



# IRON ORE

Independent Metallurgical Operations Pty Ltd (IMO) has extensive experience in the development of process flowsheets for Direct Shipping Ore (DSO), Magnetite and complex iron deposits. Our team has proven capabilities in the design and management of iron ore testwork programs, project development, project review, blend optimisation and operations throughout Australia and worldwide.

Our scope of services ranges from sample selection, ore characterisation and mineralogy, through to management of metallurgical testwork, process aspects of scoping and feasibility studies and client representation onto plant commissioning, ramp up and process plant optimisation.



PROJECT	CLIENT	OUR WORK
Roy Hill Project, Western Australia	Roy Hill Holdings	<p><b><u>Roy Hill 1 Project DFS Consulting and Commissioning:</u></b></p> <ul style="list-style-type: none"> <li>Bench and pilot testwork design and management – scrubbing, screening, Desliming, UCC and Spirals beneficiation of Marra Mamba Ore.</li> <li>Pilot scale marketing bulk sample preparation.</li> <li>Process options and risk assessment – including LIMN process modelling.</li> <li>Process engineering; delivery of material balances, PDC, equipment size selection, PFD and P&amp;ID review.</li> </ul>
Brockman 4, FFP Western Australia	Rio Tinto	<p><b><u>PFS Process Studies:</u></b></p> <ul style="list-style-type: none"> <li>Process options analysis (LIMN modelling) incorporating: Jigging, elutriation, spirals and magnetic separation.</li> <li>HLS and incremental grade analysis assessing yield optimisation and impact on feed and concentrate blending strategies.</li> <li>Operations support for the commissioning and ramp-up of the FFP plant.</li> </ul>
Cloudbreak Operation, Western Australia	FMG	<p><b><u>Routine Process Sample Analysis:</u></b></p> <ul style="list-style-type: none"> <li>Flowsheet development and metallurgical testwork including tertiary crusher feed comminution and size distribution testwork. A range of physical characterisation and comminution testwork was also conducted to determine comminution properties of HPGR feed and discharge samples;</li> <li>Metallurgical testwork program assessing Desands Fines dewatering targeting a minimum moisture content of the process plant Stacker Fines;</li> <li>Flowsheet development as well as metallurgical testwork, including comminution and size distribution testwork.</li> </ul>
Roy Hill Project, Western Australia	Roy Hill Holdings	<p><b><u>Wet Plant Sitework:</u></b></p> <ul style="list-style-type: none"> <li>Process plant systems and mass balance auditing.</li> <li>Performance guarantee testing.</li> <li>Design and execution of bulk ROM sampling and screening campaign to quantify ROM size distribution.</li> <li>Process plant survey design and management.</li> <li>Development of process water and chloride balance including assessment of water source quality, impact on Fines and options for chloride mitigation.</li> </ul>

► Please contact us for more details on how we can provide you with assistance and support to your project.

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## IMO Consulting & Operations

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# IRON ORE continued (1)



PROJECT	CLIENT	OUR WORK
Christmas Creek Operation, Western Australia	FMG	<p><b>Existing Equipment Process Flow Optimisation:</b></p> <ul style="list-style-type: none"> <li>Preliminary study and metallurgical testwork to investigate re-tasking the existing belt filters at site for duty on WHIMS Concentrate Thickener Underflow;</li> <li>Metallurgical testwork on WHIMS Matrix boxes, identifying the root cause for aperture blockage.</li> </ul>
Roy Hill Project, Western Australia	Roy Hill Holdings	<p><b>Geometallurgy and process modelling:</b></p> <ul style="list-style-type: none"> <li>Geometallurgical drill core testwork review and data analysis.</li> <li>Geomet database design and implementation.</li> <li>Process plant model design – geomet resource simulation.</li> <li>Low grade studies - Dense Media and WHIMS.</li> <li>Process modelling - existing and future unit processes.</li> <li>Geophysical regression analysis and machine learning.</li> </ul>
Jimblebar, Western Australia	BHP	<p><b>Brockman and Marra Mamba beneficiation studies:</b></p> <ul style="list-style-type: none"> <li>Testwork analysis: cyclone desliming, elutriation and spirals.</li> <li>Two stage 4" cyclone pilot study data analysis.</li> <li>Locked Cycle 10" Cyclone testwork – cyclone modelling.</li> <li>Beneficiation studies – project yield-grade curves and cyclone selection.</li> </ul>
Roy Hill Project, Western Australia	Roy Hill Holdings	<p><b>WHIMS Stage 1 PFS and DFS Process Engineering:</b></p> <ul style="list-style-type: none"> <li>WHIMS PFS testwork DD and value engineering.</li> <li>WHIMS DFS process engineering including material balances, PDC and Process Control Specification.</li> </ul>
Roper Bar Iron Project, Northern Territory	Nathan River Resources	<p><b>Scoping Study Testwork Management:</b></p> <ul style="list-style-type: none"> <li>Dense media beneficiation testwork on lump and fines BFO samples to feed into a DMS beneficiation study;</li> <li>Dense media beneficiation testwork on low-grade material including ore sorting, DMS, DMC and WHIMS.</li> </ul>
Roy Hill Project, Western Australia	Roy Hill Holdings	<p><b>DFS Process Engineering:</b></p> <ul style="list-style-type: none"> <li>WHIMS 1.5 DFS process engineering.</li> <li>Spirals Circuit DFS process engineering.</li> </ul>
Roper Bar Iron Ore Project, Northern Territory	Macquarie Bank	<p><b>Oolitic Iron Project Due Diligence:</b></p> <ul style="list-style-type: none"> <li>Metallurgical due diligence - testwork and PDC review.</li> <li>Process flowsheet review, including capital and operating cost estimation for Dense Media Lump-Fines and Spirals plant.</li> </ul>
Mbalam-Nabeba, West Africa	Sundance Resources	<p><b>PFS Consulting Services:</b></p> <ul style="list-style-type: none"> <li>PFS technical review and design recommendations.</li> </ul>
Mount Caudan, Western Australia	Cazaly Resources	<p><b>PFS and DFS Studies and Process Engineering:</b></p> <ul style="list-style-type: none"> <li>PFS and DFS testwork design and management.</li> <li>DFS process engineering.</li> </ul>
Jack Hills, Western Australia	Crosslands Resources Ltd	<p><b>Jig Pilot – PFS Process Study</b></p>
Railway Iron Ore Project, Western Australia	United Minerals Corporation	<ul style="list-style-type: none"> <li>Characterisation testwork design and management.</li> </ul>
Savage River, South Australia	Grange Resources	<ul style="list-style-type: none"> <li>Due diligence review and development magnetite pumping and pelletisation studies.</li> </ul>

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PROJECT	CLIENT	OUR WORK
<b>Confidential Project</b>	Advanced Metals Pty Ltd	<ul style="list-style-type: none"><li>Metallurgical testwork removing phosphorus from iron ore via acid washing.</li></ul>
<b>Mount Gould Project, Western Australia</b>	Newcam Minerals	<ul style="list-style-type: none"><li>Metallurgical testwork to assess the lump and fines yield of the project's ore with subsequent consolidation of key properties into a set of datasheets;</li><li>Assistance with process flowsheet design and major equipment selection as well as generation of marketing sample.</li></ul>
<b>Broad Flat Well Iron Project, Western Australia</b>	Burley Minerals	<ul style="list-style-type: none"><li>Metallurgical testing of various channel iron deposit ore composites, to determine responsiveness of ore to wet washing and screening as well as iron, silica and alumina content.</li></ul>
<b>Onslow Iron Project, Western Australia</b>	SRK Consulting	<ul style="list-style-type: none"><li>Due Diligence on Onslow Iron Project.</li></ul>
<b>Buzzard Iron Ore Project, South Australia</b>	Agile Mining Services Pty Ltd	<ul style="list-style-type: none"><li>Beneficiation test work on iron ore composites to produce bulk marketing products of "Lump" and "Fines" from each composite and characterise the products.</li></ul>

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