realized when the first shipment of iron ore departed Port Hedland headed for China. This milestone marked the culmination of more than three years of work by WorleyParsons.

WorleyParsons' involvement began with *Select* undertaking the Definitive Feasibility Study for the FMG Iron Ore and Infrastructure Project, which consisted of a new mine site and port facilities, complete with the associated materials handling facilities and a 250km rail development connecting the mine to the port. We were also responsible for regulatory conformance and environmental project management construction complying with the Public Environmental Review and Environmental Management Plans.

**Project: King Abdullah Economic City – Millennium Seaport****Customer: EMAAR Properties****Phases:** IDENTIFY >> EVALUATE >> DEFINE >> EXECUTE >> OPERATE

Saudi Arabia

The King Abdullah Economic City near Rabigh, north of Jeddah, is a US\$26.6 billion development covering over 55 million m² along a 35km shoreline on the Red Sea. The port will have an integrated transport system with seamless high speed transition from sea to rail, road and air, making the city the main gateway to the Central and Eastern Provinces as well as the entire Kingdom. The port, with its close proximity to holy cities, will have a dedicated Haj terminal (with adjoining hotels and other world class amenities) to accommodate over 500,000 pilgrims every season. WorleyParsons performed the initial planning for the port and developed the port concept and provided a detailed estimate of construction costs. The planning phase included the design of a state-of-the-art container port with a throughput capacity of up to 6 million TEU/year.

**Project: Exshaw - Zero Water Discharge Feasibility Study****Customer: Lafarge Canada Ltd****Phases:** IDENTIFY >> EVALUATE >> DEFINE >> EXECUTE >> OPERATE

Canada

This feasibility study involved a review of various options to reuse and recirculate water in an industrial cement cooling process, necessary for a planned expansion of the facility. The study's goal was to develop a zero water discharge approach by increasing reuse onsite without compromising the cooling temperature of cement. This, in turn, reduced the amount of impacted water discharged back to the river. The study focused on reusing as much of the existing infrastructure onsite as possible, and developed new innovative ways to mitigate impacts on the surrounding environment.

**Project: Impact Assessment for the New Quito Airport****Customer: Corporación Quiport, S.A. / Aecon Group Inc.****Phases:** IDENTIFY >> EVALUATE >> DEFINE >> EXECUTE >> OPERATE

Ecuador

The new Quito airport is in the process of being built on a 1,500ha site (ten times larger than the existing airport) about 18km from the centre of town. WorleyParsons prepared a full Environmental and Social Impact Assessment for the construction of the new airport which met the requirements of four different international financial institutions. The study included a social baseline report, demographic analysis, social impact assessment and social management plan. We also developed the final Socio-Environmental Management Plan that will be used during construction and operations of the New Quito Airport.





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EcoNomics™ Assessment

WorleyParsons provides customers with strategic decision making support by quantifying project sustainability during the critical *Select* phase.

EcoNomics™ enables our customers to properly consider the social, ecological, community and financial impacts of existing and planned facilities. The key to long-term profitability for projects is increasingly dependent on ensuring these issues are considered in the *Select* phase and embedded into the subsequent delivery phases of the project.

We work closely with our customers in framing workshops to agree on the key project objective, identify project options, and determine the financial and external assets to be assessed and risks to be evaluated. This early interaction with the widest possible range of stakeholders provides a clear focus for the assessment and assists in building relationships.

WorleyParsons has developed a suite of proprietary assessment tools with the ability to consider any combination of financial, environmental and social issues for project analysis on a range of possible future conditions and relate them to the customer in the single universal metric of money. Quantifying these different elements is made possible by using the latest available economic studies, literature and research, along with current market costs, to value externalities. All external values are taken from reputable organisations such as the UN, World Bank, and other government and industry bodies worldwide.

We use likely ranges of values for external assets which allow uncertainties to be harnessed, providing better decision making, risk mitigation and a more robust project outcome. Evaluating project options in this way assists our customers to optimize their environmental and social spending to avoid unnecessary expenditure driven by outside parties.

1

common metric for comparing all solutions - money

30+

external and internal variables to consider

100+

EcoNomics™ assessments completed on projects worldwide

Project: Leismer Expansion Project

Customer: Statoil Hydro

Phases: IDENTIFY >> EVALUATE >> DEFINE >> EXECUTE >> OPERATE

Canada

The EcoNomics™ DELTA tool allowed Statoil Hydro to select the most sustainable power and steam generation options for their SAGD plant both now and in the future.

WorleyParsons was requested to complete an EcoNomics™ assessment to determine the most sustainable combination of power generation, steam generation and carbon capture and storage to support the operation of a steam assisted gravity drainage (SAGD) plant with an associated 44,972 bbl/day of bitumen production. An EcoNomics™ framing workshop, risk analysis study and the EcoNomics™ DELTA tool provided insight into the overall economics and sustainability of the power and steam generation decision. Our analysts took into account the likely changes in policy and regulation in Alberta over the life of the project and the likely changes in the values placed on key external resources, notably carbon and water.





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Our Vision

WorleyParsons will be the preferred global provider of technical, project and operational support services to our customers, using the distinctive WorleyParsons culture to create value for them and prosperity for our people.

Leadership

- Committed, empowered and rewarded people
- EcoNomics™ - Delivering profitable sustainability
- Integrity in all aspects of business
- Energy and excitement
- Minimum bureaucracy

Relationships

- Rapport with all stakeholders
- Open and respectful
- Collaborative approach to business

Agility

- Smallest assignment to world-scale developments
- Local capability with global leverage
- Responsive to customer preferences
- Optimum solutions customized to needs

Performance

- Zero harm
- Results for our customers and other stakeholders
- World-class resources, capability and experience



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EcoNomics™

**For further information about
our global capability email:
select@worleyparsons.com**

www.worleyparsons.com

