

Lycopodium

FY  
20  
22

Shareholder  
Report

30 JUNE 2022

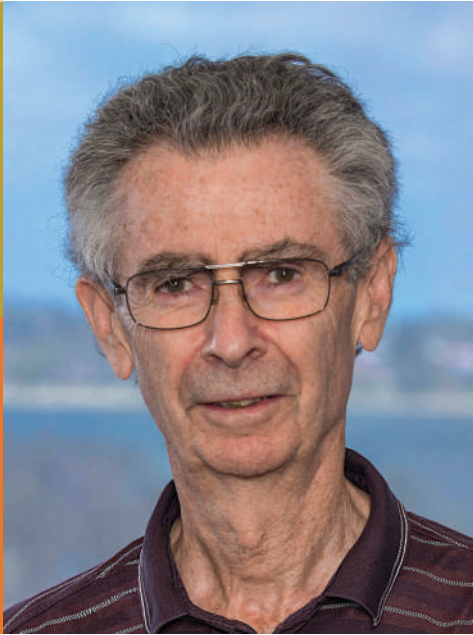




Wahgnion Gold Project, Burkina Faso



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# Chairman's Report

**My name is Mick Caratti. I am one of the founders and chairman of Lycopodium.**

**This publication is designed to introduce you to the company, telling you who we are, what we do and how we see our future.**

**This report does not replace the statutory financial statements but is designed to provide an informative insight into Lycopodium in an easier to read layout.**

In my section of the report, I usually try to give an insight into the industries and markets that our subsidiaries service.

The year has seen a material change in the impact of COVID in our lives, with most restrictions lifted and the vaccines reducing the severity of infection of those who catch the ever-evolving strains. A recent newspaper article described the measures used in an 1898 bubonic plague pandemic and it is interesting that they were

much the same as worked for COVID. While travel is not the everyday activity it was three years ago, it is not a restraint on our activities in Australia or internationally at this time.

We have seen a strong demand for our services in line with the strength in metal prices. The reduction in prices at the end of the year does not seem to have dampened the enthusiasm of project developers but time will tell if that remains, in the face of economic and stability issues that are evolving at this time. The sales of electric cars, which have tripled in two years, has seen the major motor industry companies recognise that they are dependent on supply of both computer chips and lithium, and several have moved to secure supply of lithium at the mine which is something new in my experience. The demand has led to shortages in engineering and trade skills which will increase the risk of technical, cost and schedule problems in the sector in coming years.

I spoke last year about the trend we had observed of an increased awareness of the need for action on climate change coming from within the industry. The awareness may have been initiated by shareholder activism and financing requirements, but it has become obvious that the earlier adopters will be able to obtain finance or equity funding and will reap the benefits of the wave in demand that is coming. There has also been a competition developing as to which of the major companies can become carbon neutral the soonest which bodes well for our industry's necessary transition.

We have noticed an interesting development in some clients' method of obtaining EPC pricing for their projects. It is called Early Contractor Involvement (ECI) and when well run, allows several companies to be

**This year, Lycopodium has returned a record profit and much of that comes from work undertaken during the COVID pandemic which is a tribute to the skill and planning of the whole Lycopodium team.**

reimbursed for their tendering cost of preparing lump sum pricing for major projects, and is particularly useful in a time of high demand. By well run I mean the owner has undertaken a detailed feasibility study and has defined the project to a normal bankable level. Unfortunately, some owners have taken a short cut and used the ECI process to replace the feasibility study stage. There is a risk to this strategy, as the contractors have varying ability to undertake that work and important project decisions are given less focus than would be desirable in a feasibility study. It will be interesting to see how this development evolves.

I have noted over the last two years an increase in activity in the Australian manufacturing sector and it is heartening to see that it is continuing which has provided good opportunities for our LPI team.

I noted last year that our Toronto team had been working from home and they were not able to return to the office for over two years. I can now advise that they have undertaken the majority of a Lump Sum project in Africa for a Canadian client with the team working from home and that it is on time and on budget which I believe is to be commended. The Toronto office is about to start a flexible work arrangement trial based on the success of that project.

This year has seen a major milestone with the resignation, for personal reasons, of two of the directors and original founders of the company. I met Laurie Marshall and Bob Osmetti on the Nevoria project at

Marvel Loch in 1984 and have been working with them almost continuously since that time. They have made a major contribution to this Company and will be sorely missed. Thank you Laurie and Bob and I wish you well in retirement on behalf of your many friends at Lycopodium.

This year, Lycopodium has returned a record profit and much of that comes from work undertaken during the COVID pandemic which is a tribute to the skill and planning of the whole Lycopodium team. I would like to thank everyone for their contribution on behalf of the shareholders and Board.

I hope you find this report informative and readable and if you would like more information, please give us a call.



**MJ Caratti**  
Chairman  
Lycopodium Limited





# Managing Director's Report

**FY2022 has been a successful year for the business, with the award of new study work and the progression of a number of significant projects to the construction phase.**

## Full Year Results

**For the financial year ended 30 June 2022, Lycopodium generated revenue of \$232.2 million and a net profit after tax of \$27.2 million. The Directors have resolved to pay a final dividend of 36 cents per share. The total dividend for the year is 54 cents fully franked.**

## Activities for the Past Year

**With a strong pipeline of work spanning our core operating sectors of Resources, Infrastructure and Industrial Processes, we have had many new people join the Group this year, across all businesses and geographies. During FY2022, we employed more than 950 people in our offices and on project sites around the world.**

Investment in our people is fundamental to our culture and our ongoing success. We are committed to providing a workplace environment that enables our people to reach their full potential and perform at their best, and in support of this, a number of initiatives have been developed over the past 12 months which will be rolled out during FY2023. This includes the introduction of a global HR Information System (HRIS) to facilitate workplace efficiencies. A new global Performance & Engagement platform to support a culture of continual performance feedback and engagement will further supplement the HRIS. In May 2022, we launched our inaugural Emerging Leaders Program, a nine month leadership program focused on the development of the middle management levels within the business and therefore a key component of our succession planning strategy.

Knowledge management continues to be a strategic focus for the business, and significant investment has been made in our network and systems over the past year. This includes implementing changes to our project collaboration software, ProjectWise, to support improved functionality. We also upgraded to Office 365, including the introduction of Teams and SharePoint, both very important tools for promoting collaboration across our global operations. Significant effort has gone into researching and analysing options for a new enterprise resource planning (ERP) system that will support our Finance and Project Controls functions. It is anticipated the chosen system will be introduced globally in FY2023, further enabling the efficient delivery of services to our clients and ensuring consistency in information collection and reporting.

Being innovative and at the forefront of new technology is critical to business sustainability, both internally in driving business efficiency and effectiveness through investment in our internal systems as described above, and externally in the solutions we deliver for our clients. This includes pursuing innovation in minerals processing technologies and investing in prospective technologies in order to develop future opportunities. Our commitment to continuous improvement empowers our people to think creatively and we celebrate and share success through our internal innovation award.

Following the establishment of our new service offering, Lycopodium Energy, in FY2021, we have continued to grow our knowledge and build capability through strategic partnerships, to ultimately deliver new services that will enable us to participate in green energy opportunities in downstream processing, generation and storage, and electrification. While this is still considered an early stage initiative, we are working in collaboration with our clients and partners to understand and evaluate future requirements and develop strategies to meet these.

## Outlook

**Global economic recovery has continued into 2022, albeit at a slower pace than 2021 due to a number of factors, including the Russian invasion of Ukraine and consequent sanctions, the potential for new variants of COVID-19, persistent supply chain disruption, and growing inflation.**

In the Resources sector, base metal usage is expected to rise, as world industrial activity recovers and as the energy transition continues, with a global impetus to build

energy and transport systems based on lower emission sources materialising in the coming years. As Western nations seek alternatives to Russian energy supplies, this is likely to further accelerate the push towards developing renewable energy solutions.

Global iron ore demand is forecast to grow steadily, as China, the world's largest importer, is expected to adopt more expansionary fiscal and monetary policies going forward following a tight stance in 2021. On the back of historical price highs achieved in the first half of 2021, iron ore exploration expenditure has grown. In March, China announced a plan to diversify its iron ore supply chain and is investigating a number of possible iron ore mines in Africa. However, given the significant investment in mining-related and transport infrastructure required to get minerals to market, including new ports and rail networks, development of these prospects remains some way off at present.

Demand for gold remains strong, buoyed by investment in 'safe' assets amid rising inflation and ongoing geopolitical uncertainty. Interestingly, consumption in technology is increasing, with gold a critical component in COVID-19 diagnostic tests and with its growing



application in the electronics sector, including for heart rate tracking functionality in smartphones and watches.

The demand for lithium continues to be driven by the use of batteries in portable electrical appliances and in electric vehicles (EV). Surging EV sales is driving demand not only for lithium, but a range of other critical minerals and metals used in the production process, including graphite, copper, nickel, manganese and cobalt.

In the Infrastructure sector, the opportunity to provide rail infrastructure management (RIM) services is forecast to strengthen over the coming years, with substantial

additions to railway assets over the past decade and the current expansion of bulk freight and commuter passenger rail transport services.

The shift to a domestic manufacturing focus in response to the pandemic has delivered new opportunities in the Industrial Processes sector, including for base vaccine component production facilities. The development of emerging markets, including waste and recycling, water and wastewater, and hydrogen, is also continuing to drive sector growth.

*Bomboré Gold Project, Burkina Faso*





## Operational Highlights

During FY2022, we have built on the momentum generated in FY2021, with the mobilisation of teams to projects transitioning to the construction phase and the further award of a number of new opportunities.

### Resources

We continue to deliver studies and projects spanning most major commodities, including iron ore, gold, copper, nickel, lithium, graphite, diamonds, platinum and mineral



sands, for projects located around the world, most notably in Africa, Australia, Southeast Asia and North and Central America.

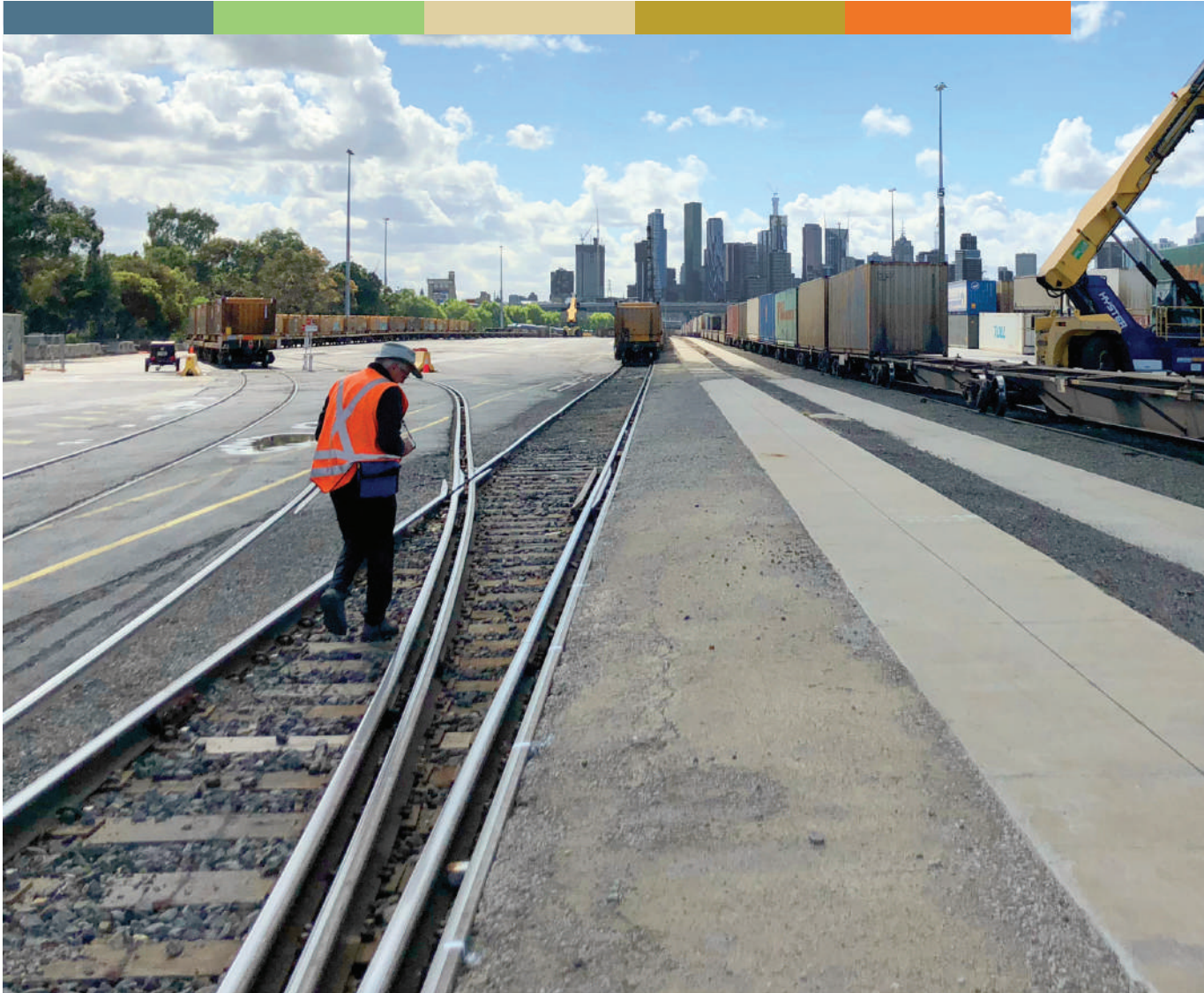
During calendar year 2021, the Group was awarded a number of Engineering, Procurement and Construction Management (EPCM) contracts, which commenced onsite works in FY2022. This includes the Motheo Copper Project in Botswana (Sandfire); Bomboré Gold Project in Burkina Faso (Orezone); Ahafo North Gold Project in Ghana (Newmont); Talison Lithium Mine Services Area Project in Western Australia (Talison); and the Navachab Gold Mine Expansion in Namibia (QKR). Successfully transitioning into the delivery phase for these projects, and mobilising personnel to sites across a multitude of disparate locations, is a significant undertaking and a credit to our operations teams.

Provision of engineering, design, procurement and construction support for First Quantum Minerals' Ball Mill 6 Project at its Cobré Plant in Panama, one of the largest copper mines in the world, was ongoing throughout the year. The project is expanding production capacity at the plant, adding a further 22 megawatt ball mill to the operation.

Through the year, we continued to strengthen our position as a premier partner in the delivery of lithium projects, with the award of several projects in Western Australia, including the EPCM contract for Talison Lithium's Chemical Grade Processing Plant #3 (CGP3), the provision of professional engineering services for the Lithium Hydroxide Plant 2 (LHP2) Recommencement Project Phase 1 for Tianqi Lithium, and the early works scope, followed by the full EPCM contract, for the delivery of the Kathleen Valley Lithium Project for Liontown Resources. We were also awarded the Engineering, Procurement and Secondment Services contract for the Goulamina Lithium Project in Mali, one of the largest lithium deposits in the world, and the EPCM contract for Lepidico Limited's Phase 1 Integrated Project for delivery of the concentrator in Namibia and the chemical plant in the United Arab Emirates.

It is fantastic to have secured such a strong pipeline of projects in Australia to complement our offshore work, providing our people with plenty of opportunity to engage with the exciting projects we are involved with around the globe.

We are pleased to continue our work on the Batu Hijau Process Plant Expansion Project in Indonesia for PT Amman Mineral Nusa Tenggara, with award of the Engineering Services contract following delivery of the Front End Engineering and Design (FEED). Batu Hijau is the second largest copper and gold mine in Indonesia and represents a strategic project win for Lycopodium, underpinning our growth strategy in the Asia-Pacific region on major brownfield and greenfield projects.



*Track inspection, Melbourne, Victoria*

Continuing our long-standing relationship with Endeavour Mining, during the year we were awarded the early works for the Sabodala-Massawa Expansion Project, supporting the integration and expansion of the Sabodala-Massawa complex, the largest producing gold mine in Senegal. We were also awarded an early phase scope for Endeavour's Lafigué Project in Côte d'Ivoire.

Also in Côte d'Ivoire, our team in Toronto progressed delivery of Fortuna Silver Mines' Séguéla Gold Project during the year, with our scope including the design, supply and project delivery of the processing plant, plant site buildings and associated infrastructure. Our Canadian operations have continued to expand, establishing relationships with key clients based in the Americas, including Aya Gold & Silver Inc, for whom we delivered the FEED for the Zgounder Expansion Project in Morocco and the Feasibility Study (FS) for the Tijirit Gold Project in Mauritania.

ADP Marine & Modular (ADP), our specialist subsidiary in Cape Town, continues to work closely with a number of key clients. This includes Namdeb, a joint venture between De Beers and the Government of the Republic of Namibia, who is extending the life of its land-based operations for a further 20 years. Also with De Beers/Anglo American, ADP is undertaking the FS for the FutureSmart Diamond Processing Plant in Canada. The team in Cape Town also continues to work with Paladin Energy on its restart project for the Langer Heinrich Mine in Namibia, a significant asset in the global nuclear fuel energy cycle. A particular highlight for ADP in FY2022 was the development of the Dry Mining Unit (DMU), which is being commissioned on site in Q3 2022 at the Grande Côte mineral sands operation in Senegal. More information on the DMU is provided in the Innovation section of this report.

Finally, a particular highlight for the year was achieving first ore at Rio Tinto's Western Turner Syncline Phase 2 Project in the Pilbara in October 2021. Delivered under an Engineering, Procurement and Construction (EPC) scope by Mondium, our incorporated joint venture with Monadelphous, this significant project was completed from start to finish within the constraints posed by COVID-19, which presented many challenges along the way. Also under the remit of Mondium, the EPC contract for the delivery of Talison Lithium's Tailings Retreatment Project at Greenbushes in the south-west of Western Australia successfully progressed to the commissioning and handover stage in early 2022.

## Infrastructure

In Infrastructure, we continue to provide design, engineering, technical advisory and RIM services for greenfield and brownfield rail projects, supporting Australia's major passenger and freight rail system operators, including New South Wales' Country Regional Network (CRN), Pacific National and Aurizon. A particularly interesting project being undertaken is the provision of services to Transport Heritage NSW to upgrade approximately 17 kilometres of heritage railway between Picton and Colo Vale. The Loop Line Upgrade Project will enable heritage trains to return to Colo Vale for the first time in over 30 years.

## Industrial Processes

Our Industrial Processes business has benefited from the increase in opportunities borne from the refocus on domestic manufacturing resulting from the supply chain disruptions experienced during the pandemic, providing design consultancy services to Commonwealth Serum Laboratories (CSL) for the development of base vaccine component production and plasma and blood facilities. This includes securing the detailed engineering scope for CSL's world-class influenza vaccine manufacturing facility being built in Melbourne. The team has also continued its long-standing partnership with Australia's Nuclear Science and Technology Organisation (ANSTO), providing ongoing services for the Australian Synchrotron, a major research facility and one of Australia's most significant pieces of scientific infrastructure.

**A comprehensive overview of projects and studies delivered during FY2022 is included later in this report.**

## Innovation

**Our commitment to continuous improvement – doing things better, working smarter for our clients, and using our vast experience and knowledge to uncover innovative solutions to complex problems – has seen us progress a number of key innovations during FY2022.**

### Dry Mining Unit

The Dry Mining Unit, which was developed by ADP during FY2021, combines underwater track crawler technology with high capacity skid-mounted materials handling and sand pumping systems, into a single 400 tonne remotely controlled mobile sand processing machine.

The unit was manufactured in Cape Town and trial assembled and tested earlier this year before being disassembled and shipped to Senegal for commissioning on site at the Grande Côte mineral sands operation, the largest single dredge mineral sands operation in the world, in Q3 2022.

The technology represents an innovative operating cost saving asset for clients in the mineral sands environment and could also be used in other operations where sand or fine overburden material can be slurried and pumped to either a concentrator plant or a tailings facility. The efficiency compared to conventional tramming is substantial, with the machine relocated weekly to keep front end loader tramming distance to a minimum, thereby lowering diesel fuel consumption and carbon emissions.

It is estimated the solution will provide a 10 fold saving in energy usage when compared to the conventional load and haul method, and as haulage represents a significant proportion (estimated to be around 25%) of total energy consumption in mining, the sustainability impact of this innovative solution is considerable over the life of the mine.

### Digital Twin

During FY2022, ADP has continued to work collaboratively with its client in the development of a connected digital twin using dynamic simulation and other leading-edge integration software and specialist proprietary applications (apps) tailored to specific minerals of interest.

Under this approach, the plant is engineered as a static digital twin (digital replica of the asset). Using augmented reality and virtual reality technology enables the static digital twin to be the primary interface for operations and plant maintenance, linked to the connected digital twin running in the background. The simulator is dynamically linked to the mine plans and utilises geo-metallurgical data to predict and optimise plant performance and blending.

This software technology facilitates extensive options analysis and scenario planning during the project study phases, significantly reducing the manhours required by

both Lycopodium and the client to make a final process decision. Once deployed, the digital twin provides clients with a vast array of project whole-of-life benefits that will lead to better designs, more efficient energy utilisation and ultimately lower carbon intensity per unit of production. The digital twin also provides a tool to test decarbonisation strategies and potential pathways for absolute reduction in carbon emissions.

### Orway IQ

MillROC (Mill Remote Optimisation Consulting and Coaching) continues to be developed by Orway IQ (OIQ), which is a collaboration between Process IQ and our wholly-owned subsidiary company, Orway Mineral Consultants (OMC).

This online platform provides cloud-based, customised data analysis and dashboards for optimisation of mineral processing plants and is used by OIQ's specialist metallurgists and advanced process control consultants to deliver real-time coaching and implementation of continuous improvement in plant operations, ultimately driving efficiency and reducing the carbon intensity of concentrates and metals produced in the mining process.

Based initially around comminution circuit optimisation, OIQ is expanding MillROC to provide similar services for processing downstream of comminution. In addition to the customised data analysis originally incorporated in the platform, multivariable regression analysis and machine learning tools have been added for deeper analysis of complex systems.

### FBICRC

Lycopodium is a participant in the Future Battery Industries Cooperative Research Centre (FBICRC) based at Curtin University in Western Australia, supporting the development of capability to capture the significant opportunities associated with the energy transition for Australia from the growing global battery industry.

The FBICRC brings together industry, researchers, governments and the community to ensure Australia plays a leading role in the global battery revolution, with greater participation across the value chain.

Of the 16 foundation projects being pursued under the FBICRC, we are directly participating in five of these:

- Innovative Nickel and Cobalt Extraction Technologies
- Enhancing Lithium Extraction
- Cathode Precursor Production Pilot Plant
- Chemical Processing of Vanadium and Manganese Ores for Battery Materials
- Recycling, Reuse and Repurposing of Spent Batteries

Our commitment includes the provision of funding and specialist expertise over a five year term which commenced in 2021.





## CSIRO

In another collaboration with industry, we are working with the CSIRO to consider options and areas of research that could lead to a material reduction in the carbon footprint of the High Pressure Acid Leaching (HPAL) process for nickel laterite processing.

Nickel is a key metal in the burgeoning global battery industry for electric vehicles, among other applications. Forecast demand for nickel is unlikely to be met by the traditional smelting of concentrates from nickel sulphide ores and the shortfall is expected to be met through an increase in the processing of nickel laterite ores that are processed using HPAL, which has a carbon footprint significantly higher than the traditional smelting route.

## Renewable Energy

Advances in energy storage are key to displacing diesel from mining operations. Energy storage solutions revolve around batteries and hydrogen, each with their own unique applications.

We are participating in a range of battery storage research projects, including at the Fekola Gold Mine in Mali and the Sukari Gold Mine in Egypt, and are also undertaking a Definitive Feasibility Study (DFS) for Lithium Australia for the production of lithium ferro phosphate (LFP) battery pre-cursor material. LFP is emerging as a primary battery material for passenger cars, recently surpassing nickel, manganese and cobalt (NMC) batteries in global sales.

Our participation in hydrogen projects includes the Hydrogen Energy Supply Chain (HESC) project at the Port of Hastings in Victoria, a world-first pilot project focused on safely and efficiently converting locally produced clean hydrogen for international transportation. We are also providing the FEED for the hydrogen electrolyser project for Chiyoda Corporation in Gladstone, Queensland and the hydrogen refuelling infrastructure for Anglo American at its Mogalakwena open-pit platinum mine in South Africa.

*The Yaouré Gold Mine in Côte d'Ivoire was the first project to be purpose-built 'MillROC ready'*

Clontarf students, Perth, Western Australia



Nana's House, Accra, Ghana



## HSE and Community

**Our commitment to providing a safe working environment for our people and delivering projects safely for our clients is intrinsic to our culture and a fundamental metric of our success.**

With a number of significant projects mobilising to site during the period, we implemented initiatives to support safe practices across our managed sites, including a 'Back to Basics' campaign, reinforcing that all incidents are preventable if risk is understood and proactively managed.

During FY2022 there were 3.2 million manhours worked, with a Lost Time Injury Frequency Rate (LTIFR) of 0.3 against an Australian construction industry average of 8.5. While our LTIFR remains extremely low by industry standards, we will continue to prioritise safety across our business and strive for continuous improvement, providing our people with the tools and resources required to maintain our exemplary standards.

We support the communities in which we live and work, in particular social development and education endeavours, through the Lycopodium Foundation.

This includes our well established partnerships with the Murlpirmarra Connection and the Clontarf Foundation in Australia, with both organisations supporting the education, self-esteem, life skills and employment prospects of young Aboriginal and Torres Strait Islander people.

In Africa, we have worked with BASICS International, a non-government organisation (NGO) committed to protecting the basic human rights of children to education, shelter, food and safety, for many years. In 2010, we assisted BASICS to build a school in Ghana, affectionately referred to as 'Nana's House' that has enriched the lives of children living in poor communities of Accra for over a decade now. Having endured Ghana's harsh coastal environment over the years, Nana's House

was in need of some significant repairs and maintenance, and during the year we provided the funds to undertake these works, giving Nana's House a new lease on life.

Also in Ghana, we partnered with The Pearl Safe Haven, an NGO operating an emergency shelter for survivors of sexual and domestic violence in Accra, providing the funds to enable them to construct a wall to secure the perimeter of their facility.

In response to the pandemic, we launched a Donation for Vaccination campaign with our staff, encouraging them to get vaccinated and pledging funds to UNICEF's global COVID-19 Appeal for every vaccination certificate received. Funds donated through this initiative facilitated the delivery of critical supplies, including masks, vaccines and oxygen, to vulnerable communities in need around the world.

LycoVent, the electrically operated ventilator designed and fabricated by Lycopodium for use as an emergency backup in the event of a shortage resulting from the pandemic, moved into the testing phase on the ground in African hospitals, facilitated by our partnership with Australian Doctors for Africa. We intend to make LycoVent available to African hospitals where the need for such a device is considered significant, not only in response to COVID but more broadly to supplement the limited healthcare options available.

Throughout the year, the Group continued to support various charitable initiatives championed by our staff, including Jeans for Genes, for which we have raised more than \$380,000 since our partnership began back in the 1990's, and the St Vincent de Paul Society.

Our membership with the Australia-Africa Minerals & Energy Group (AAMEG), the peak body representing Australian companies engaged in the development of Africa's resource industry, remains a fundamental element of our industry engagement strategy.

## Acknowledgement

FY2022 has been a rewarding year for the business and the fact that we have been able to continue to win work, provide opportunities for new people to join the business and support our clients to deliver their projects, despite the pandemic prevailing for two years, is a reflection of the strength, commitment and resilience of our people. On behalf of the Board of Directors, I thank our staff for your incredible effort and loyalty over this period, you have truly embodied what it means to be a Lycopod.

I would also like to acknowledge and thank two of our Directors who retired during the year, both of whom were founding partners of Lycopodium. Laurie Marshall and Bob Osmetti were instrumental in the development of the Company from our early days as a privately owned engineering consultancy to the global organisation we are today.

Finally, thank you to our clients. You continue to put your trust in us and we are very proud of the many long-standing partnerships we enjoy with you.



**Peter De Leo**  
Managing Director  
Lycopodium Limited

*Murpurrmarra Connection Cultural Exchange Weekend, Wiluna, Western Australia*



# Company Highlights



**950**

People working globally across our projects and offices



**0.3 LTIFR**

Based on 3.2 million manhours worked across managed projects



**\$232.2m**

Revenue



**\$27.2m**

Net Profit After Tax



**68.4 cents**

Earnings per Share



**54 cents**

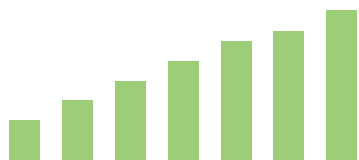
Full year dividend

Developed the innovative **Dry Mining Unit**, combining underwater track crawler technology with high capacity skid-mounted materials handling and sand pumping systems into a single 400 tonne remotely controlled mobile sand processing machine





Provided the Front End Engineering and Design services for the FBICRC's flagship Cathode Precursor Production Pilot Plant, the first of its kind in Australia, which is set to supercharge Australia's local battery manufacturing capabilities



**Record profit achieved**

**Highest ever payout ratio to shareholders**

**First ore achieved at Rio Tinto's Western Turner Syncline Phase 2 Project in Western Australia**

**Record number of EPCM projects in delivery around the world**

# Financial Highlights

*Séguéla Gold Project, Côte d'Ivoire*

**Operating within our core sectors of Resources, Infrastructure and Industrial Processes, during FY2022 we delivered services for projects around the world – predominantly in Africa, Australia, Southeast Asia and North and Central America.**

With a number of significant projects progressing to the on-site delivery phase and new work won during FY2022, the Company achieved a strong financial result for the year, realising record profit and a very healthy return on equity of 29.0%.

The Company's revenue for the financial year ended 30 June 2022 was \$232.2 million, an increase of 43% on FY2021 revenue (\$162.2m). FY2022 Earnings Before Interest, Tax, Depreciation and Amortisation (EBITDA) was \$45.4 million and Net Profit After Tax (NPAT) was \$27.2 million.

The Company's cash position remains very strong, with cash on hand of \$100.9 million at financial year end. The strong balance sheet continues to provide capacity for investment, with total assets of \$218.9 million, equity of \$99.7 million and net tangible assets per share of \$2.34.

Revenue **\$232.2m**

Equity **\$99.7m**

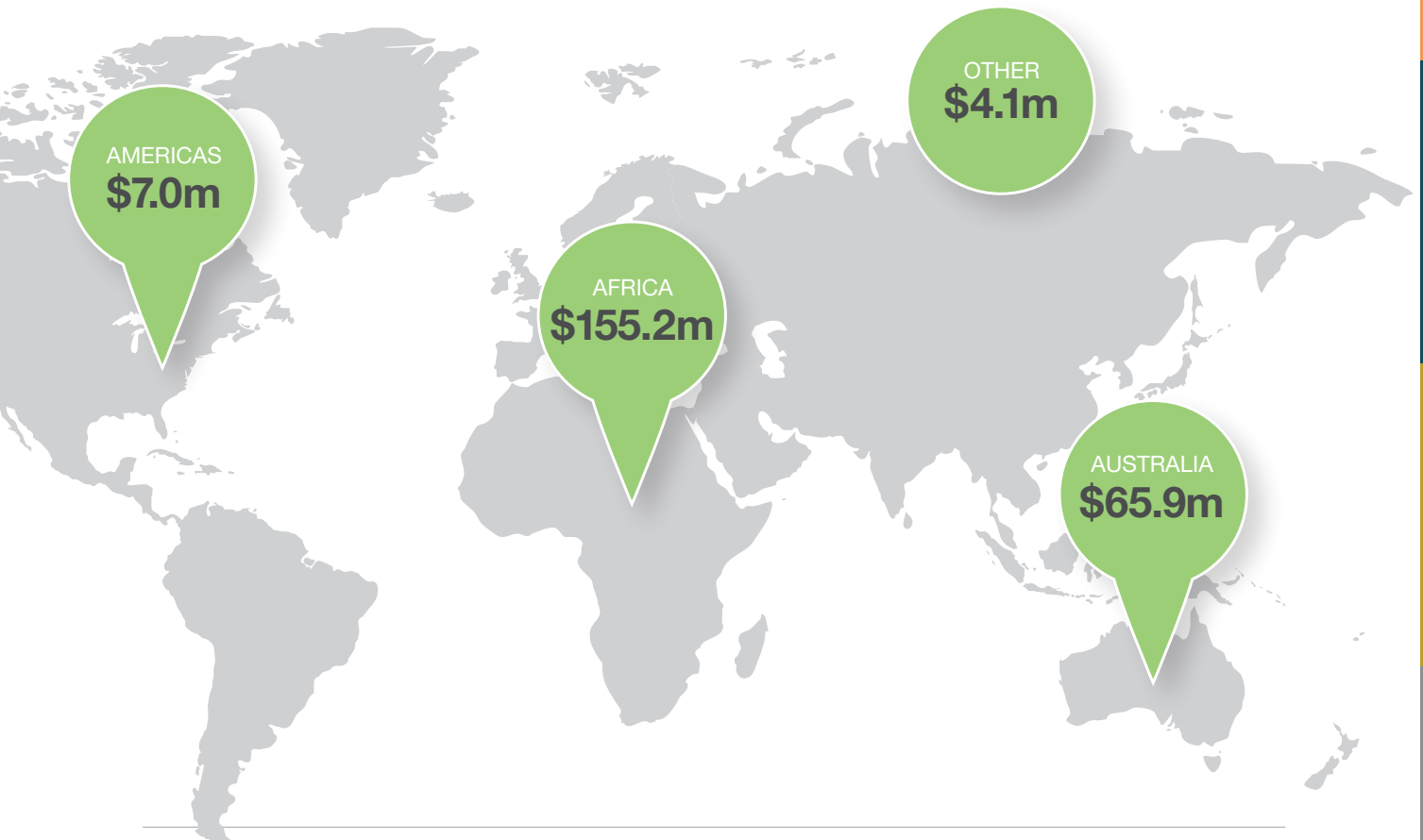
NPAT **\$27.2m**

EBITDA **\$45.4m**

Total Assets **\$218.9m**

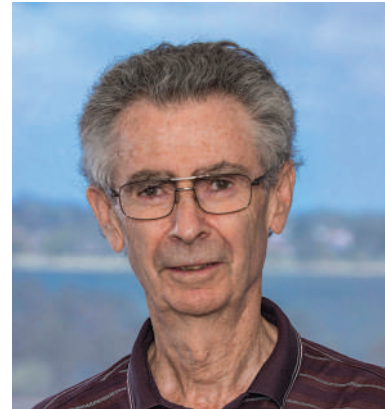
Cash on Hand **\$100.9m**

Net Tangible Assets per Share **\$2.34**





# Board of Directors



**Michael (Mick) Caratti**  
Non-Executive Chairman



**Peter De Leo**  
Managing Director



**Bruno Ruggiero**  
Executive Director



**Karl Cicanese**  
Executive Director



**Rodney (Rod) Leonard**  
Non-Executive Director



**Steven Chadwick**  
Non-Executive  
Independent Director



**Justine Campbell**  
Company Secretary/  
Chief Financial Officer

# About Lycopodium

## Defining Lycopodium

The breadth and depth of our expertise and knowledge is far-reaching. It spans sectors, across continents. The work we deliver is technically challenging, requiring a detailed understanding to convert an idea into reality.

Whether it's working out how to recover magnesium salts from solar salt fields, or producing biodiesel from animal tallow, we take the science around a project, the chemistry and the physics, and as the interface between science and engineering, use our skills to convert the science into a commercial reality. Therefore, we believe the appropriate definition for Lycopodium is that we *commercialise science*.

The sectors within which we operate are diverse. Across resources, infrastructure and industrial processes, the broad and truly fascinating array of projects that we are involved with – most minerals and metals, hazardous and toxic chemical processes, emerging technologies, R&D – give range to a team of industry professionals that is at the forefront of innovation in the delivery of leading technical solutions.

*Bouly Gold Project, Burkina Faso  
Photo by Armand van Heerden*

## Building on Everything that is Good

**We have built our reputation over the past three decades by successfully delivering many projects across the globe, often in very difficult jurisdictions. We have been challenged by a myriad of variables – logistics, climate, cultures and language, to name a few.**

Despite these challenges, we have managed to deliver all of our projects on time, on spec, on budget, and most importantly – profitably. We define the risks for our client

and before we take a job on, we define the risks that will be borne by our shareholders.

We are not perturbed by geography, jurisdiction or technology. We are confident in our ability to identify and manage the risks associated with process development, engineering and project delivery. This approach has stood the test of time and placed us among the top project delivery engineers in Australia, Africa, Asia and the Americas. We continue to build upon everything that is good about that approach.

Those core skills we applied in the early days have evolved into services that we now provide across multiple sectors.

## Our Sectors

### RESOURCES



- Gold & Precious Metals
- Base Metals
- Battery Metals
- Specialty Metals
- Diamonds & Gemstones
- Bulk Minerals
  - Iron Ore
  - Minerals Sands
  - Bauxite

### INFRASTRUCTURE



- Railways
- Roads
- Ports
- Non-Process Resource Infrastructure
- Asset Management

### INDUSTRIAL PROCESSES



- Pharmaceuticals
- Biotechnology
- Chemical & Energy
- Food & Beverage
- Manufacturing
- Research & Development



### SERVICES



- Feasibility Studies
- Process Development & Optimisation
- Engineering & Design
- Project Management & Delivery
- Project Services
- Construction Management
- Commissioning & Operations Support
- Asset Management

### LOCATIONS

- AUSTRALASIA
  - Perth
  - Melbourne
  - Newcastle
  - Brisbane
  - Manila
- AFRICA
  - Cape Town
  - Accra
- AMERICAS
  - Toronto



## The Business

### Locations

Our business is global. Within Australia we have offices in Perth, Melbourne, Newcastle and Brisbane. We also have offices in Toronto, Cape Town, Accra and Manila.

### Clients

Our clients are global and include both private and publicly listed companies. Among listed companies, our clients cover the full range, from small juniors, through mid-tier and ultimately to the majors. We occupy a unique position in the engineering market in that we have both the systems and processes necessary to service Tier 1 clients, but also the flexibility to provide simplified processes for junior and mid-tier clients.

This is a very deliberate strategy – many of our original junior clients have been acquired by majors or have themselves evolved into mid-tier companies. We have grown with them, whilst continuing to support the junior companies as they move along their own growth trajectory.

### Sectors

Lycopodium operates within the Resources, Infrastructure and Industrial Processes sectors.

- Within Resources we cover all commodities and minerals. We are recognised globally for our capability in gold, copper and diamonds.
- Within Infrastructure we cover predominantly road, rail and ports, plus asset management services to government infrastructure.
- Within Industrial Processes we cover markets such as pharmaceuticals and biotechnology, food and beverage, chemicals and energy, sustainability and environment.

### Services

As previously stated, our purpose is to commercialise science. The services we offer in commercialising science are independent of and completely transferable between any of the sectors we operate within. Although some of our offices carry higher or lower numbers of professionals within any service, the global nature of our business means we can deliver the requisite service in the requisite sector wherever it is required.





The following section provides a summary of our services.

### Feasibility studies and advisory

Feasibility studies and our associated advisory services are the heart of our business, where we throw big-picture ideas around in concept development and preliminary economic analysis. It's where we solve problems, refine and reduce options during pre-feasibility and, ultimately, deliver certainty in project viability.

It is during the feasibility study that we are able to deliver the greatest value to our clients. An error in process selection or project definition at this early stage is amplified many times over as the project develops and can ultimately be fatal for the project and sometimes for the client.

Quality engineers like Lycopodium, differentiate themselves from the pack with this service. We have a fine track record for preparing studies that are technically and commercially sound, fit-for-purpose and tailored to the client's expectations.

The purpose of our feasibility studies is to help our clients move forward with clarity and confidence.

### Process development and optimisation

The success of industrial processes and resource projects revolves around process development and optimisation. We arguably have some of the best teams in the world working with clients around the globe, covering mineralogy, metallurgy, chemistry, contaminant management and environmental management, among other things.

Whether it's an 85 Mtpa copper concentrator in Panama or a 5 tpd polymeric anti-microbial plant in Australia, process development is the first and most critical step in commercialising the science for a project. Commercial success can only be achieved if the correct flowsheet is developed to match inputs and outputs.

At Lycopodium, we spend our working lives developing new ways to maximise recovery, reduce operating costs, de-bottleneck processes and improve capital efficiency. Through this focus we are able to support our clients to extract maximum value from their operating assets.

### Engineering and design

With age comes wisdom. We have learned many engineering lessons delivering projects in cold climates and desert plains, in tropical jungles and dangerous surf zones. We are continually learning from our experiences, adapting and improving our engineering as new materials come onto the market, new equipment becomes available and new technologies roll out.

In addition to capturing our tacit knowledge from the field, we are heavily invested in preserving our explicit knowledge by being part of the forward group in the evolution of digital engineering. We are working with

our clients in the development of digital transformation strategies that will enable us to provide more extensive and cost-effective options analysis and scenario planning during the project study phases, ultimately leading to better designs and more efficient operations in the future.

### Project management and delivery

It's a matter of policy that we manage all our projects in a manner that will not cause our employees, contractors or the general public harm or jeopardise anyone's health. Furthermore, our health, safety and environment policy ensures we minimise our impact on the environment.

Our project management expertise encompasses many things, including but not limited to project execution and procedure planning, contract and document management, industrial relations contract negotiation, contractor management, schedule coordination, plant commissioning and operator training.

These skills help deliver a good project for our clients.

With increasing global awareness of social and cultural issues, our clients' access to funding and project success depends more than ever on our ability to address social risks and impacts during project design and construction. We're committed to developing and fostering long-term relationships with local and regional contractors and suppliers, leveraging local supply chains and expertise wherever possible to upskill and encourage local economic growth.

These skills help deliver a good project for local communities.

We take all practicable steps to achieve zero injuries and zero environmental impact, leaving only positive legacies within the communities in which we work.

### Project controls

Good project controls help manage risks for our clients – they also manage risks for Lycopodium.

Our project controls and project management procedures provide the client and us with transparency on, among other things, budget management, change management, commitments, forecasting, tracking and completions and handover. These fundamental measures represent a single source of truth for project delivery performance, allowing problems or delays to be identified and mitigating steps to be implemented.

Our good project controls are essential for good business.

### Commissioning and operations support

Our process and design engineers are always part of the commissioning team – it's the Lycopodium way. We see, touch and feel the consequences of our decisions. This intimate knowledge means our plants ramp up to nameplate capacity quickly and transition to operating personnel seamlessly. The tacit knowledge



ANSTO Australian Synchrotron, Victoria

gained from having our process and design engineers as part of the commissioning team ensures continuous improvement with all lessons learned 'brought back' to the business and where necessary, captured in future designs.

We believe we have the best track record of any Australian engineer (modesty prevents us claiming a wider geography) for bringing projects up to and maintaining nameplate capacity in the shortest time. The impact on cashflow for our clients by achieving production ahead of schedule is enormous and contributes materially to the repeat business we have enjoyed over the years with so many clients.

#### Process control and optimisation

The fourth wave of the industrial revolution, known as Industry 4.0, has brought the opportunity for Lycopodium to leverage further the depth of scientific and engineering knowledge we possess around chemical and resource processes. By leveraging big data and analytics, automation, advanced hardware and machine learning with cloud computing, we are moving into the space of data driven mining decisions and the creation of 'smart mines'.

Our wholly-owned subsidiary, Orway Mineral Consultants (OMC), in its joint venture with technology provider, Process IQ, has developed a digital twin of grinding circuits called MillROC (Mill Remote Optimisation Consulting and Coaching). OMC is a global leader in grinding circuit design and optimisation. Process IQ is a leader in digital platforms, big data and the Industrial Internet of Things (IIoT). By combining the grinding circuit IP with the right cloud-based digital platform, MillROC is able to create a digital twin of the client's grinding circuit. Changes in control parameters can be made to the digital twin and the model run to establish whether such changes improve circuit performance. If they do, real time recommendations can be made to the client to optimise actual mill performance.

#### Asset management

In the sectors that we service, the purpose of asset management strategies is to ensure the assets can be maintained and operated within their rated design window for as long as possible. By supporting our clients to track asset performance and monitor where the asset sits within its operating window, we are able to help clients plan for shutdowns rather than have them respond to failures.

## Our People

Like all good organisations we try very hard to attract and retain the brightest and the best, from young graduates just starting out, through to seasoned professionals. We would like to think that we are up there among the best as an employer but we know there is always a need for continuous improvement, adapting to the changing needs of society, demographics and expectations. It is something we take very seriously and strive to maintain the highest standards.

We believe it takes different people to make a difference.

We encourage broad perspectives and differences of opinion. We like to empower people early in their careers and expose them to responsibility, we like our people to have lots of field experience and practical knowledge. That is how the Company began and it is the culture we still work hard to retain today.

Out of this culture a term has evolved. The term is 'Lycopod'. It is a term created by people who work within the business, it was not created by management nor by shareholders. The following is how a Lycopod has been defined:

It is an endearing term for the people in our organisation, who are confident and capable when assigned a task and are culturally aligned to Lycopodium's values. It should be noted that Lycopods have a range of personalities and demeanours. Whilst there is a requirement for professionalism at all times, Lycopods are not conformists and are not all from the same mould.

We like the definition and hope you do too.

*Yaouré Gold Project, Côte d'Ivoire*



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## Bomboré Gold Project

**Client**  
Orezone Gold Corporation

**Location**  
Burkina Faso

**Commodity**  
Gold

### RESOURCES

**Lycopodium is providing Engineering, Procurement and Construction Management (EPCM) services for Orezone's Stage 1 Oxide Process Plant for the Bomboré Gold Project.**

Bomboré is considered the largest undeveloped gold deposit in Burkina Faso. With a 13+ year mine life, Orezone plans to develop the project in stages, with Stage 1 focused on the oxides as a carbon-in-leach (CIL) operation. Stage 2, for which we are providing an updated Feasibility Study (FS), will focus on the underlying sulphides, with a separate crushing and grinding circuit feeding the same CIL circuit as the oxides. Lycopodium has been involved with the project since

inception, having supported the initial study work and Front End Engineering and Design (FEED), progressing to the detailed engineering, procurement and construction management services for the design and construction of the oxide plant, which will have a capacity of 5.2 Mtpa.

The project remains on-schedule and on-budget for the first gold pour in Q3 2022.



## Séguéla Gold Project

**Client**  
Fortuna Silver Mines Inc

**Location**  
Côte d'Ivoire

**Commodity**  
Gold

### RESOURCES

**Lycopodium has designed and is providing supply and project delivery services for the processing plant and associated plant related services and infrastructure for the Séguéla Gold Project in Côte d'Ivoire.**

The greenfield development is located approximately 240 kilometres north-west of Yamoussoukro, the political capital of Côte d'Ivoire, and approximately 480 kilometres north-west of Abidjan, the country's commercial capital. The project consists of the near surface Antenna, Agouti, Boulder, Ancien and Koula deposits that are ideally located near existing infrastructure including grid power, transport and water resources.

Lycopodium is responsible for the design and supply of equipment, manufactured goods and all other materials

and the construction management, pre-operational testing and commissioning services, as well as the overarching project management, for the delivery of the 1.25 Mtpa, carbon-in-leach gold process plant.

Lycopodium has been engaged in the development of the Séguéla Gold Project since its inception, having previously completed the Preliminary Economic Assessment (PEA) in 2019, Feasibility Study (FS) in 2020, and the Feasibility Study Optimisation (FSO) and Front End Engineering and Design (FEED) for the project in 2021.

Construction is underway, with first gold pour projected by mid-2023.



## Cobré Panama Ball Mill 6 Project

### Client

First Quantum Minerals

### Location

Panama

### Commodity

Copper, Gold, Silver, Molybdenum

### RESOURCES

**Cobré Panama is First Quantum's newest operation, located in Colon Province, 120 kilometres west of Panama City. It is one of the largest copper mines in the world and the production complex includes a series of open-pits, a processing plant, a 300 megawatt power station and an international shipping port.**

Commencing commercial production in 2019, Lycopodium delivered the detailed engineering design for the process plant and provided technical input into the procurement process for the construction of the plant, services and associated infrastructure. At full current capacity, the plant will process 85 Mtpa of ore to produce more than 300,000 tonnes of copper per year along with gold, silver and molybdenum.

The three 28 megawatt semi-autogenous grinding (SAG) mills, four 16.5 megawatt ball mills and one 22 megawatt ball mill at Cobré Panama are amongst the largest installed anywhere in the world.

As production capacity at Cobré Panama continues to be developed to ultimately process 100 Mtpa of ore, Lycopodium is providing engineering, design, procurement and construction support services for the mine's Ball Mill 6 Project, adding a further 22 megawatt ball mill.

Completion of construction works and commencement of commissioning is targeted for 2023, to allow for a ramp-up of production over the course of the year and achieve a throughput rate of 100 Mtpa at the end of 2023.



## Motheo Copper Project

### Client

Sandfire Resources

### Location

Botswana

### Commodity

Copper, Silver

### RESOURCES

**Lycopodium is providing Engineering, Procurement and Construction Management (EPCM) services for the delivery of the 3.2 Mtpa copper concentrate treatment plant and associated non-process infrastructure for Sandfire's Motheo Copper Mine.**

The Motheo Copper Mine is located in Botswana's Kalahari Copper Belt, one of the world's most exciting and emerging copper producing regions, and is centred on the development of the T3 Deposit, a significant sediment-hosted copper and silver deposit.

Lycopodium has a long association with the project, having undertaken the Definitive Feasibility Study (DFS) for the process plant, followed by the Front End Engineering and Design (FEED) to support long-lead procurement and early works site packages and other engineering works to facilitate an accelerated project development schedule.

The project, being overseen by Tshukudu Metals Botswana (Pty) Ltd, a wholly owned subsidiary of Sandfire Resources, is being delivered via Lycopodium subsidiary ADP Kukama, which operates from Botswana, offering locally based services to the country.

Construction is progressing to schedule, with completion anticipated Q2 2023.



## Western Turner Syncline Phase 2

**Client**  
Rio Tinto

**Location**  
Western Australia

**Commodity**  
Iron Ore

### RESOURCES

**Mondium, Lycopodium's incorporated joint venture with Monadelphous, delivered the Western Turner Syncline Phase 2 (WTS2) mine, located in the Pilbara region of Western Australia, under an engineering, procurement and construction approach for Rio Tinto.**

Development of the WTS2 mine supports mining of existing and new deposits and included construction of a new crusher, 13 kilometre conveyor and substantial mine non-process facilities and roads infrastructure.

Mondium's scope included all engineering and design, procurement and site construction works associated with the development, including the process plant, overland conveyor and non-process infrastructure.

Work on the project commenced in the first quarter of 2020 and first ore was achieved in October 2021.





# Agnew Plant Expansion Stage 1

**Client**  
Gold Fields

**Location**  
Western Australia

**Commodity**  
Gold

## RESOURCES

Situated in the Eastern Goldfields region of Western Australia, the Agnew Gold Mine site is 23 kilometres west of Leinster, 375 kilometres north of Kalgoorlie and nearly 1,000 kilometres north-east of Perth.

The mine produces over 250,000 ounces of gold per annum, with gold sourced from the underground operations and processed via a carbon-in-pulp (CIP) plant.

Lycopodium is providing the Engineering, Procurement and Construction Management (EPCM) services for the Agnew Plant Expansion Stage 1 Project, which includes the addition of a new three stage crushing circuit, with a new fine ore bin feeding onto an extension to the existing ball mill feed conveyor.

This upgrade, which is due for completion in Q3 2022, will provide a crushing plant capable of treating 1.35 Mtpa of gold bearing ore over the ten-year life of the mine.



# Batu Hijau Expansion Project

**Client**  
PT Amman Mineral Nusa Tenggara

**Location**  
Indonesia

**Commodity**  
Copper, Gold

## RESOURCES

**Batu Hijau is an open-pit copper-gold mine located on the island of Sumbawa in the province of West Nusa Tenggara, about 1,500 kilometres east of Jakarta.**

It is the second largest copper and gold mine in Indonesia and has produced more than 8 billion pounds of copper and over 8½ million troy ounces of gold since production commenced in 2000.

In 2020, Lycopodium was awarded the Front End Engineering and Design (FEED) for the development of additional mineral processing capacity to more than double existing production, including primary crushing station, overland conveyor, coarse ore stockpile and reclaim, milling with pebble crushing, flotation circuits and concentrate and tailings pipelines.

In 2021, Lycopodium was subsequently awarded the Professional Engineering and Management Services (PMS) scope to facilitate the process plant expansion. This was then followed by the award of the Engineering Services contract for the development of several key process plant areas, commencing January 2022.

Image: Chemical Grade Processing Plant #2 (CGP2), Greenbushes, Western Australia



## Chemical Grade Processing Plant #3 (CGP3)

**Client**  
Talisson Lithium

**Location**  
Western Australia

**Commodity**  
Lithium

### RESOURCES

**Talisson Lithium owns and operates the Greenbushes Lithium Operation, located proximal to the town of Greenbushes in the south-west of Western Australia. Established in 1888 to mine tin, it is Western Australia's oldest continuously operated mine. Lithium mining at the site commenced in 1983 and since then, Talisison has earned the reputation as one of the world's leading lithium minerals concentrate producers.**

The mining and processing operations at Greenbushes have been upgraded and expanded over the decades to increase production and incorporate new technologies as demand for lithium minerals has grown. The development of a third chemical grade lithium processing plant at Greenbushes, Chemical Grade Processing Plant #3 (CGP3), for which Lycopodium is providing the Engineering, Procurement and Construction Management (EPCM) services, will enable Talisison to continue to supply the downstream lithium processing industry being established in Western Australia.

Lycopodium has an established relationship with Talisison Lithium, including providing EPCM services for the Mine Services Area (MSA) Relocation Project and delivery of the Tailings Retreatment Project (TRP) by Mondium, Lycopodium's incorporated joint venture with Monadelphous.



# Mine Services Area Relocation Project

**Client**  
Talison Lithium

**Location**  
Western Australia

**Commodity**  
Lithium

## RESOURCES

**Talison Lithium is expanding lithium mineral concentrate production capacity at its Greenbushes site in Western Australia's south-west, requiring relocation of the current Mine Services Area to enable the open pit expansion to occur.**

Lycopodium is undertaking the Engineering, Procurement and Construction Management (EPCM) contract for delivery of the relocation project. The project is intended to provide new suitably sized and fit-for-purpose facilities, to safely and efficiently operate and maintain the mining fleet and mine planning activities required to support the planned mining operations.

The facilities will include workshops; technical services building, including a Mine Control Centre; diesel fuel storage, distribution and refuelling stations; tyre change and washdown facilities; and related infrastructure and ancillary facilities.

Construction activities are ongoing through to mid-2023.



# Tailings Retreatment Project

**Client**  
Talison Lithium

**Location**  
Western Australia

**Commodity**  
Lithium

## RESOURCES

**Mondium, Lycopodium's incorporated joint venture with Monadelphous, delivered the Tailings Retreatment Project (TRP), a critical element in the expansion of Talison Lithium's Greenbushes operation in the south-west of Western Australia.**

As the Engineering, Procurement and Construction (EPC) contractor on this greenfield site, Mondium undertook all engineering, procurement, construction and commissioning for the project.

The process plant, consisting of a mineral processing

concentrator with associated services and ancillaries, has been designed to take reclaimed tailings from an existing tailings storage facility and upgrade the contained lithium content to produce a saleable lithium concentrate and a barren tail.

Scope included the design, construction and commissioning of all process and non-process infrastructure, including plant offices, ablutions, control room and a workshop.

The project was completed in January 2022.



## Langer Heinrich Uranium Restart Project Phase 1

**Client**  
Paladin Energy

**Location**  
Namibia

**Commodity**  
Uranium

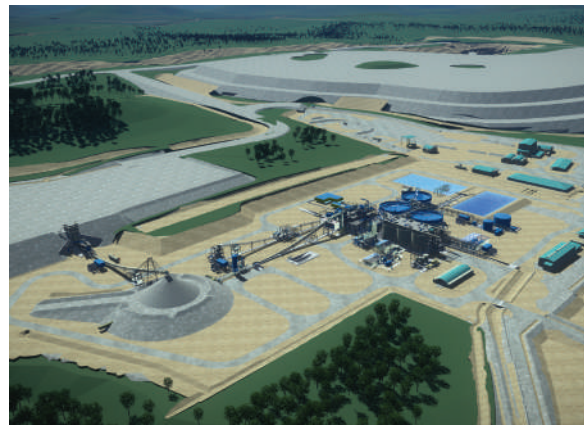
### RESOURCES

Paladin holds a 75% interest in the Langer Heinrich Mine (LHM), which is situated approximately 80 kilometres east of Swakopmund in Namibia's Namib Naukluft National Park.

The mine has been in care and maintenance since May 2018 due to sustained low uranium prices. The Paladin Board has made the decision to return the LHM to production with first volumes targeted for the March quarter of CY2024. Paladin's decision to restart production at the mine is supported by strong uranium market fundamentals and continued progress on uranium marketing activities.

The restart scope of work will focus on general repairs and refurbishment required to return the existing process plant to operational readiness, coupled with the delivery of process upgrades to increase throughput capacity and operational availability.

ADP Namibia, together with specialist consultants, will provide Engineering, Procurement and Construction Management (EPCM) services to Paladin and Langer Heinrich Uranium (Pty) Ltd to design, procure and safely construct and commission the works.



## Ahafo North Project

**Client**  
Newmont Ghana Gold Limited

**Location**  
Ghana

**Commodity**  
Gold

### RESOURCES

Lycopodium is providing Engineering, Procurement and Construction Management (EPCM) services for the design and construction of the process plant and infrastructure for Newmont's Ahafo North Project.

The Ahafo Gold Mine is located approximately 380 kilometres northwest of Ghana's national capital city of Accra. The Ahafo North Project is a greenfield development some 30 kilometres northeast of Newmont's existing Ahafo operations, referred to as Ahafo South.

Lycopodium has been working with Newmont since 2003 in the delivery of its projects in Ghana, including the study and project execution stages for Ahafo South and the Akyem Gold Mine.

Lycopodium's involvement since inception on the Ahafo North Project includes the initial study work, the advancement of engineering design to prepare for the procurement of long lead items and the development of a detailed project execution plan, schedule and capital cost estimate.

With no current or prior mining activity on the site, the seven mineralised areas that comprise the Ahafo North Project span a strike length of approximately 14 kilometres. The development will include a series of open-pits with a 3.4 Mtpa process plant (3.7 Mtpa on softer oxide ores) using conventional carbon-in-leach (CIL) technology.



## Lithium Hydroxide Plant 2 (LHP2) Recommencement Project

### Client

Tianqi Lithium Energy Australia

### Location

Western Australia

### Commodity

Lithium

### RESOURCES

Western Australia's first battery-grade lithium hydroxide was produced in May 2022 at Tianqi Lithium Energy Australia's processing plant in the Kwinana Industrial Area, south of Perth, for supply to global customers producing rechargeable batteries for the electric vehicle and energy storage system industries.

The Kwinana facility is the world's first fully automated processing plant to produce battery grade lithium

hydroxide, and the first lithium hydroxide plant in Australia.

The plant has designs for two identical production trains, of which the first train, LHP1, is now in operation. Train 2 (LHP2) is under development, with Lycopodium providing professional services, including project strategies and engineering in relation to early works.



## Kathleen Valley Lithium Project

### Client

Liontown Resources

### Location

Western Australia

### Commodity

Lithium

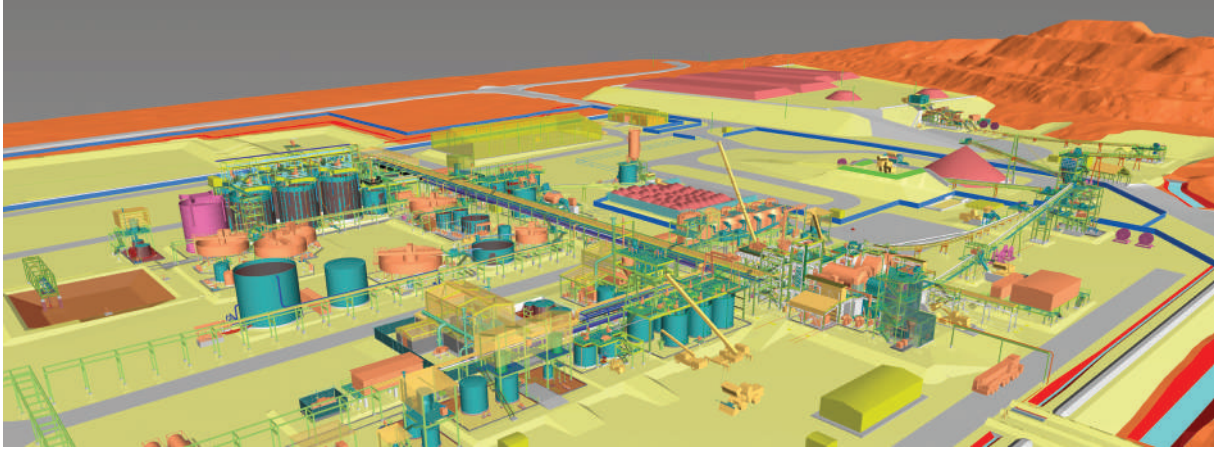
### RESOURCES

**The Kathleen Valley Lithium Project is located on the western edge of the Norseman-Wiluna Greenstone Belt, about 60 kilometres north of Leinster, and 680 kilometres north-east of Perth, Western Australia.**

Kathleen Valley is one of the world's largest and highest-grade hard rock lithium deposits and, with an initial 2.5 Mtpa production capacity, it is expected to supply ~500,000 tonnes of 6% lithium oxide concentrate per year. With first production expected in Q2 2024, the deposit will also produce Tantalum Pentoxide, a valuable material used in electronics and optics manufacturing.

Mining will predominately be underground, allowing direct access to higher grade mineralisation while minimising waste and the environmental footprint of the project, with mined ore processed through a Whole of Ore Flotation circuit.

Having initially undertaken the Pre-feasibility Study (PFS) update for the project, followed by Value Engineering Assessments (VEAs) and subsequently the Definitive Feasibility Study (DFS) and Front End Engineering and Design (FEED) services, Lycopodium was awarded the Engineering, Procurement and Construction Management (EPCM) contract for the delivery of the project.



## Sabodala-Massawa BIOX<sup>®</sup> Expansion Project

### Client

Sabodala Gold Operations SA  
(Endeavour Mining)

### Location

Senegal

### Commodity

Gold

### RESOURCES

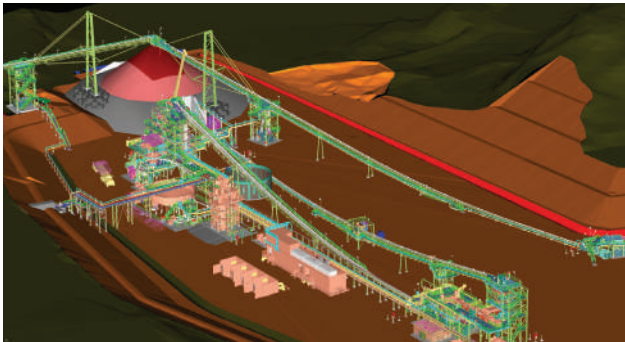
**Sabodala-Massawa is the largest producing gold mine in Senegal, located approximately 650 kilometres east-southeast of the capital city of Dakar and 96 kilometres north of the town of Kedougou.**

Endeavour acquired the Sabodala-Massawa complex in February 2021, which included the Sabodala mill and deposits and the nearby Massawa deposits, the largest undeveloped open-pit project in Africa. Massawa is located within trucking distance of Sabodala, creating the opportunity for significant capital and operating synergies.

The integration and expansion of the Sabodala-Massawa complex involves supplementing the current 4.2 Mtpa carbon-in-leach (CIL) plant with a 1.2 Mtpa BIOX<sup>®</sup> (biological oxidation) plant to process the high-grade refractory ores from the Massawa deposits.

Following delivery of the Definitive Feasibility Study (DFS), Lycopodium was awarded the Early Works scope for the Sabodala-Massawa BIOX<sup>®</sup> Expansion Project.

Project construction commenced in Q2 2022 and first gold pour from the BIOX<sup>®</sup> plant is expected in early 2024.



## Navachab Gold Mine Expansion

### Client

QKR Namibia Navachab Gold Mine  
Pty Ltd

### Location

Namibia

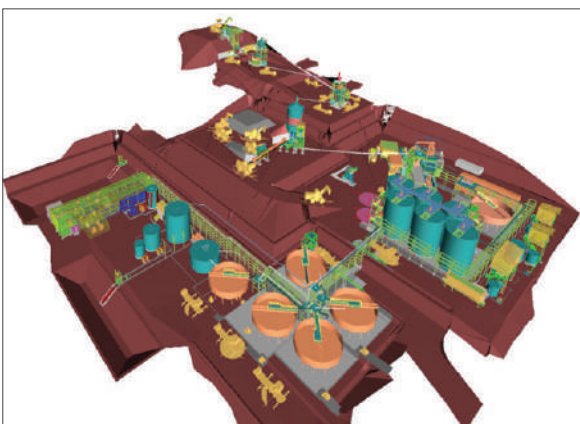
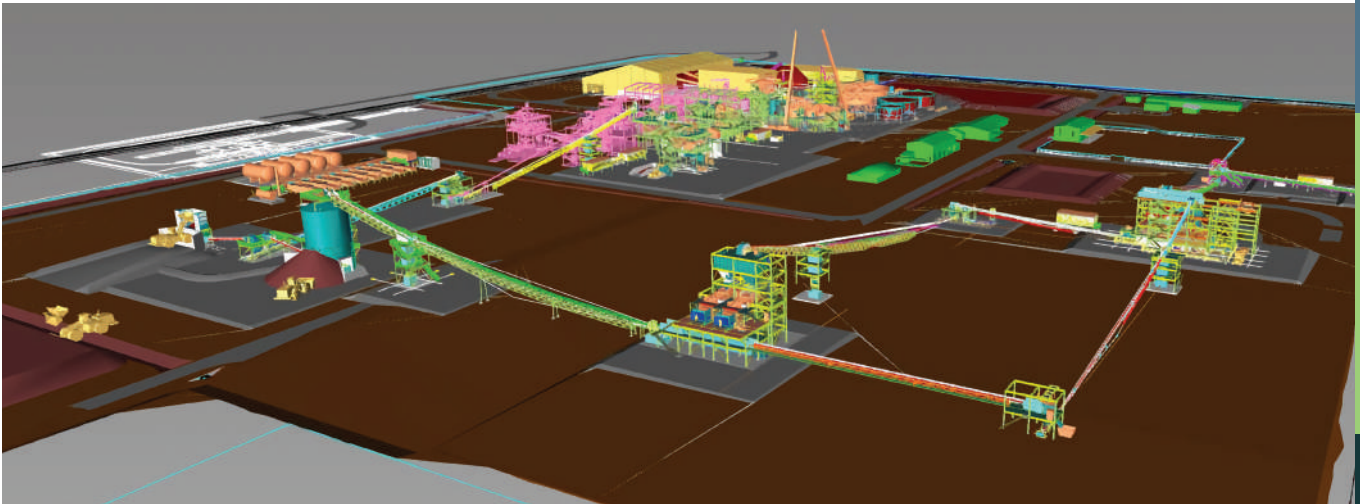
### Commodity

Gold

### RESOURCES

**The Navachab Gold Mine is an open-pit mine located near Karibib, in the Erongo Region of Namibia. It is the oldest gold mine in Namibia and takes its name from the local Navachab farm, which the gold deposit was found beneath.**

Lycopodium is providing the Engineering, Procurement and Construction Management (EPCM) services for the expansion of the mine, which includes a new milling circuit with 1.19 Mtpa capacity and an expansion of the CIP circuit to increase tonnage from 1.36 to 2.46 Mtpa.



## Goulamina Lithium Project

**Client**  
Leo Lithium

**Location**  
Mali

**Commodity**  
Lithium

### RESOURCES

The Goulamina Lithium Project is located in the Bougouni Region of southern Mali, approximately 150 kilometres south of the country's capital, Bamako.

One of the largest undeveloped hard rock lithium deposits globally, the world-class Goulamina lithium deposit will be West Africa's first operating lithium mine.

Having completed the original Definitive Feasibility Study (DFS) in 2019, Lycopodium provided a DFS Update in December 2021, which included a revised flowsheet to facilitate a potential increase in plant throughput to 4.0 Mtpa. Process plant production from the initial stage is via a crushing and milling circuit, followed by flotation, dewatering and storage, producing 0.5 Mtpa of spodumene concentrate per annum. Production will increase to 0.8 Mtpa<sup>1</sup> on construction of Stage 2.

Lycopodium has subsequently commenced the Engineering, Procurement and Construction Management (EPCM) activities for the delivery of the project (Stage 1), which will be completed in 2024.

1. Based on Stage 2 steady state production (first 5 years)

## Zgounder Expansion Project

**Client**  
Aya Gold & Silver Inc

**Location**  
Morocco

**Commodity**  
Silver

### RESOURCES

The Zgounder Silver Mine is located in Morocco's Anti-Atlas mountain range, approximately 260 kilometres east of the city of Agadir, in the Taroudant Province.

The Zgounder Expansion Project includes a new 2,000 tpd process plant to complement the existing 500 tpd flotation plant and 170 tpd cyanidation plant.

Lycopodium provided the Front End Engineering and Design (FEED) services, including bulk earthworks design, process design and compilation of specifications and datasheets for major and long lead equipment packages, for the proposed expansion.



## Phase 1 Integrated Project

**Client**  
Lepidico Limited

**Location**  
Namibia and the United Arab Emirates

**Commodity**  
Lithium

### RESOURCES

**Lepidico is a chemical company with global interests, focused on the development and operation of lithium assets, particularly those containing lithium-rich mica minerals. The company has developed the proprietary L-Max® and LOH-Max® technologies, which are hydrometallurgical processes to extract and recover lithium and other alkali metals from lithium containing micas and phosphates.**

Having provided the early works and Front End Engineering and Design (FEED) for Lepidico's Phase 1 Integrated Project, Lycopodium was subsequently awarded the Engineering, Procurement and Construction Management (EPCM) contract in October 2021.

The project includes the design, construction and commissioning of a mineral concentrator at the Karibib mine in Namibia and a chemical plant in the United Arab Emirates (UAE). Lycopodium is providing engineering design, procurement of equipment and materials, and

construction management, pre-operational testing and commissioning for the project.

Two open-pit mines will be redeveloped at the Karibib mine in Namibia, including the construction of a mineral concentrator and associated infrastructure at the site. The lithium-mica concentrate produced at Karibib will be shipped from Namibia to the chemical plant in the UAE.

The Phase 1 chemical plant will be located in the Khalifa Industrial Zone, Abu Dhabi (KIZAD) and will process 56,700 dtpa of lithium bearing mica concentrates to produce approximately 5,600 tpa of lithium hydroxide monohydrate and several by-products.

The initial early works and FEED scope commenced in May 2021, with project completion anticipated in 2024.





## Additional Feed System (AFS)

### Client

De Beers Namdeb

### Location

Namibia

### Commodity

Diamonds

### RESOURCES

In order to increase Namdeb's Southern Coastal Mines' (SCM) processing capacity and find alternative process solutions, Namdeb approached ADP to investigate an alternate feed stream to 3 Plant, their flagship plant in Mining Area 1.

The main objective of this Alternative Feed Stream (AFS) was to investigate different technologies and flowsheets that could be implemented to treat run-of-mine (ROM) up to 300 tph, with a secondary focus on the removal of clay, shell and other light contaminants. To this end, a scrubbing and screening front end solution was designed that would act independently (delivery to DMS stockpile) of the existing plant in order to facilitate increased overall utilisation.

Design for the AFS plant was finalised in October 2021 and site mobilisation of the civil and structural, mechanical, platework and piping (SMPP) contractors occurred in April 2022. Once the construction team has undertaken the bulk excavations and layer works of the more than 100,000 cubes tipping ramp, the remaining civil works will be completed. The SMPP scope is scheduled to start in October 2022, with practical completion of the project by March 2023.



## Tijirit Gold Project

### Client

Aya Gold & Silver Inc

### Location

Mauritania

### Commodity

Gold

### RESOURCES

The Tijirit Gold Project is located in northwestern Mauritania, approximately 275 kilometres north of the capital Nouakchott. This world-class deposit is an orogenic gold camp with development stage gold deposits within multiple pits.

Lycopodium is preparing an NI 43-101 compliant Feasibility Study (FS) to assess the potential for developing Tijirit. The study envisages a base case scenario of a 1,000 tpd processing plant that can be easily expanded to 2,000 tpd. The proposed initial flowsheet will comprise a conventional primary crush and semi-autogenous grinding (SAG) milling circuit, followed by gravity gold recovery and leaching.



## Picton to Colo Vale Line Track Upgrade and Extension

### Client

Transport Heritage NSW (THNSW)

### Location

New South Wales

### Sector

Rail

### INFRASTRUCTURE

Lycopodium has been engaged to assist Transport Heritage NSW to upgrade approximately 17 kilometres of heritage railway from Picton to Colo Vale in New South Wales. This section of the historic railway line, stretching from Sydney's southwest to the Southern Highlands, will welcome back heritage trains for the first time in 30 years, following a \$14.6 million project investment from the state government.

Our involvement spans a range of services including development of project documentation and tender specifications, management of the procurement process of key contractors for the upgrade of the Loop Line, and working with THNSW management to make recommendations as to preferred contractors.

Responsibilities extend to management of all appointed contractors including all aspects of induction, safety, compliance and managing the end-to-end delivery of contracted works, community engagement, problem solving and issue resolution.



**Lycopodium was engaged to undertake a scoping study to inform the upgrade to 25 Tonne Axle Loads (TAL) of three rail lines in regional New South Wales.**

As part of the Country Lines Improvement Program, Lycopodium assessed rail lines between Stockinbingal to Griffith, Narrabri to Walgett and Temora to Ungarie – totalling over 450 kilometres – for the suitability of upgrading the tracks to 25TAL.

The scope included track structure review, Preliminary Environment Assessment (PEA) and a Review of Environmental Factors (REF) as well as detailed assessment of all culverts, level crossings and turnouts within the scope area.

To perform the track structure review, Lycopodium developed a Power BI model to assess the rail, sleepers, ballast and formation, along with reviewing the maintenance history and track performance.

By undertaking this, along with a customised formation design, both the longitudinal extent of works and scope of civil works were optimised to provide economical options for the upgrade scope.

## CRN 25 Tonne Axle Load Upgrade

### Client

John Holland Rail Country Regional Network

### Location

New South Wales

### Sector

Rail

### INFRASTRUCTURE



## Synchrotron Beamline Shielding Hutches (BioSAX & ADS)

**Client**  
Innospec AG (Germany)

**Location**  
Victoria

**Sector**  
Research & Development

### INDUSTRIAL PROCESSES

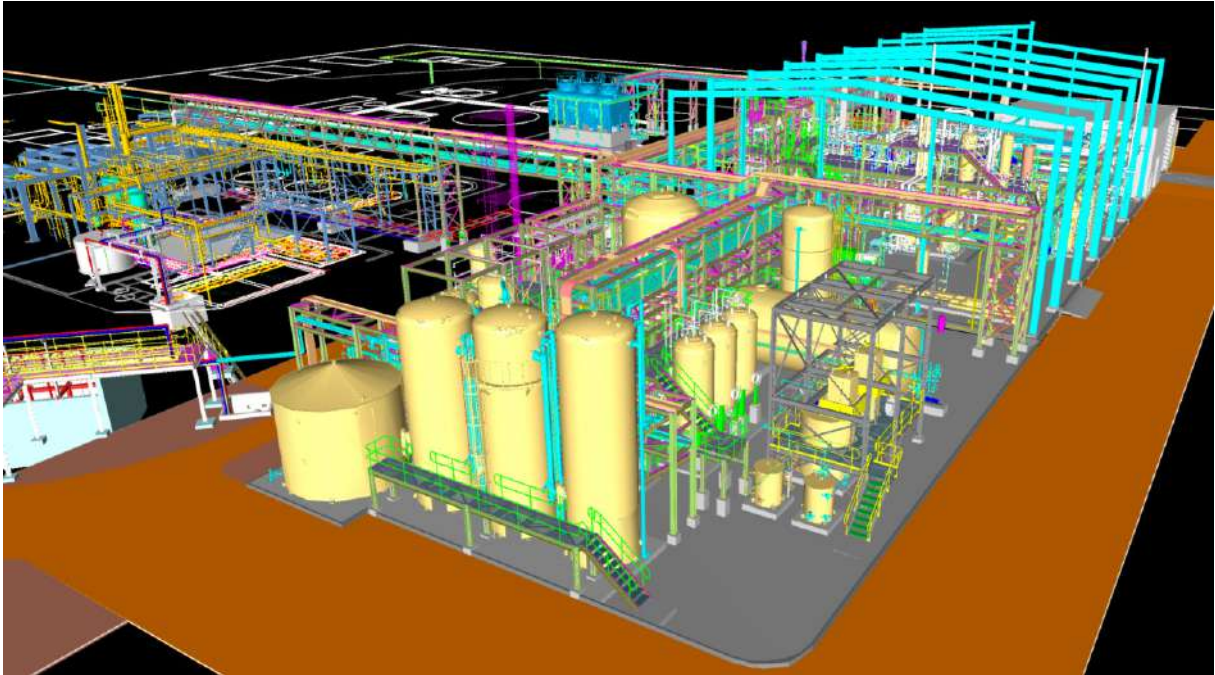
**The Australian Synchrotron is a research facility in Melbourne, adjacent to the Monash University Clayton Campus, and is operated by ANSTO (Australian Nuclear Science and Technology Organisation).**

Synchrotrons produce powerful beams of light – more than a million times brighter than the sun – that are used at individual experimental facilities to examine the molecular and atomic details of a wide range of materials. These advanced techniques are applied to research in many important areas, including health and medical, food, environment, biotechnology, nanotechnology, energy, mining, agriculture, advanced materials, and cultural heritage.

The electron packets travel just under the speed of light – about 299,792 kilometres a second. When the electron packets travel in a curved path they generate intense broad spectrum light ranging from infrared through to X-rays, which is channelled down long pipelines, known as beamlines, into a suite of scientific instruments where the intense beams of light reveal the innermost, microscopic secrets of materials.

When founded in 2007, the facility was given room to grow – space was reserved for extra beamlines to be added in the future, and Lycopodium has been part of a number of these expansion projects. On the latest Project BRIGHT build of six additional beamlines, Lycopodium has been entrusted individually with all six. On this occasion, we extended our local knowledge to support Innospec AG, a German company, to assist with the engagement of local sub-contractors to support the installation of two new lead-lined shielding enclosures (known as BioSAX and ADS beamlines), and to support Innospec and ANSTO with site installation activity and safety management.

The BioSAX beamline enclosures have been radiation tested and handed over to ANSTO for the internal fit-out of utilities and scientific equipment, whilst the ADS beamline is currently progressing with anticipated completion in Q3 2022.



## Chlor Alkali Facility

### Client

Coogee Chemicals Pty Ltd

### Location

Western Australia

### Sector

Chemical & Energy

### INDUSTRIAL PROCESSES

Coogee is an Australian privately owned chemical company specialising in the manufacture, storage and transportation of bulk liquids and dangerous goods. The Chlor Alkali Facility will produce chlorine and caustic soda by electrolysis of pure brine material.

After completing the initial Front End Engineering and Design (FEED) Study, Lycopodium was awarded the detailed Engineering Design phase for the Chlor Alkali Facility, to be located at Coogee's existing Kemerton facility.

Lycopodium's scope of services included the Engineering and Drafting for civil, concrete, structural, mechanical, piping, instrumentation and electrical. The project included full 3D modelling and generation of over 500 piping isometric drawings.





# Consolidated Statement of Profit or Loss and Other Comprehensive Income

For the year ended 30 June 2022

	Notes	2022 \$	2021 \$
Revenue from contracts with customers	5(a)	228,711,210	158,062,505
Interest income		563,484	551,307
Other income	5(c)	2,882,139	3,561,836
<b>Total income</b>		<b>232,156,833</b>	162,175,648
Employee benefits expense		(85,216,446)	(61,759,749)
Depreciation and amortisation expense	6	(5,621,299)	(4,784,787)
Project expenses		(3,709,202)	(3,560,682)
Equipment and materials		(45,365,867)	(19,157,291)
Contractors		(46,421,321)	(25,806,496)
Occupancy expense		(1,760,674)	(1,907,537)
Other expenses		(13,353,492)	(13,013,638)
Warranty provision reversal/(expenses)	21	9,305,489	(11,022,306)
Finance costs	6	(886,201)	(816,789)
Share of net (loss)/profit of associates and joint ventures accounted for using the equity method	17	(201,172)	1,143,008
<b>Profit before income tax</b>		<b>38,926,648</b>	21,489,381
Income tax expense	7	(12,074,774)	(7,423,134)
<b>Profit for the year</b>		<b>26,851,874</b>	14,066,247
Profit attributable to:			
Owners of Lycopodium Limited		27,177,701	14,199,449
Non-controlling interests		(325,827)	(133,202)
<b>Profit for the year</b>		<b>26,851,874</b>	14,066,247
<b>Other comprehensive income</b>			
<i>Items that may be reclassified to profit or loss</i>			
Foreign currency translation		(817,656)	1,209,198
<b>Total comprehensive income for the year</b>		<b>26,034,218</b>	15,275,445
Other comprehensive income for the year is attributable to:			
Owners of Lycopodium Limited		26,030,215	15,408,647
Non-controlling interests		4,003	(133,202)
<b>Total comprehensive income for the year</b>		<b>26,034,218</b>	15,275,445
	Notes	Cents	Cents
<b>Earnings per share for profit attributable to the ordinary equity holders of the Company:</b>			
Basic earnings per share	36(a)	68.4	35.7
Diluted earnings per share	36(b)	68.4	35.5

# Consolidated Statement of Financial Position

As at 30 June 2022

	Notes	2022 \$	2021 \$
<b>ASSETS</b>			
<b>Current assets</b>			
Cash and cash equivalents	8	100,946,619	76,841,139
Trade and other receivables	9	67,111,605	43,887,117
Inventories	10	347,627	1,540,415
Current tax receivables		-	1,971,240
Other current assets		5,518,861	2,482,762
<b>Total current assets</b>	11	<b>173,924,712</b>	126,722,673
<b>Non-current assets</b>			
Property, plant and equipment	12	6,897,962	4,671,757
Right-of-use assets	13	13,687,667	14,925,280
Intangible assets	14	6,524,274	6,743,650
Deferred tax assets	15	12,621,890	6,189,450
Investments in listed equities	16(a)	2,471,669	739,920
Investments accounted for using the equity method	17	2,768,361	3,870,307
Other receivables	18	42,459	189,413
<b>Total non-current assets</b>		<b>45,014,282</b>	37,329,777
<b>Total assets</b>		<b>218,938,994</b>	164,052,450
<b>LIABILITIES</b>			
<b>Current liabilities</b>			
Trade and other payables	19	26,024,079	15,399,106
Contract and other liabilities	5(b)	43,468,918	17,055,363
Borrowings	16(b)	841,470	760,274
Lease liabilities	16(a)	3,426,992	2,669,183
Current tax liabilities		18,960,637	4,941,192
Derivative liabilities		536,081	
Employee benefits	20	8,869,891	7,572,761
Provisions	21	4,087,367	13,340,431
<b>Total current liabilities</b>		<b>106,215,435</b>	61,738,310
<b>Non-current liabilities</b>			
Borrowings	16(b)	683,317	1,404,749
Employee benefits	23	671,369	165,864
Lease liabilities	16(a)	11,693,453	13,069,705
<b>Total non-current liabilities</b>		<b>13,048,139</b>	14,640,318
<b>Total liabilities</b>		<b>119,263,574</b>	76,378,631
<b>Net assets</b>		<b>99,675,420</b>	87,673,822
<b>EQUITY</b>			
Contributed equity	24	19,344,160	20,854,574
Reserves	25	(337,504)	(229,936)
Retained earnings	26	81,496,413	67,758,814
Parent entity interest		100,503,069	88,383,452
Non-controlling interests	27	(827,649)	(709,630)
<b>Total equity</b>		<b>99,675,420</b>	87,673,822

# Shareholder Information

The shareholder information set out below was applicable as at 6 August 2022.

## A. Distribution of Equity Securities

Analysis of numbers of equity security holders by size of holding:

Holding	Total Holders
1 - 1000	600
1,001 - 5,000	611
5,001 - 10,000	212
10,001 - 100,000	226
100,001 and over	31
	<b>1,680</b>

There were 100 holders of less than a marketable parcel of ordinary shares.

## B. Equity Security Holders

The names of the twenty largest holders of quoted equity securities are listed below:

Holding	Ordinary shares	
	Number held	Percentage of Units
1 REESH PTY LTD <THE M J CARATTI FAMILY A/C>	9,109,367	22.92
2 CHIMAERA CAPITAL LIMITED <BRUNNO RUGGIERO>	3,192,332	8.03
3 BNP PARIBAS NOMS PTY LTD <GLOBAL MARKETS DRP>	3,088,727	7.77
4 UBS NOMINEES PTY LTD <THORNEY INVESTMENT GROUP>	2,732,800	6.88
5 J P MORGAN NOMINEES AUSTRALIA PTY LIMITED <CLIME ASSET GROUP>	1,636,891	4.12
6 ACCEDE PTY LTD <THE L W MARSHALL FAMILY A/C>	992,332	2.50
7 CADDY FOX PTY LTD <THE LEONARD FAMILY A/C>	979,215	2.46
8 MR PETER DE LEO & MRS TIANA DE LEO <DE LEO SUPER FUND A/C>	896,711	2.26
9 MONADELPHOUS GROUP LIMITED	603,511	1.52
10 CITICORP NOMINEES PTY LIMITED	530,684	1.34
11 HSBC CUSTODY NOMINEES (AUSTRALIA) LIMITED	446,931	1.12
12 GOTTERDAMERUNG PTY LIMITED <GOTTERDAMERUNG FAMILY A/C>	432,078	1.09
13 NATIONAL NOMINEES LIMITED	413,326	1.04
14 MR DAVID JAMES TAYLOR	370,000	0.93
15 DFA - AUSTRALIA	328,359	0.83
16 YARRA CAPITAL MANGEMENT	328,201	0.83
17 MR ROBERT JOSEPH OSMETT	308,148	0.78
18 HSBC CUSTODY NOMINEES (AUSTRALIA) LIMITED	294,015	0.74
19 MR JAMES SMITH	240,000	0.60
20 BOTECH PTY LTD <BOTTECCHIA SUPER FUND A/C>	224,365	0.56
	<b>27,147,993</b>	<b>68.32</b>

## C. Substantial Holders

Analysis of numbers of equity security holders by size of holding:

	Number held	Percentage of Units
1 REESH PTY LTD <THE M J CARATTI FAMILY A/C>	9,109,367	22.92
2 CHIMAERA CAPITAL LIMITED <BRUNNO RUGGIERO>	3,192,332	8.03
3 BNP PARIBAS NOMS PTY LTD <GLOBAL MARKETS DRP>	3,088,727	7.77
4 UBS NOMINEES PTY LTD <THORNEY INVESTMENT GROUP>	2,732,800	6.88
5 J P MORGAN NOMINEES AUSTRALIA PTY LIMITED <CLIME ASSET GROUP>	1,636,891	4.12



# Corporate Directory

## Board of Directors

**Michael John Caratti**  
Non-Executive Chairman

**Peter De Leo**  
Managing Director

**Rodney Lloyd Leonard**  
Non-Executive Director

**Bruno Ruggiero**  
Executive Director

**Karl Anthony Cicanese**  
Executive Director

**Steven John Micheil Chadwick**  
Non-Executive, Independent Director

## Audit Committee

**Peter De Leo**  
**Rodney Leonard**

## Remuneration Committee

**Michael Caratti**  
**Steven Chadwick**

## Risk Committee

**Peter De Leo**  
**Rodney Leonard**  
**Bruno Ruggiero**

## Company Secretary

**Justine Campbell**

## Registered and Principal Office

Level 5, 1 Adelaide Terrace  
East Perth, Western Australia 6004  
+61 8 6210 5222

## Share Registry

Computershare Investor Services Pty Limited  
Level 11, 172 St Georges Terrace  
Perth, Western Australia 6000  
+61 8 9323 2000

## Lawyers

Steinepreis Paganin  
Level 4, The Read Buildings  
16 Milligan Street  
Perth, Western Australia 6000  
+61 8 9321 4000

## Auditors

RSM Australia Partners  
Level 32, Exchange Tower  
2 The Esplanade  
Perth, Western Australia 6000  
+61 8 9261 9100

## Principal Banker

Australia and New Zealand Bank  
Level 10, 77 St Georges Terrace  
Perth, Western Australia 6000

## Website

[www.lycopodium.com](http://www.lycopodium.com)



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