Quarterly Activities Report
For the Period Ended 30 September 2020

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Pensana Rare Earths Plc (LSE: PRE; ASX: PM8) (the Company or Pensana) is pleased to present its quarterly activities report for the period ended 30 September 2020.

Highlights

- **Post the end of the quarter the Wood Group was appointed to complete a study into establishing a rare earth processing facility in the UK with a view to establishing a sustainable mine to magnet supply chain for the burgeoning EV and Offshore Wind industries. The initial response has been overwhelmingly positive with three potential sites under review.**
- **The BFS study is well advanced and is expected to confirm the strong economics reported in the PFS. An update on the BFS and the new development strategy will be reported by 16 November 2020.**
- **A new Mineral Resource estimate for Longonjo was reported and contains more than 2.3 times the previous estimate of the Measured and Indicated resources used in the Preliminary Feasibility Study.**
- **Exploration programmes at the new 7,500 Km2 Coola Project are in full swing with positive early indications of mineralisation reported. The next set of results are expected towards the end of November or early December.**
- **The Company was admitted to the standard list of the Main Board of the London Stock Exchange. SI Capital and Mirabaud were appointed as brokers to the Company.**
- **A further equity placement of US$8.6 million was made to FSDEA the Angola Sovereign Wealth Fund which is now the Company's major shareholder with a 23% interest.**
- **Experienced mining lawyer Sandra Bates was appointed Non-Executive Director. Chief Operating Officer Dave Hammond announced his resignation with effect from the end of the year. A number of potential replacement candidates have been interviewed.**
- **A Heads of Agreement was signed with China Great Wall Industry Corporation for the engineering construction and management and arrangement of finance to develop the Longonjo project. Specialist project engineers Paradigm Project Management were appointed to expedite the development of the project.**

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UK rare earth processing study

Post Quarter end on 12 October 2020 the Company announced the appointment of the Wood Group to complete a study into the establishment of an integrated rare earth processing facility in the UK.

With the expanded resource and the Bankable Feasibility Study ("BFS") designs to include the production of a rare earth carbonate, Pensana has identified a unique opportunity to explore the potential to make one further downstream step by establishing a rare earth oxide facility in the UK.

A mid-stream magnet metal supply linked to downstream magnet manufacturing capacity could create a sustainable magnet metal supply chain at a time of increasing concern of the provenance of these critical metals for the electric vehicle ("EV") and offshore wind turbine industries.

The study will focus on this broader context and take into account sustainable development when considering the preferred process route, location, capital and operating costs, financing arrangements and government incentives relating to the UK project. The study has received widespread interest and is expected to take approximately three months to complete.

Three sites are currently being evaluated at Merseyside, Humber and the Tees Valley. Preliminary investigations indicate that the reagents, skilled labour and power available at internationally competitive rates at each of these sites.

Two of the sites are located within enterprise zones which bring a range of incentives including available land, simplified planning approvals, a Single Conversation Group which brings together the all the relevant agencies for a smoother process, tax benefits in the form of enhanced capital allowances and other government incentives.

In particular there are grants available to companies that are involved in the renewable energy and low carbon sectors and their associated supply chains. More broadly there is strong government support for investments in the green economy with the strategy to build back better, build back greener and to build back faster.

Mixed rare earth carbonate success

Also post Quarter end on 5 October 2020 the Company was pleased to report a further significant step with the successful production of the first NdPr rich mixed

rare earth carbonate ("MREC") from testwork currently underway on mineralisation from Longonjo.

The production of the particularly high grade MREC, with NdPr comprising 33.5% of the total rare earths[1] content is an important step in demonstrating the development of an effective carbonate flow sheet.

MREC is a much higher purity and higher value product and has a broader market and range of applications than the concentrate product contemplated in the November 2019 Preliminary Feasibility Study.

[1] equivalent rare earth oxide grades and proportions

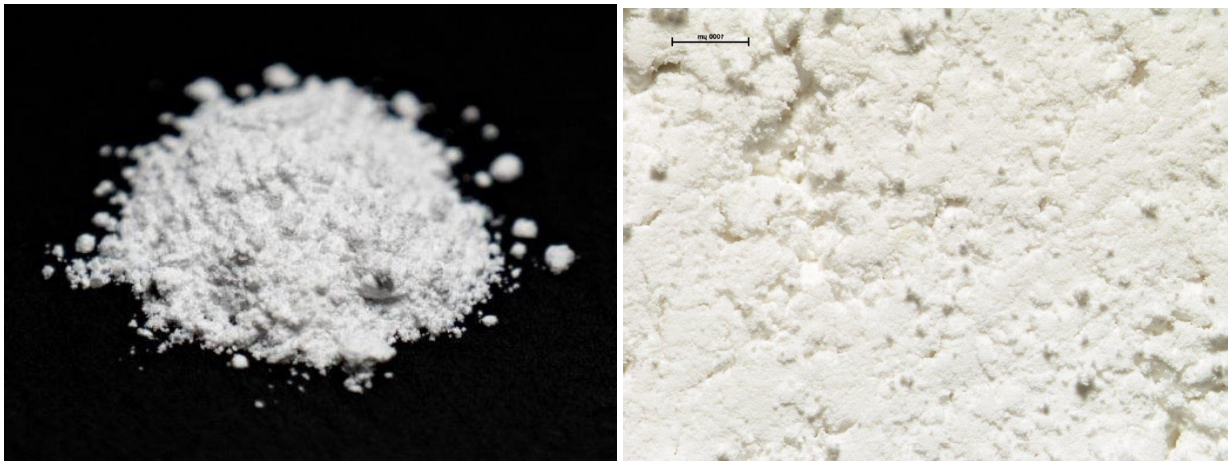


Figure 1: NdPr rich rare earth carbonate produced in test work

Bankable Feasibility Study Progress

Significant positive progress has been made on the series of technical work streams and studies that will contribute to the BFS. Several key BFS work programmes including the revised Mineral Resource estimate and the successful operation of a beneficiation pilot plant are now complete.

The pilot plant treated 42 dry tonnes of material to produce NdPr concentrates up to 6.1% NdPr (within 25.8% REO*).

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Figure 2: Comminution section of the beneficiation pilot plant at ALS Metallurgy, Perth, showing, SAG mill, vibrating screens and flotation feed tank on the right

**NdPr=neodymium+praseodymium oxide; REO = total rare earth oxide including yttrium*

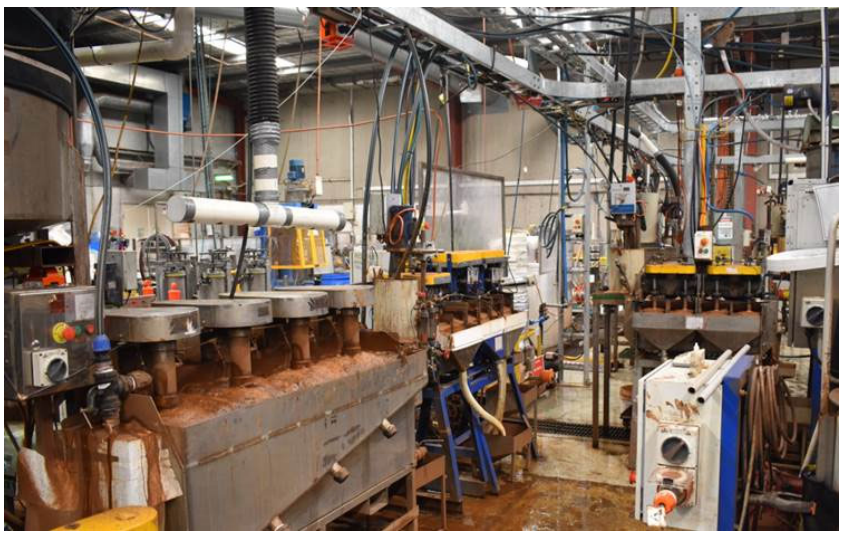




Figure 3: Left: Pre flotation circuit for removal of barite from feed, from left to right, Rougher, 1st cleaner and 2nd Cleaner stages. Right: Pensana Technical Consultant Phil Burger with final rare earth concentrate post filtering

The operation of the pilot plant has provided extensive operational and engineering design information and production cost data that will be incorporated

into the BFS. The pilot plant has also produced concentrate for use in the next stage carbonate process work.

Other work streams, including the optimisation of the MREC flowsheet, have been successfully advanced but require additional work to bring the testwork results up to the required reporting standards for the study.

Mineral Resource estimate

The receipt of the last two batches of drill programme assay results during the Quarter allowed the Company's appointed international mining industry consultants SRK Consulting (Australasia) Pty Ltd to complete an upgraded Mineral Resource estimate for Longonjo. The Mineral Resource estimate, reported in accordance with the JORC Code and Guidelines 2012, is:

313 million tonnes at 1.43% REO including 0.32% NdPr for 4,470,000 tonnes of REO including 990,000 tonnes of NdPr

*NdPr = neodymium+praseodymium oxide. REO = total rare earth oxides. A 0.1% NdPr cut is applied. 14 September LSE and ASX announcement summarise the estimate at a range of cut off grades, material types, resource categories and individual rare earth oxide grades.

The upgraded estimate:

- contains more than **2.3 times** the previous estimate of the Measured and Indicated resources used in the Preliminary Feasibility Study[1] (announced ASX: 15 November 2019).
- has increased the proportion of the resources reported in the Measured and Indicated categories from 31% to 68%[2];
- and has increased the overall contained NdPr by 35%[2];

[1] Comparison of contained NdPr within the Weathered Zone Measured and Indicated categories at a 0.2% NdPr cut off, November 2019 and new Mineral Resource estimates.

[2] Comparison of contained NdPr within the November 2019 and new Total Longonjo Mineral Resource estimates at a 0.1% NdPr cut off (Measured+Indicated+Inferred categories).

See LSE and ASX announcement of 14 September 2020 for Mineral Resource estimate details. All material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed.

Table 1 below provides a summary of the Measured, Indicated and Inferred Mineral Resources at the 0.1% NdPr cut:

Table 1: Longonjo Mineral Resource estimate, Total, at 0.1% NdPr lower grade cut

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Mineral Resource estimate category	Tonnes (million)	REO grade (%)	NdPr grade (%)	Contained REO (Tonnes)	Contained NdPr (Tonnes)
Measured	25.7	2.58	0.55	664,000	141,000
Indicated	165	1.51	0.33	2,490,000	536,000
Inferred	123	1.08	0.25	1,320,000	313,000
Total:	**313**	**1.43**	**0.32**	**4,470,000**	**990,000**

REO includes NdPr. Figures may not sum due to rounding. See Table 7 for average distribution of individual REOs.

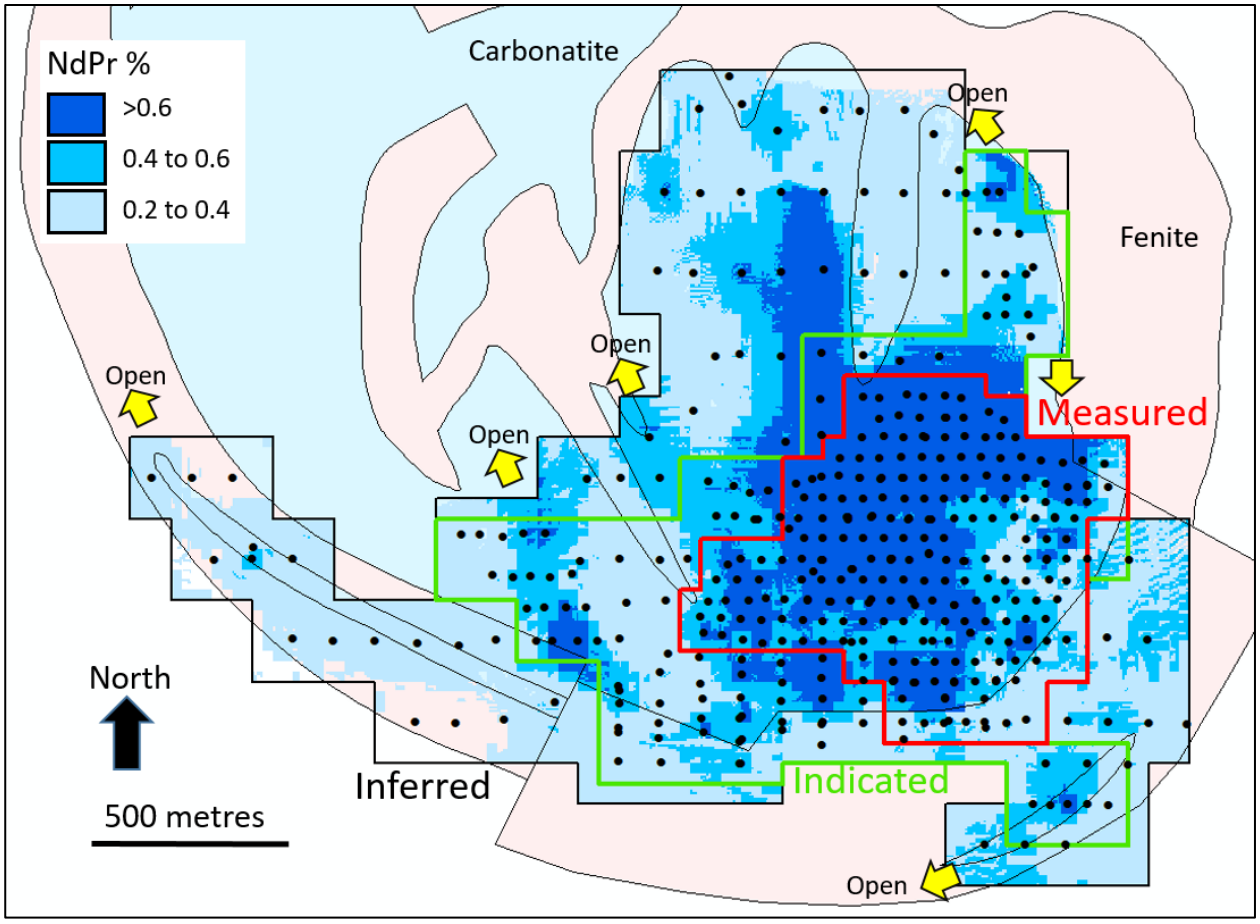


Figure 4: Plan view of the Mineral Resource block model for the weathered zone coloured by average NdPr grade over simplified geology of the Longonjo carbonatite. Resource categories highlighted.

The initial BFS mine schedule will be based on a subset of this resource – the Weathered Zone Measured and Indicated category mineralisation. This style of mineralisation is the most favourable for mining and processing due to its high grades from surface and morphology of a thick blanket of soft material, typically ranging in thickness from 15 to 75 metres.

At a 0.2% NdPr lower grade cut, the Measured and Indicated category estimates for the Weathered Zone are:

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39.9 million tonnes at 2.38% REO including 0.52% NdPr for 948,000 tonnes of REO including 208,000 tonnes of NdPr

A 0.2% NdPr cut is applied. Weathered Zone Measured and Indicated categories only, and is contained within and is a subset of the Total Mineral Resource estimate. Table 2 summarises the Weathered Zone Measured, Indicated and Inferred Mineral Resources at a 0.2% NdPr cut.

Table 2: Longonjo Weathered Zone Mineral Resource estimate at 0.20% NdPr grade cut-off

Mineral Resource estimate category	Tonnes (million)	REO grade (%)	NdPr grade (%)	Contained REO (Tonnes)	Contained NdPr (Tonnes)
Measured	15.5	3.13	0.66	485,000	102,000
Indicated	24.4	1.90	0.44	463,000	106,000
Inferred	26.0	1.60	0.39	414,000	101,000
Total:	**65.9**	**2.07**	**0.47**	**1,360,000**	**310,000**

REO includes NdPr. Figures may not sum due to rounding. The Weathered Zone Mineral Resource estimate is contained within and is a sub-set of the total Mineral Resource for Longonjo shown in Table 1. See 14 September LSE and ASX announcement for further details of the estimate

The infill drilling has successfully increased the amount of Measured and Indicated category resource to more than **2.3 times** that of the previous estimate on which the Preliminary Feasibility Study (ASX: November 2019) was based.

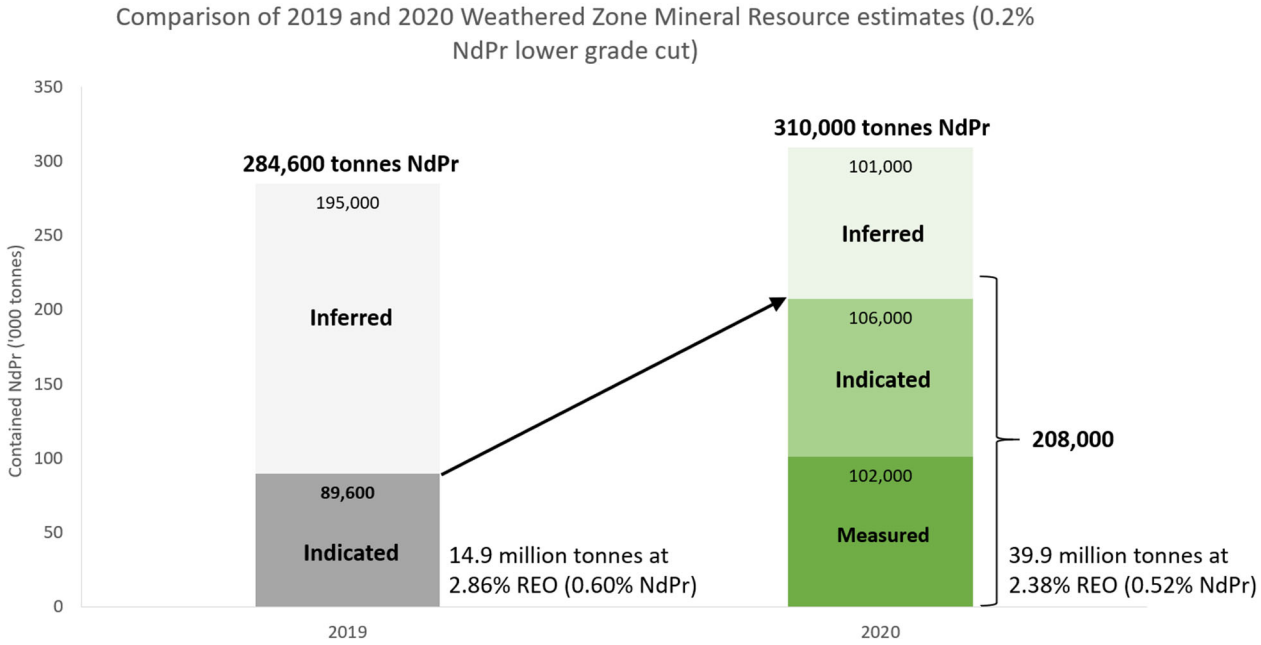


Figure 5: The new estimate contains over 2.3 times the amount of NdPr in the Measured and Indicated categories. Figures may not sum due to rounding.

The revised estimate is expected to support an extended mine life for Longonjo on successful completion of the Bankable Feasibility Study work streams.

Fresh Rock mineralisation

Assay results were received for a number of drill holes that were extended into in the fresh rock immediately below the weathered mineralisation. The deeper drilling intersected continuous mineralisation from surface to the end of hole depth of 80 metres. Fresh rock mineralisation remains open in all directions (Figure 6).

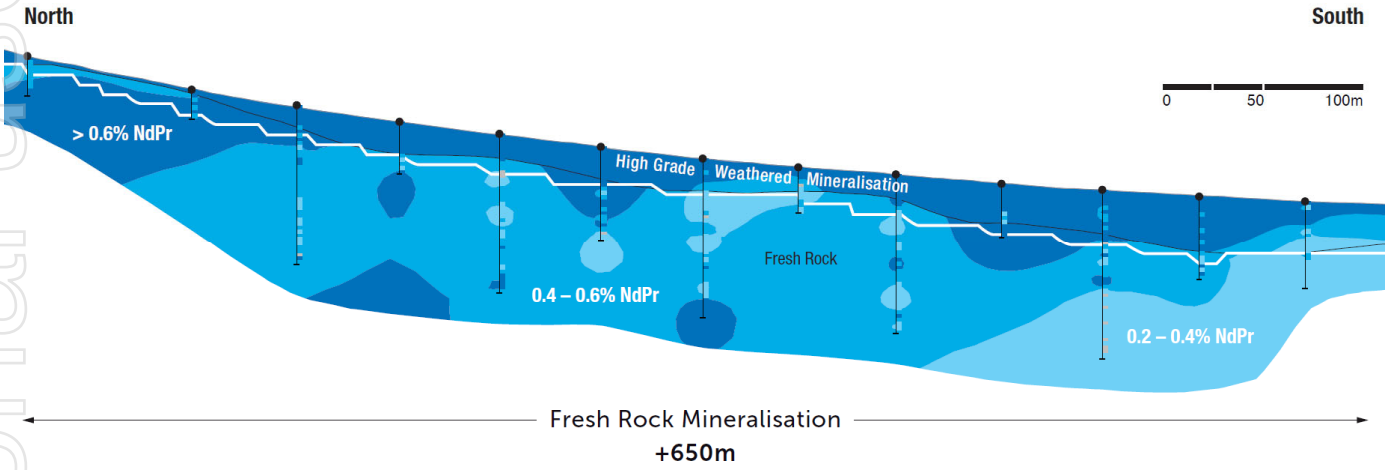


Figure 6: Recent drilling intersected continuous mineralisation within fresh rock beneath the ~25 metre thick weathered zone and envisaged open pit. North – south section 524,200E

Further drilling is planned in this area, which will form the basis for future Mineral Resource estimation. Metallurgical testwork on the fresh rock, which is excluded from the BFS, is in progress and the Company will provide updates as results come to hand.

Coola Project

Post quarter end on 19 October 2020 the Company provided an update on exploration activity in progress at the exciting new 7,500 square kilometre Coola Project located 16 kilometres north of Longonjo.

Initial soil and rock sampling assay results up to 2.99% REO and outcropping fluorspar mineralisation confirm the prospectivity for a range of commodities listed as critical by the European Commission. The Coola Project has the potential to complement future magnet metal materials production from Longonjo with its

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prospectivity for a range of 'new technology' metals that include heavy rare earths (HREE), light rare earths (LREE), scandium, niobium, tantalum, hafnium and fluorspar.



Figure 7: Geologist Geraldine Tchimbali geological mapping with Senior Geologist Benedito Madaleno at the Monte Verde alkali – carbonatite complex

The Coola alkali – carbonatite extends over a 6 kilometre by 2.5 kilometre area. Previous limited academic work returned 3.64% REO from carbonatite rock samples.

Assay results from initial reconnaissance sampling over a small portion of the complex (Figure 8) completed by Pensana confirm rare earth mineralisation in soils and rocks up to 2.99% REO.

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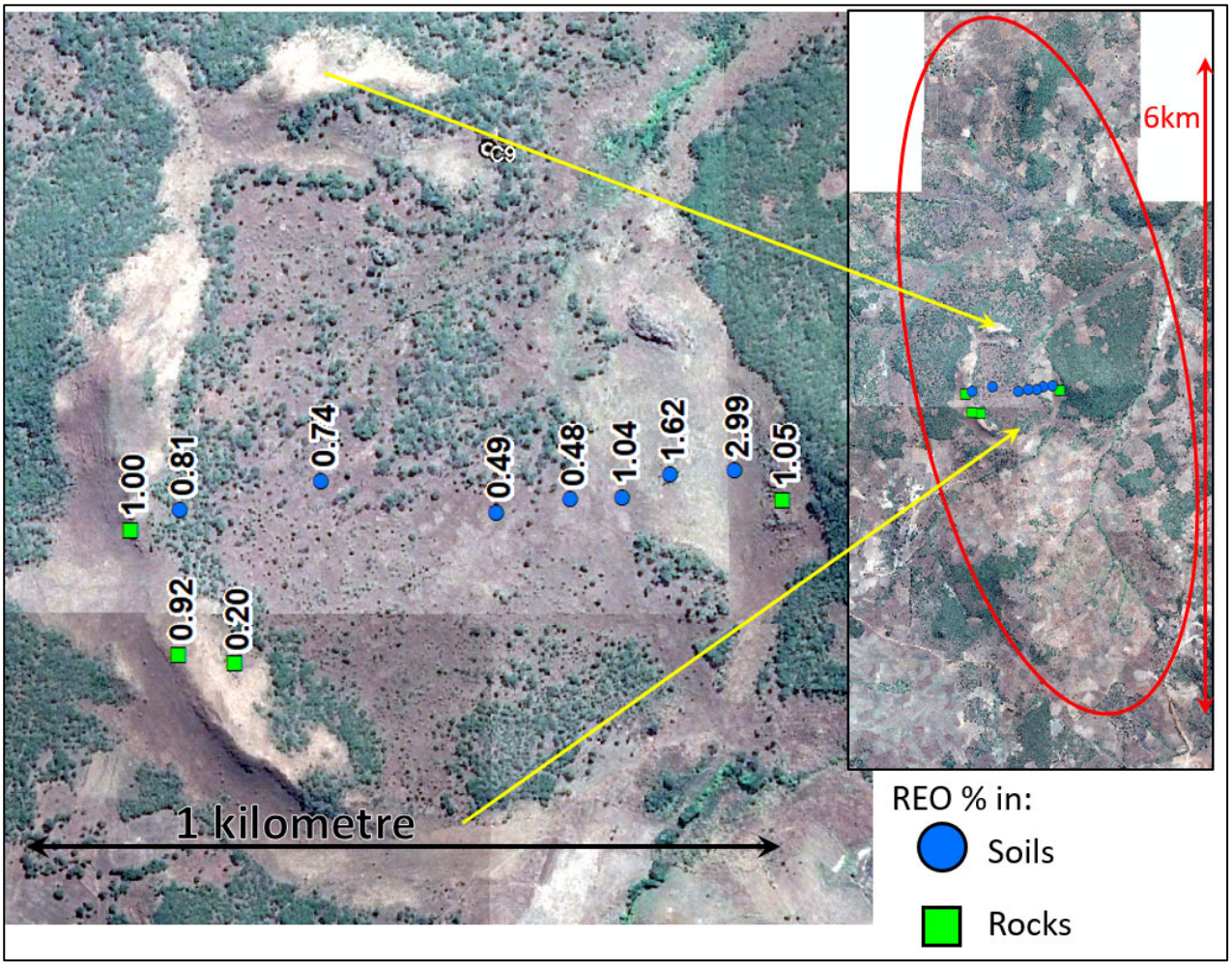


Figure 8: Rare earth oxide assay results from soil and rock sampling completed by Pensana during a reconnaissance field visit. The ring structure is formed by a carbonatite dyke. The central area lies entirely under soil cover and geological models suggest the potential for an untested carbonatite body.

Systematic soil sampling, geological mapping and rock sampling have been completed over the entire Coola complex and samples despatched for analysis. Geological mapping also completed by the team has located extensive fluorspar mineralisation (Figure 9) at Coola that, as well as representing the potential for direct economic potential in this critical commodity, also indicates a fertile geological system that is prospective for other 'new technology' metals.

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Figure 9: Band of fluorspar (blocky outcrop in centre) at Coola with detail inset showing massive style of purple fluorspar mineralisation. Geological hammer for scale is 35 centimetres long.

Soil and geological mapping has also been completed over the sub circular 4.5 kilometres by 3.5 kilometres Monte Verde alkali – carbonatite complex.

Stream sediment sampling of a range of geophysical targets is in progress and soil sampling and rock sampling of the 13 kilometre by 5 kilometre Sulima alkali complex will commence shortly.

The Company looks forward to advising the market of the assay results from this series of exploration programmes as they are received.

CORPORATE

Admission to London Stock Exchange

As part of the Company's strategic objective of targeting the UK's burgeoning ESG and generalist fund market who are looking to gain exposure to the metals critical to energy transition the Company finalised its admission to the London Stock Exchanges Main Market for listed securities under the ticker "LSE: PRE" on the 6th of July. The entire issued share capital of 188, 274,665 ordinary shares was admitted.

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Heads of Agreement signed with China Great Wall Industry Corporation ("CGWIC")

The Company announced on 20 July that it had entered into a heads of agreement with CGWIC for the purposes of co-operating together on the Longonjo Project. CGWIC is a company with expertise and experience in international engineering and is actively engaged in Africa.

Appointment of Paradigm Project Management

On 27 July the Company announced the engagement PPM as the owner's representative for the Longonjo NdPr Project in Angola, to manage the on ground development of the project on behalf of Pensana and co-ordinate the BFS and Front End Engineering Design for Longonjo's power, water and waste services, offices, workshops, camp infrastructure and off-mine facilities including the rail and port side facilities.

Appointment of London broker SI Capital

On 29 July the Company reported the engagement of SI Capital as broker to the Company in London. SI Capital is a specialist, full service stockbroker and member of the London Stock Exchange based in Surrey and Mayfair founded around 20 years ago offering fully integrated Corporate Broking, Research/Analysis and Investor Advisor capabilities sourcing best of class opportunities for investors across the investment universe.

Board appointment

On 10 August Ms Sandra Bates was appointed as an Independent Non-Executive Director of the Company. Ms Bates is an international lawyer with over 20 years' experience advising listed and private companies in the natural resources sector on complex commercial negotiations and Environmental, Social and Governance (ESG) engagement.

Appointment of St James and Mirabaud

On 12 August the Company announced the appointment of Mirabaud Securities Limited ("Mirabaud") as joint broker to the Company in London. Mirabaud is a London-based broker which focusses on the natural resources sectors providing ideas based research on niche equity market segments. Furthermore the Company engaged the services of St James's Corporate Services Limited a specialist company secretarial and corporate administration services provider in the UK with over 25 years' experience in the UK, Africa and Australian environment

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Royalty over Tanzania gold exploration assets

On 21 September the Company reported its responsibilities in the Miyabi exploration gold project in Tanzania were to be assumed with immediate effect by Drillcraft Limited, a private company based in Mauritius with an established gold operational base in Tanzania. The transaction comprised the receipt of net cash proceeds by Pensana of approximately US$0.4 million payable alongside a five-year, 2% royalty participation agreement over the existing mineral resource estimate of approximately 0.5 million ounces of gold, with operations forecast to commence in mid-2021

Issue of equity to Angolan Sovereign Wealth Fund ("ASF")

Further to the equity investments by the ASF in March and June of this year, the company announced a further equity investment of US$8.6 million on 25 September. The investment will be used to advance the Longonjo project as the first major rare earth mine to be developed in over a decade and to provide general working capital

Departure of Dave Hammond

Post period end the company announced the departure of Dave Hammond who will be stepping down in his role as Chief Operating Officer and director of the Company.

Authorised by the board of Pensana Rare Earths Plc.

For Further information:

Pensana Rare Earths Plc

Website: www.pensana.co.uk
Paul Atherley Chairman / Tim George, CEO contact@pensana.co.uk
Buchanan (UK Financial PR) +44 (0) 207 466 5000
Bobby Morse/ Augustine Chipungu /James Husband pensana@buchanan.uk.com

Competent Persons Statements

The information in this report that relates to Geology and Exploration results is based on information compiled and/or reviewed by David Hammond, who is a Member of The Australasian Institute of Mining and Metallurgy. David Hammond is the Chief Operating Officer and a Director of the Company. He has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and the activity which he is undertaking to qualify as a Competent Person in terms of the 2012 Edition of the Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves. David Hammond consents to the inclusion in the report of the matters based on his information in the form and contest in which it appears.

The information in this report that relates to the 2020 Mineral Resource estimates is based on work done by Rodney Brown of SRK Consulting (Australasia) Pty Ltd. Rodney Brown is a member of The Australasian Institute of Mining and Metallurgy and has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration, and to the activity he is undertaking, to qualify as a Competent Person in terms of The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code 2012 edition).

The company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of estimates of Mineral Resources estimates that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

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Summary of Tenement Information as at 30 September 2020

Country	Project Name	License Name	License no.	% Held at 30 June 2020	Change	% Held at 30 Sep 2020
Angola	Longonjo	Ozango Minerais SA	Nº298/05/01/T.E/ANG-MIREMPET/2020	100%	-	100%
	Ozango	Ozango Minerais SA	Nº013/03/09/T.P/ANG-MGM/2015	84%	-	84%
	Coola	Coola Mining LDA	Nº059/02/01/T.P/ANG-MIREMPET/2020	90%	-	90%
Tanzania	Miyabi	Miyabi Dyke	PL8933/2013	100%	-	100%
	Miyabi	Miyabi North	PL10908/2016	100%	-	100%
	Miyabi	Miyabi Airport New	PL10556/2015	100%	-	100%
	Miyabi	Mwabombo	PL10836/2016	100%	-	100%
	Miyabi	Kilimani	PL11309/2019	100%	-	100%
	Miyabi	Dalafuma	PL11310/2019	100%	-	100%
	Miyabi	Ngaya	PL11311/2019	100%	-	100%
	Miyabi	Shambani	PL11312/2019	100%	-	100%

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