

# **PENSANA** Plc

**Financing underway to unlock one of the world's  
largest undeveloped rare earth projects**

**UK Government backing to establish magnet  
metal supply chain in the UK**

**The EV Economy Webinar  
18 January 2024  
LSE:PRE**



## Corporate Summary

LSE standard list (**LSE: PRE**)

285 million shares on issue

Market Capitalization ~£58 million

### Highly Supportive Major Shareholders have invested US\$70 million to date

**Angolan Sovereign Wealth Fund FSDEA (26%)**  
*(Invested US\$32 million Mar 2020 – Apr 2023 and  
US\$15 million loan October 2023)*

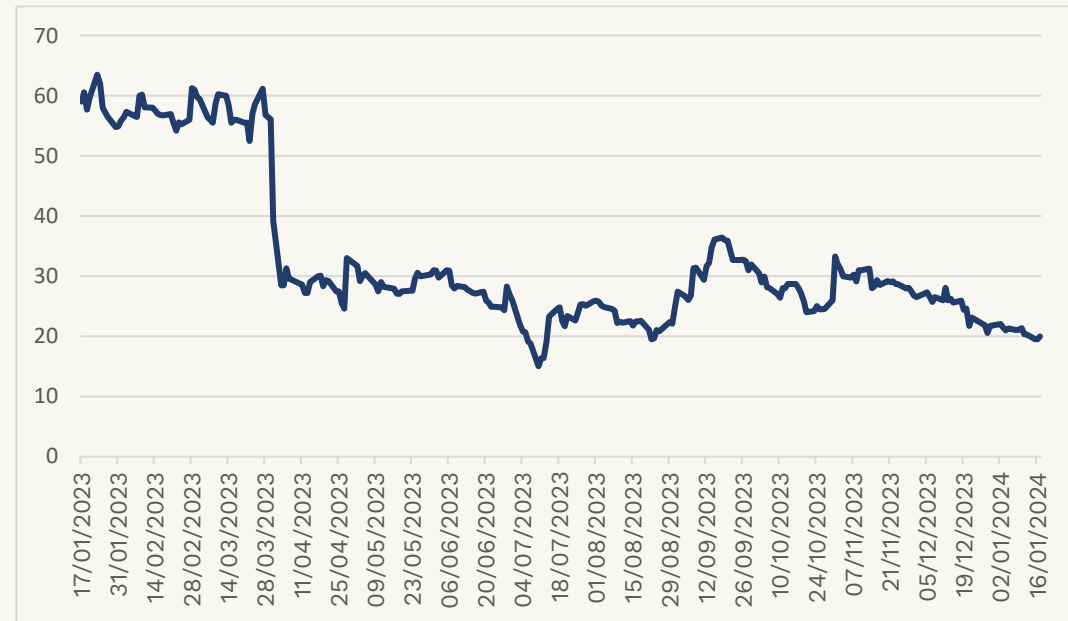
**M&G Investments (12%)**  
*(Invested US\$22 million Jan 2022 – Apr 2023)*

**Selection Capital (Chairman PCA) (5%)**  
*(Invested US\$750,000 Mar 2020 and subsequently  
US\$292,000 on-market purchases)*

**Other Institutional investors (5%)**

**Management and Related parties (3%)**

## 12 Month Share Price

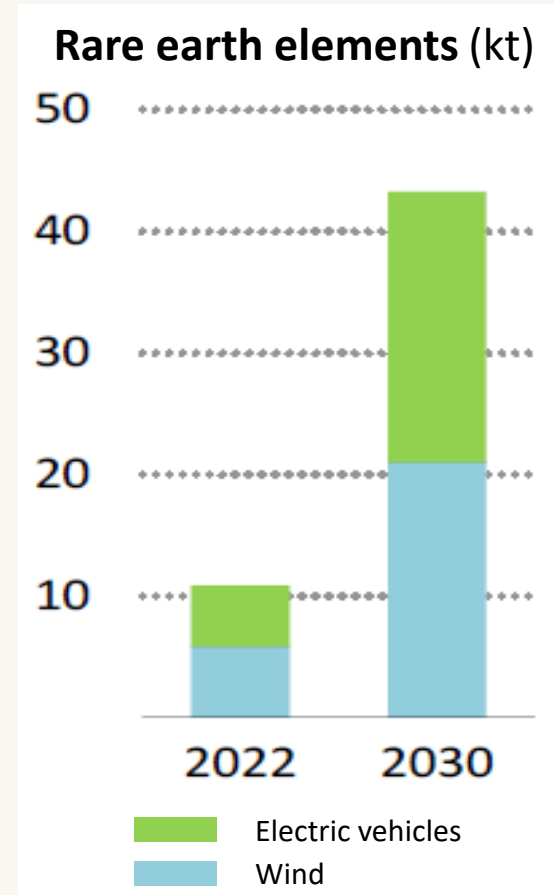


## IEA World Energy Outlook 2023: Electric Vehicles to increase 10-fold by 2030 amid *'unstoppable'* net zero shift

The transition to clean energy is happening worldwide and it's unstoppable. Electric vehicles are now expected to have a global market share of 38% of new sales by 2030.

Rapid uptake in EVs in recent years with projections now showing more than 220 million passenger cars on the road in 2030, a 20% increase in the 2020 outlook.







Long lead times for mines and the associated infrastructure mean that scaling up supplies takes time, raising the risk of supply bottlenecks.



*Demand for rare earths expected to increase by almost 400% by 2030 under IEA APS*

## Investment Opportunity

### Rare opportunity to gain direct exposure to the biggest energy transition in history

-  The electrification of motive power through EVs and Wind Turbines will generate a demand growth for magnet metal NdPr of 7.5% CAGR over the next decade.
-  Pensana owns one of the world's largest undeveloped rare earth mines, one of only three with a JORC Reserve >100,000 tonnes of NdPr.
-  Global significant producer ~5% of world production of NdPr at full capacity.
-  Upfront capital cost of US\$200 million for the fully permitted mine and processing facilities is amongst the lowest amongst its peers.
-  FSDEA, ABSA and African multilateral agencies working towards the US\$200 million capital requirement at the subsidiary level.
-  Fully permitted US\$250 million downstream separation facility at the Saltend Chemicals Park in the Humber Freeport. Financing underway.

# One of the Largest Undeveloped Rare Earth Deposits Globally

## Excellent rail, hydro and port infrastructure

JORC RESERVE 30 million tonnes 2.55% TREO containing 166,000 tonnes NdPr oxide for initial 20-year mine-life.

The near surface, deeply weathered orebody, has an average mine depth of less than 30 metres.

High average mine grade of 3.73% TREO and 0.79% NdPr over the first five years.

Access to affordable hydroelectric power and direct access to the Lobito Port via the Benguela rail line.



## Growing Mining Jurisdiction Attracting Global Investment

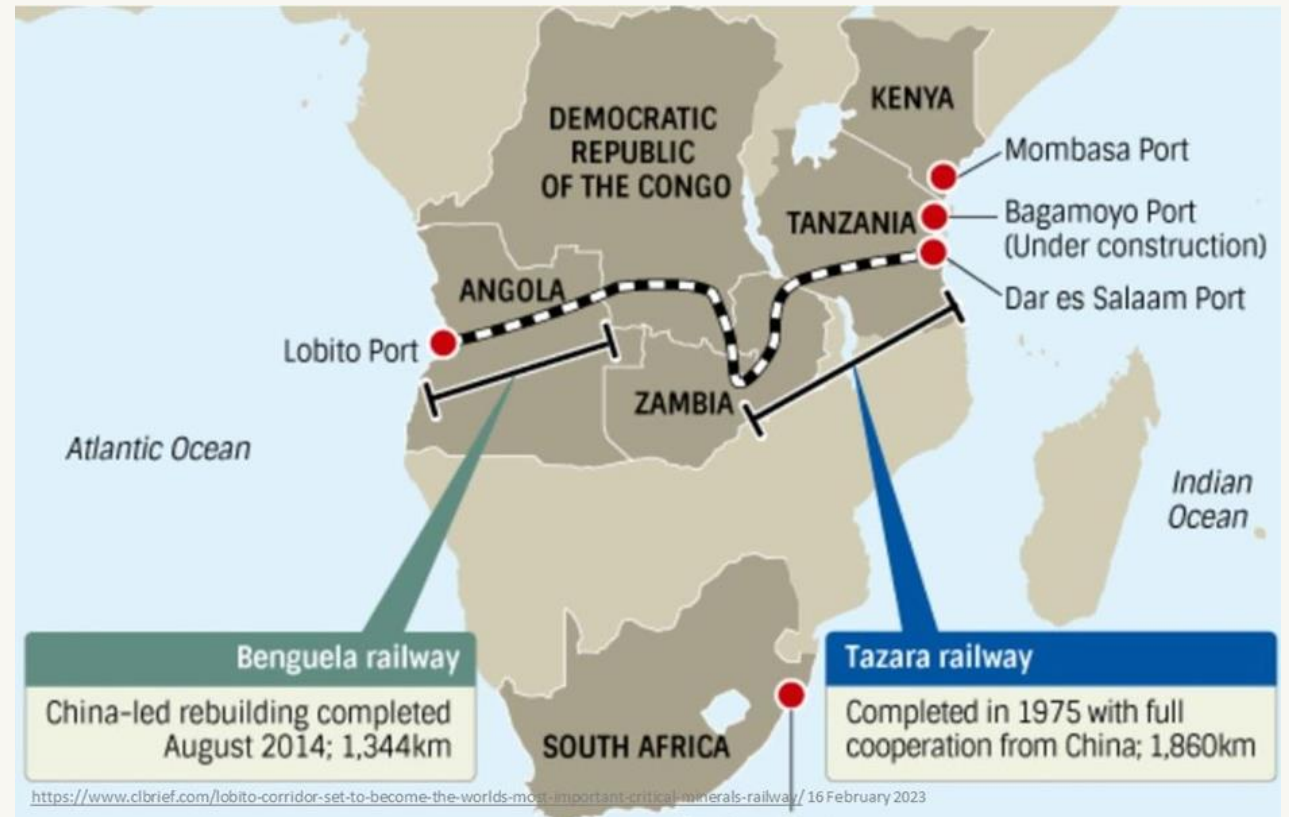
Angola has an untapped critical minerals endowment, exceptional rail, hydro and port infrastructure and a highly supportive Government.

**Ivanhoe Founder Robert Friedland** *"We thank the government of Angola for welcoming Ivanhoe Mines and entrusting us to explore their vast mineral endowment. Our goal is to make Angola a globally significant producer of strategic minerals that our planet so desperately needs, for many generations to come."*

**Anglo American CEO Mark Cutifani** *"I was impressed with the strategic vision that the Minister has for Angola, and what he wants to do with the Mining Sector."*

**De Beers CEO Bruce Cleaver** highlighted the *"..stable and attractive investment environment."*

**Pensana CEO Tim George** *"..the Lobito Corridor will have a very positive impact on the transport logistics during construction and on the reagent and product transport during operations."*



*The US\$550 million Lobito Corridor is anticipated to become one of Africa's most important rail transport systems.*

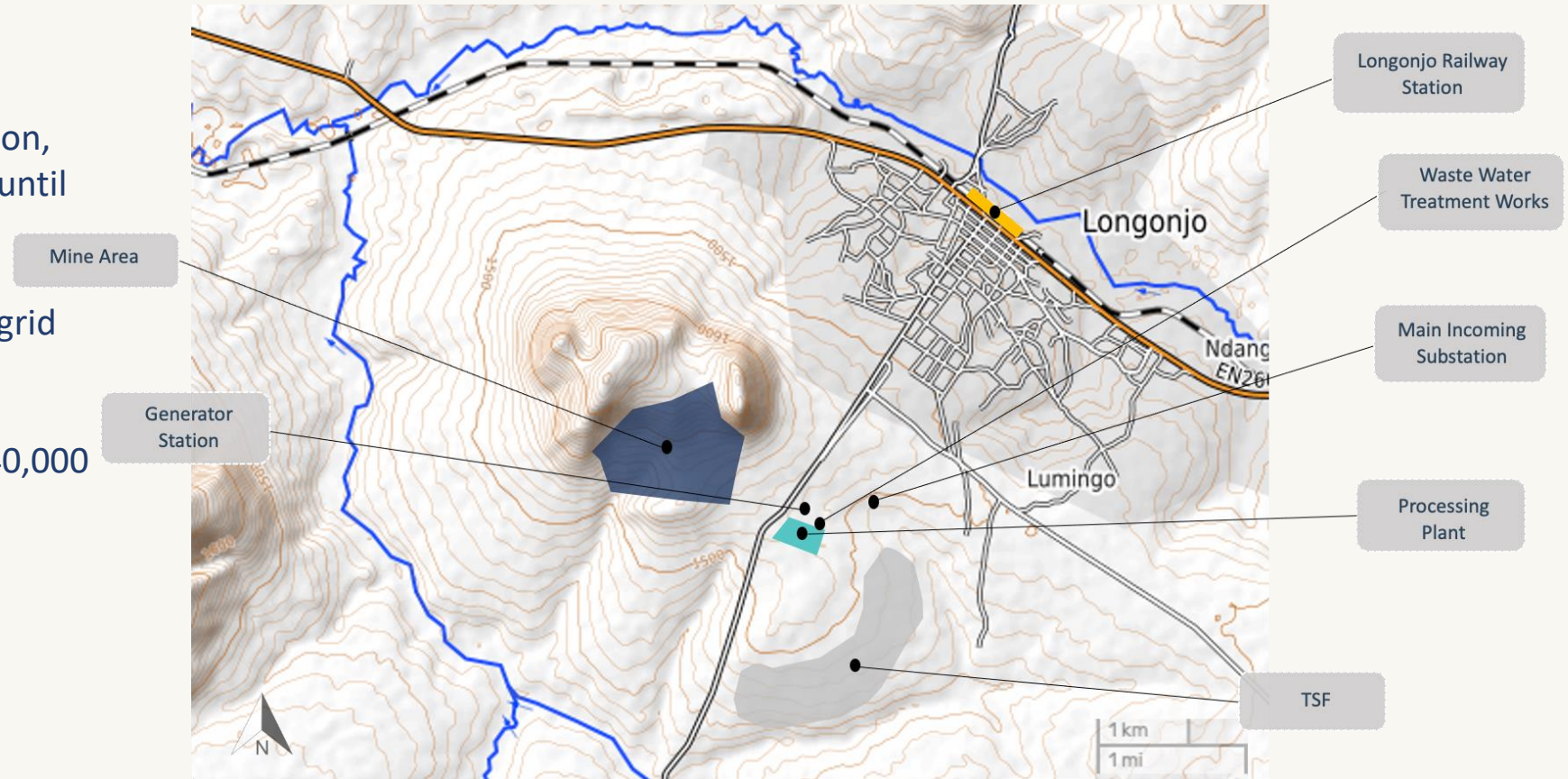
# State-of-the-art Mine and Processing Facility

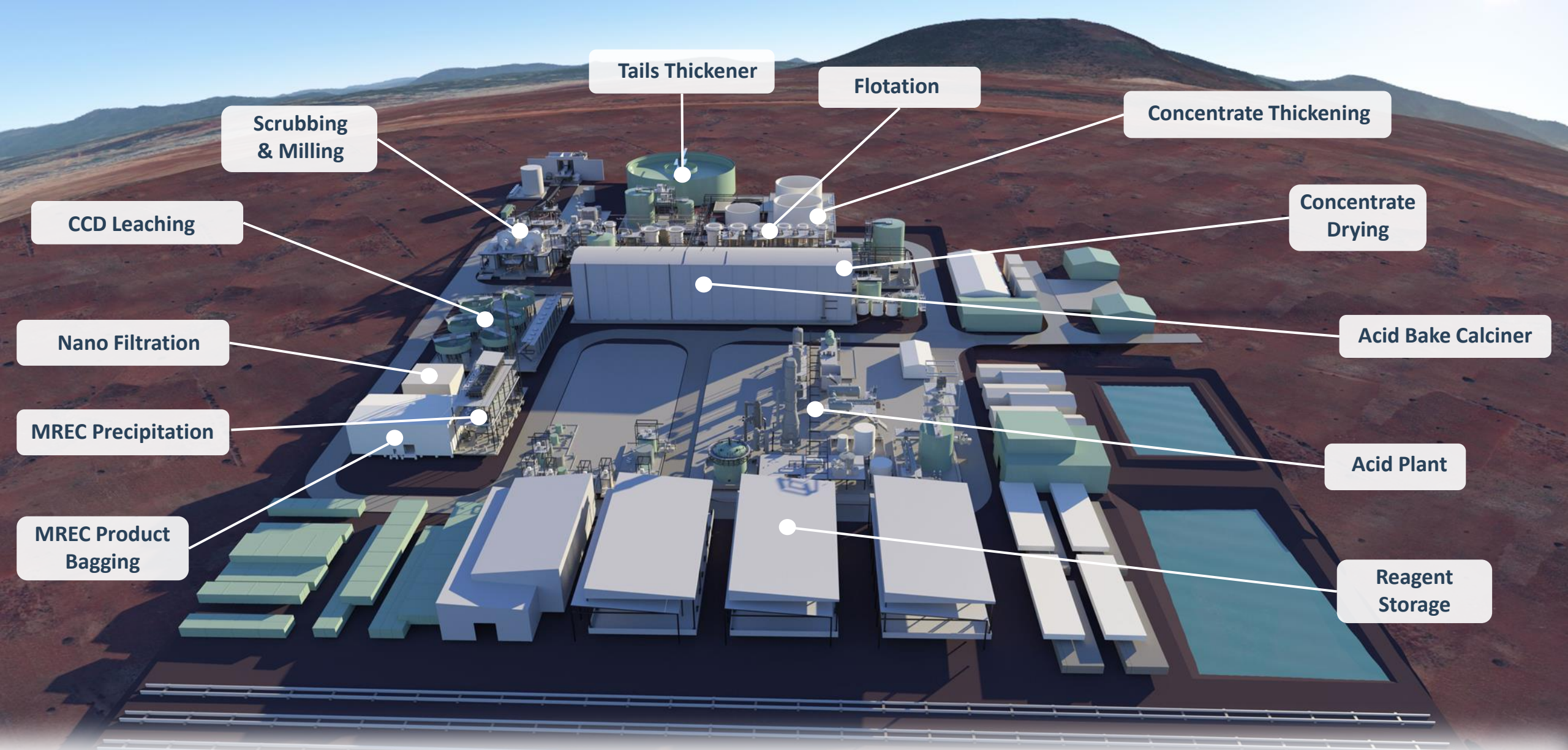
## Upfront capital cost lowest amongst peers

Upfront capital cost of US\$200 million, with circa US\$105 million deferred until year three.

Related mainly to plant expansion, grid connection and rail spur.

At full capacity annual production 40,000 tonnes of highly marketable, radionuclide-free mixed rare earth carbonate (MREC) containing 4,400 tonnes of NdPr.





Scrubbing & Milling

CCD Leaching

Nano Filtration

MREC Precipitation

MREC Product Bagging

Tails Thickener

Flotation

Concentrate Thickening

Concentrate Drying

Acid Bake Calciner

Acid Plant

Reagent Storage

✓ Modular Manufacture

✓ On-site Assembly

✓ Extensively Pilot-Tested

✓ High Quality Vendors

✓ Hydro & Solar Powered

✓ Low Scope 2 Emissions

✓ Low Impact Footprint

**PENSANA** Plc



# Highly Experienced Project Delivery Team

## Proven design and delivery track record of modular process plants across Africa



MCC is a leading project management team with a track record of delivering projects across Africa including Angola.



ADP is Lycopodium's African minerals specialist in detailed design, construction and commissioning of modular mineral processing plants. ADP has extensive development experience in Angola.



Pro Process are hydrometallurgical specialists with expertise in delivering modular process plants throughout Africa.



# Construction Activities at Longonjo



# Construction and Commissioning Schedule – first production 2026

Pensana Schedule Construction Duration per Discipline

Discipline per area	Duration (Calendar months)	Year 1												Year 2												Year 3														
		Jan'24	Feb'24	Mar'24	Apr'24	May'24	Jun'24	Jul'24	Aug'24	Sep'24	Oct'24	Nov'24	Dec'24	Jan'25	Feb'25	Mar'25	Apr'25	May'25	Jun'25	Jul'25	Aug'25	Sep'25	Oct'25	Nov'25	Dec'25	Jan'26	Feb'26	Mar'26												
<b>Plant wide</b>																																								
Overall Bulk Earthworks	6	█																																						
<b>Longonjo Refinery Construction</b>	<b>13</b>	█																																						
Civil Works	8					█																																		
Structural Installation	6							█																																
Platework Installation	6									█																														
Mechanical Installation	5											█																												
Piping Installation	3													█																										
Electrical Installation	7											█																												
Instrumentation Installation	6												█	█																										
Commissioning C2-C3	5																		█																					
<b>Hot Commissioning Assistance C4</b>	<b>2</b>																									█														
<b>Hot Commissioning Assistance C5-C6</b>	<b>4</b>																												█						█					



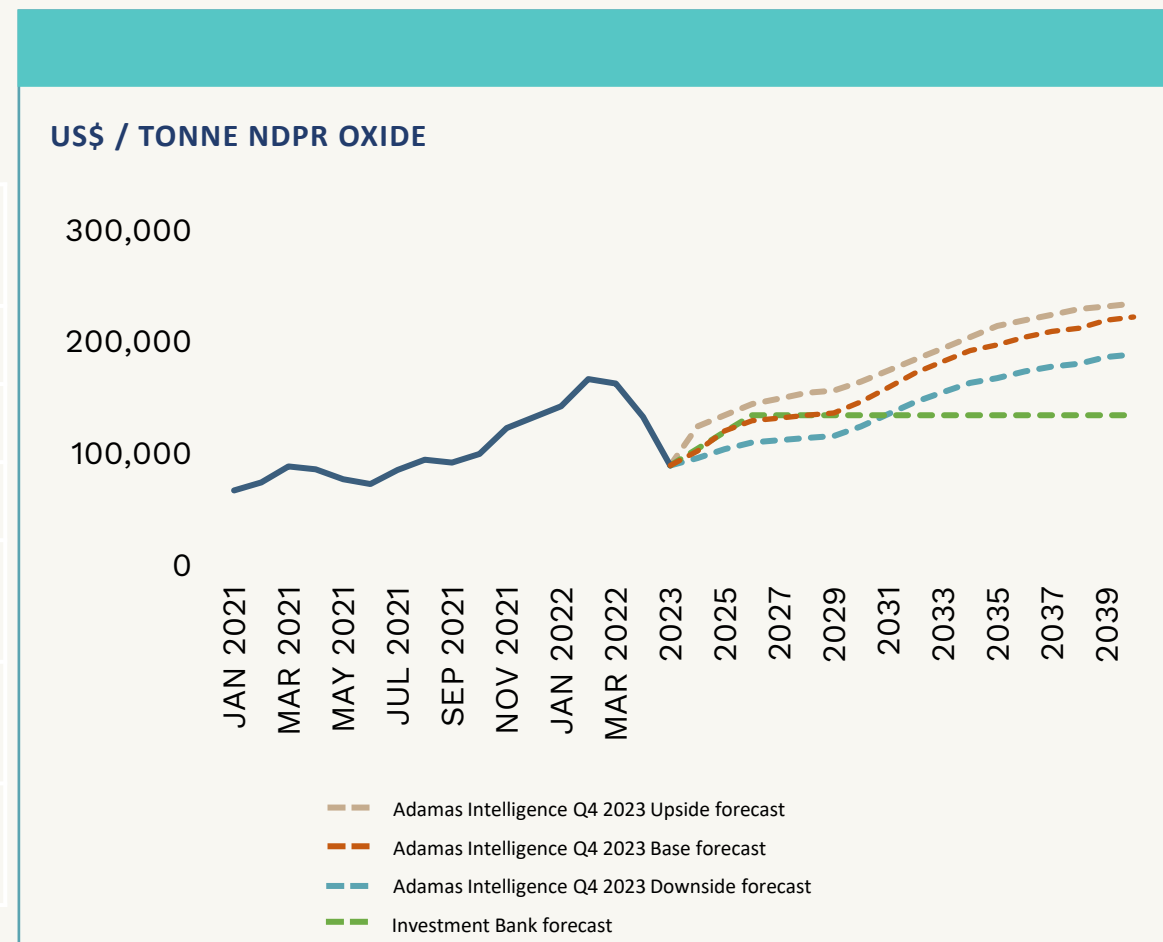
**Chairman Armando Manuel and FSDEA Board review progress with Chief Commercial Officer William Izod and Longonjo team members.**

# Longonjo - Compelling Economics

## Low upfront Capex with strong cashflow highly leveraged to the NdPr price

Management Valuation and Financial estimates based on NdPr price forecasts by Adamas Intelligence and Investment Bank

	Adamas Intelligence Base Case <sup>1</sup>	Investment Bank Forecast
NPV @ 8%	US\$ 1,116 million	US\$ 603 million
IRR	34%	29%
Payback	4 Years	4 Years
Revenue	Stage 1: US\$ 227m Stage 2: US\$ 437m	Stage 1: US\$ 217m Stage 2: US\$ 371m
EBITDA	Stage 1: US\$ 126m Stage 2: US\$ 313m	Stage 1: US\$ 124m Stage 2: US\$ 263m
Capex	Stage 1: US\$ 200m Stage 2: US\$ 105m	Stage 1: US\$ 200m Stage 2: US\$ 105m



1. Adamas Intelligence Base Case Rare Earth Pricing Outlook (Q4 2023)

## Update on Longonjo Financing

The Angolan Sovereign Wealth Fund (FSDEA) is funding construction activities on site via a US\$15 million loan, ensuring project momentum.

FSDEA and a pan-African multilateral Development organisation have indicated that they will provide US\$80 million in equity at the Ozango subsidiary level.

ABSA bank of South Africa has been mandated as lead arranger for a US\$120 million loan facility, which is expected to include export credit guarantees from ECIC and debt participation from a pan-African multilateral.

High level commercial debt and equity terms at the Ozango level have been provided with all parties now working towards completion.



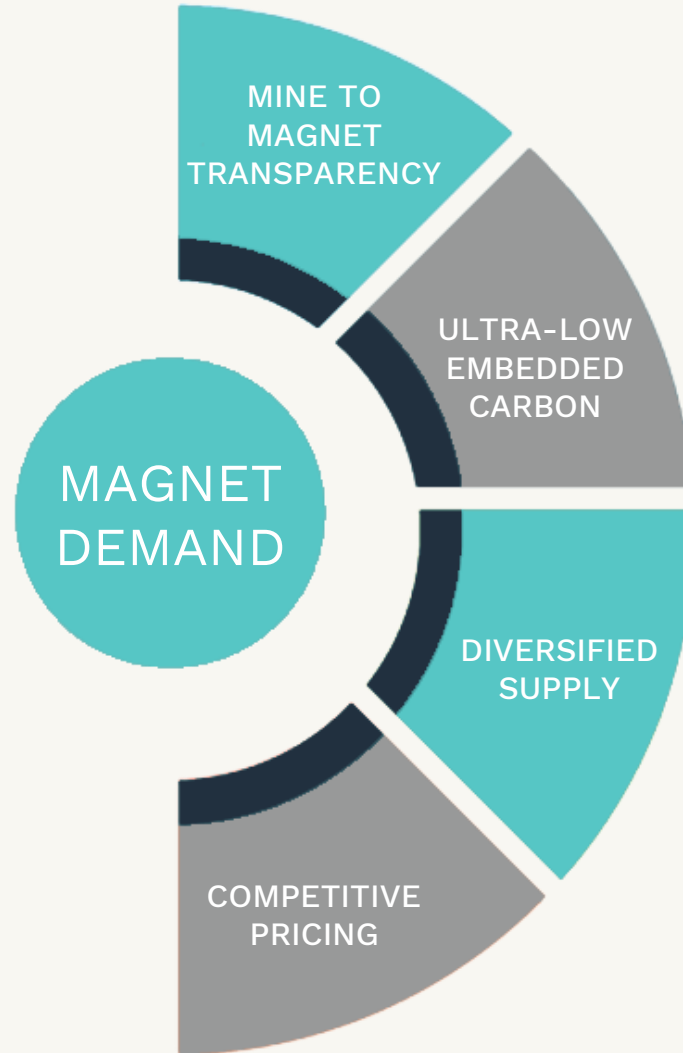
CEO Tim George recently met with FSDEA Chairman Armondo Manuel in Luanda to discuss progress at Longonjo and the financing arrangements

# Highly Marketable Mixed Rare Earth Carbonate (MREC)

One of the only mine developers to offer a high value, radionuclide-free product available for export.

Executed letter of intent for the offtake of 100% of stage 1 production from Longonjo.

Sample qualification underway which will lead to finalised agreements in Q1 2024.



Mercedes-Benz

CO2 targets as a key criterion and 50% diversified supply chain.

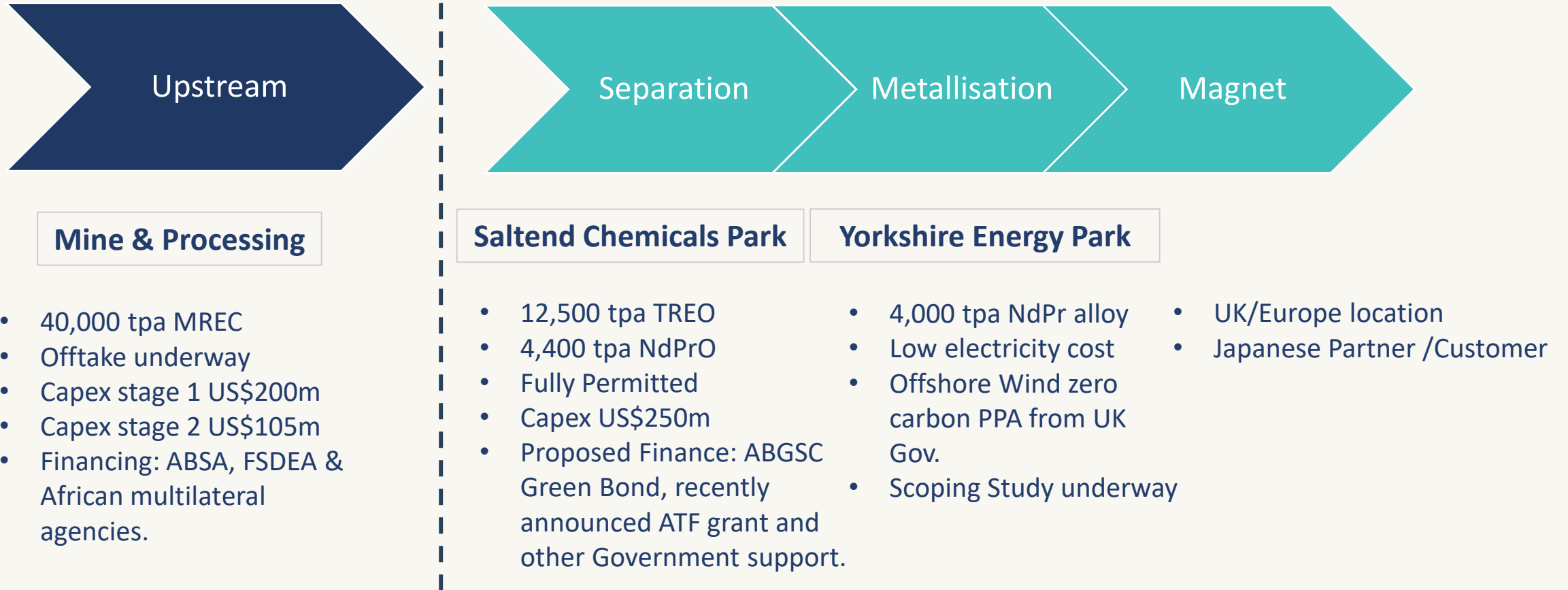
## Polestar

Net-Zero by 2030. Responsible sourcing: Ethical and transparent supply chain.



Net-Zero 2039. Full transparency for all supply chain partners.

# Looking to Establish an Independent Downstream Supply Chain



China controls **91%** of Refining, **87%** of Separation and **94%** of Magnet Production

Source: Wall Street Journal - [The U.S. Wants a Rare-Earths Supply Chain. Here's Why It Won't Come Easily.](#) - WSJ



## Minister confirms that Saltend is of strategic importance to the UK and offers ATF Grant Funding

By 2030 the UK is expected to transition from being a major producer of internal combustion engines to a world leader in electric drive units (EDUs), producing three million EDUs annually, with a large proportion for export.

Without a secure magnet metal supply chain this is under threat.

Nusrat Ghani, Minister of State at the Department for Business and Trade and Cabinet Office, highlighted that the Saltend project would be an important step in supporting the UK automotive industry which employs 780,000 people.



Secretary of State for Business and Trade has offered a £4,000,000 Grant towards the funding required to build the Saltend rare earth separation facility.

# Establishing a magnet metal supply chain to support automotive Electric Drive Unit (EDU) manufacture in the UK

## Saltend Chemicals Park, Humber Freeport



Fully engineered and permitted downstream UK Separation Facility.

Strategically located within Humber Freeport and powered by low-cost offshore wind.

Designed to produce 12,000 tonnes of TREO and 4,400 tpa of NdPr oxides equivalent to ~5% of world demand.

This will create 450 jobs during construction and 150 high-value full time jobs.

## Strong interest in Saltend's development across a wide range of stakeholders

Recent site visit by representatives of M&G, Automotive Transformation Fund, Cabinet Office for Investment, Department for Business & Trade, PX Group, Future Humber, Yorkshire Energy Park, East Riding Council and University of Lincoln.



## Studies commenced on Offshore Wind powered magnet metal facility located at Yorkshire Energy Park



**YEP Chairman Chris Turner and Pensana Chief Commercial Officer William Izod execute letter of intent for site selection and zero carbon electricity supply**

Located in YEP adjacent to the Saltend separation facility and with 50MW green electricity from the grid.

Low cost, zero carbon electrical power supplied under the Energy Intensive Industry and British Industry Supercharger Schemes.

Studies into the conversion of rare earth oxides into magnet metals using electric furnaces powered by offshore wind.

The letter of intent with YEP covers the proposed site as well as the supply of zero carbon electricity and a range of bespoke facilities for the processing of rare earths in magnet metals, R&D and supply chain activities.

# Saltend's Importance as an Independent and Sustainable Supplier

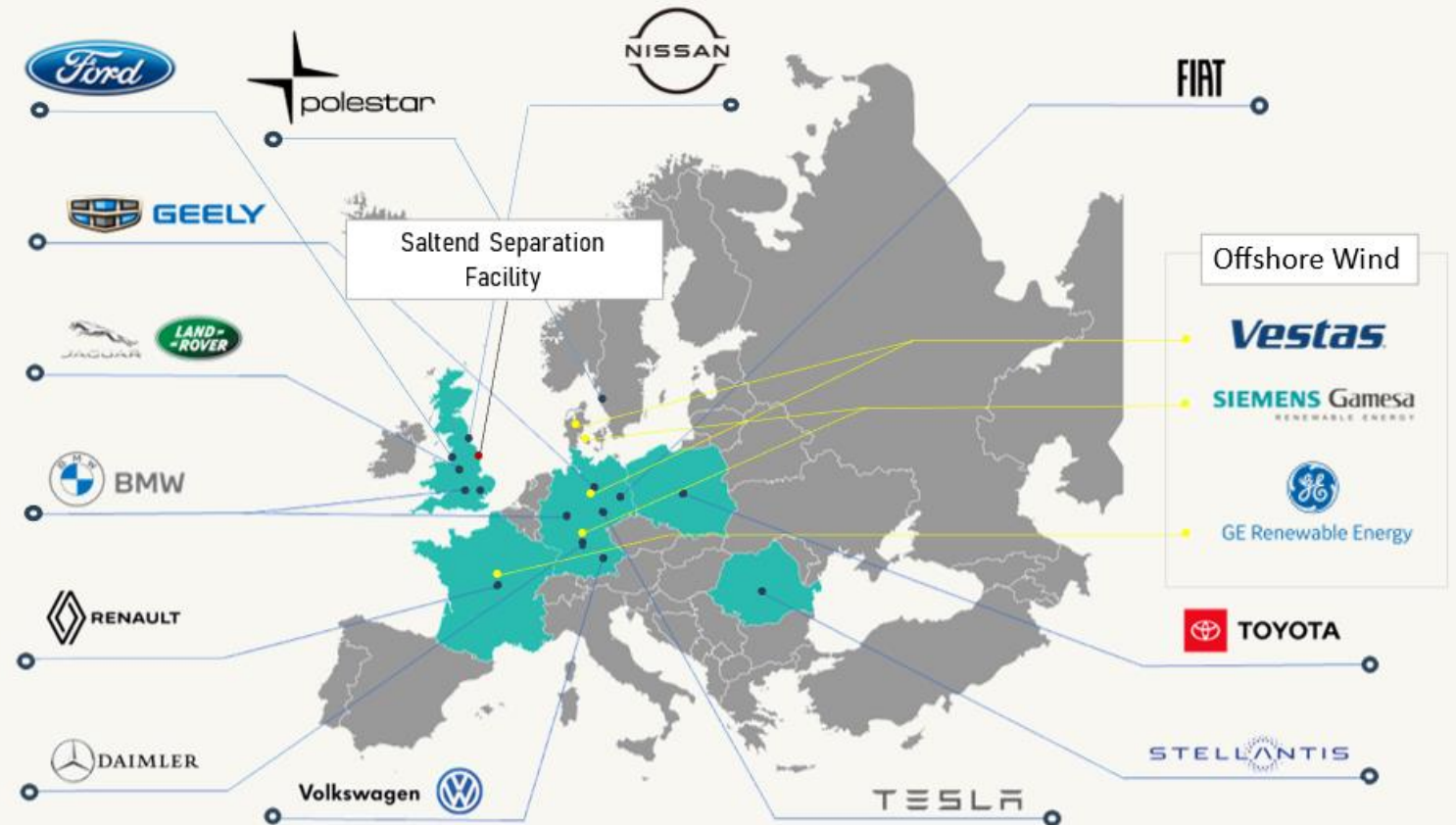
## European and UK electric vehicle industry

The UK will produce 2- 3 million Electric Drive Units (EDU's) annually from 2030.

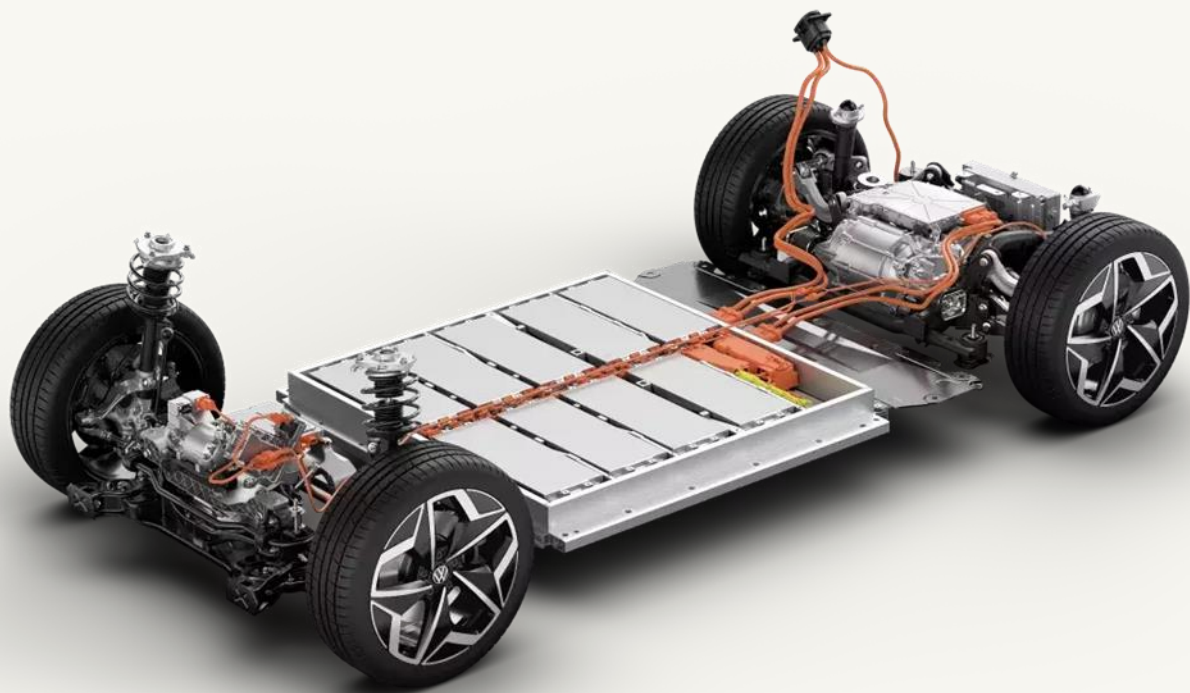
Exporting around the world supporting the burgeoning demand for electric vehicles globally.

The UK and Europe remain committed to the Automotive sector and governments continue to offer support.

Highlighting Saltend's growing importance as an independent and sustainable supplier and critical supporting supply chain for the Auto industry.



**The UK is currently a net exporter of automotive engines but needs a magnet metal supply chain to convert to electric drive units (EDUs)**



The UK is a leader in EDU technology which is being acquired by major automotive OEM's (eg: Mercedes buys UK Start-up Yasa).

It is essential for the UK that this production is not lost to overseas.

This will only happen if these supply chains are established in the UK. UK Government is already working on electrical grade steels and rotor/stator manufacture but needs to secure a magnet metal supply chain, such as the Saltend rare earth processing facility.

UK Government also wishes to utilise Pensana's relationship with the world's largest magnet manufacturer with a view to bringing their next investment to the UK.

## PARTNERING WITH POLESTAR 0

Pensana is partnering with Polestar (Nasdaq: PSNY) on its moon-shot goal of creating the first truly climate-neutral car by 2030.

The Polestar 0 project is aiming to eliminate all greenhouse gas emissions from all raw materials used to when the car is delivered to the customer and onwards to the end of the vehicle life.



Chairman Paul Atherley with Hans Pehrson Project Lead, at the Stockholm launch of Polestar's moon-shot climate-neutral car.

## Cooperation Agreement with Equinor to Recycle Offshore Wind Turbine Magnets using Low Carbon Hydrogen



*Pensana Chairman Paul Atherley with Equinor President and CEO Anders Opedal*

Pensana is partnering with leading energy provider, Equinor, to develop a low-energy method for recycling end-of-life wind turbine magnets using low-carbon Hydrogen produced from Equinor's Hydrogen to Humber (H2H) at Pensana's Saltend Rare Earth processing facility.



# Strong Independent Board and Experienced Executive Management Team



## **PAUL ATHERLEY CHAIRMAN**

Mr. Atherley is an experienced mining executive and is the founder of the Company. Previously Executive Director of the investment banking arm of HSBC. He has completed numerous successful acquisitions and financings of resource projects in Europe, China, and Australasia. He is a supporter of Women in STEM.



## **RT HON BARONESS NORTHOVER NON-EXEC DIRECTOR**

Baroness Northover was the Prime Minister's Trade Envoy to Angola (2016-2020), Zambia (2017-2020) and Minister in the Department for International Development ("DFID") 2011-15, including serving as Parliamentary Under Secretary and Africa Minister, 2014-15.



## **ROBERT KAPLAN FINANCE DIRECTOR**

Mr Kaplan is a Chartered Accountant with over 20 years of operating experience in the African mining sector. He brings a broad skill set in both the UK and sub-Saharan corporate finance together with experience in mining operations in Angola, South Africa and Tanzania.



## **ALISON SAXBY NON-EXEC DIRECTOR**

Alison is an industry-leading expert with over 35 years of experience in industrial minerals and metals. She was previously a Managing Director at metals consultancy Roskill and was recently appointed as Research Director of Project Blue. Alison is the author of numerous publications on critical and other minerals and was originally trained as a mineral engineer.



## **STEVE SHARPE NON-EXEC DIRECTOR**

Mr Sharpe is a highly experienced natural resources financier. He is an Executive Board Member of EIT Raw Materials. Previously, he was Chair of AME Group, Managing Director at Canaccord Genuity, Managing Director at Endeavour Financial and held senior positions at Standard Bank and NM Rothschild.



## **ROCKY SMITH CHIEF OPERATIONS OFFICER**

Rocky Smith is a highly experienced Chemical Engineer with 35 years of rare earths experience. He was Managing Director of Molycorp's Mountain Pass rare earth project in California, US, which is now owned by New York Stock Exchange listed MP Materials.



## **JEREMY BEETON NON-EXEC DIRECTOR**

Former Director General of the 2012 London Olympic and Paralympic Games, Principal Vice President of Bechtel, Advisory Board of PWC, and Non-Exec of SSE Plc. Currently also a Non-executive Director of John Laing.



## **TIM GEORGE EXEC DIRECTOR/ CEO**

A Minerals Engineer, Mr. George leverages over 30 years of experience in the mining and engineering sectors, with a broad experience in mining project development throughout Sub-Saharan Africa.









## **WILLIAM IZOD CHIEF COMMERCIAL OFFICER**

William Izod has extensive experience in managing and developing rare earth supply chains, including 10 years working with large multi-national companies, including managing a Motor and Powertrain supply chain controlling £1bn of annualised spend.

## Investment Opportunity

### Rare opportunity to gain direct exposure to the biggest energy transition in history

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