

Regulatory Story

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Galileo Resources Plc (AIM: GLR)

[Galileo Resources Plc](#)
("Galileo" or the "Company")

[Results of Glenover Preliminary Economic Assessment](#)

Galileo, the emerging African Rare Earth exploration and development company, is pleased to announce the results of a Preliminary Economic Assessment ("PEA") of its Glenover Rare Earth Project ("Glenover Project or the Project") in South Africa.

Economic Highlights ¹

- **Net Present Value ("NPV") of US\$ 512 million using a rare earth oxide (REO) basket price ² of US\$60.79 per kg of 99% REO and a discount rate of 8%. (NPVs at different rates are set out below e.g. NPV of US\$783 million at a discount rate of 5%).**
- **Internal Rate of Return ("IRR") of 34.5 % for the Project**
- **REO production of 167,100 t (tonnes) in mixed high-grade REO chemical product over 24-year life of mine (LOM) on current resource estimate**
- **Ore production rate from 2.7 Mt stockpiles at 400,000 t per year 1 to 7**
- **Open-pit-mine ore production from 7.1 Mt at 400,000 t per year from year 8**
- **Waste to ore mine stripping ratio of 2.1 to 1 from year 8**
- **Initial capital investment US\$233M, including a contingency of US\$34M but excluding \$57M for deferred and sustaining capital**

This PEA outlines a possible open pit operation based on an updated independent mineral resource estimate, optimization studies and design works carried out during the latter half of 2012. Further process definition is envisaged *inter alia* for potential upside to recover phosphate products, ammonium sulphate and scandium from process waste streams. The Company has separately

commissioned rare earth recovery testwork in China in order to investigate *inter alia* the use of nitric acid in the process as an alternative to the sulphuric acid studied for this PEA. The outcome of these tests will determine the direction in which the Project should take for the ensuing Pre feasibility study.

¹ Refer to the disclaimer below in regard to Compliant reporting of economic results of a PE A that includes inferred resources.

² The REO basket price is calculated as the weighted average of the individual REO prices based on estimated future (2015) prices at the relative proportions in which the REOs occur within the Glenover project deposit. No value was assigned for oxides of the five rare earth elements: Holmium, Erbium, Terbium, Ytterbium and Lutetium; these REOs have limited niche applications and would not form part of a standard off-take agreement. Based on preliminary assessment of market conditions, and a process of benchmarking other similar projects producing similar high-grade mixed REO product, a discount factor of 35 % has been applied to the basket price used in this PEA. This factor reflects the effective loss in value, to off-takers, of generally around 35% of the contained mixed REOs in further refining of the mixed product to produce oxides of the individual rare earth elements.

Colin Bird, CEO of Galileo said, "The Company is very pleased with the results of the PEA of the Glenover Project and the timely issue is a major milestone for the project. The robust results and the availability of mine-ready stockpiles mean we can now fast track confidently to a pre feasibility/feasibility study. In order to upgrade the stockpiles resource category to indicated/measured for the pre-feasibility assessment we will carry out further appropriate work to achieve this upgrade."

PEA Process

GBM, the UK-based Minerals and Engineering Consultants ("GBM"), mandated CSA Global South Africa (Pty) Ltd ("CAS") to undertake a review of the Mineral Resources and Exploration targets, a PEA confidence level mine design, pit optimisation and financial model. Digby Wells Environmental was mandated to undertake a preliminary environmental impact assessment. The mining cost estimation assumes the use of surface mining contractors using conventional drilling and blasting for both open pit ore and waste. The mining method selected for stockpile reclaim includes pre-treating with a dozer utilising the slot dozing technique and loading into haulers using a wheel loader.

As per the SAMREC Code guidelines on reports that include inferred resources, GBM concurrently developed a cash flow model excluding the inferred resources. This model, excluding the inferred resources, demonstrated a robust IRR of 25.9 % and an NPV at 8 % discount of USD 375M for a LOM of 18 years.

The economic highlights include data based on inferred resources. The Company's forward plans for the next phase of the programme include upgrading the stockpiles resource category to indicated/measured, prior to completion of a pre-feasibility assessment. Following the PEA findings, the directors are extremely confident that upgrading of this resource can be achieved and believe there is no overt reason why, after further testing, this material's grade and tonnage would be significantly different to that of the current estimate.

Ore Treatment Process

ANZAPLAN, ^aa full service specialist in testing and engineering services for high-value industrial and strategic minerals and down stream products based in Hirshau Germany, undertook extensive metallurgical laboratory testwork, comprising both physical beneficiation and hydrometallurgical processing options, on a representative bulk sample of stockpile material. The hydrometallurgical testwork showed significantly better results than those from physical beneficiation, in terms of both REO recovery and marketable product quality. Consequently, GBM developed the process flowsheet, design, and capital and operating costs for the hydrometallurgical route.

a Dorfner Analysenzentrum und Anlagenplanungsgesellschaft mbH (ANZAPLAN)

The REO recovery process developed entails a two-stage ore treatment:

- Stage one involves baking ("cracking") crushed/ground whole ore in contact with sulphuric acid, followed by the addition of water to the baked product in order to remove insoluble gypsum (calcium sulphate), iron and phosphates, which are deleterious to the recovery of rare earth elements. The solubilised rare earth elements remain in solution ("leach liquor"). The pH (acidity) of the leach liquor is adjusted to approximately 3.5 with ammonia, which causes precipitation of iron phosphates and thorium present in the ore. The solubilised rare earth elements remain in the leach liquor.
- Stage two involves the precipitation of rare earth oxalates from this leach liquor by addition of oxalic acid, which oxalates are then converted to mixed REO product by calcination (decomposition by heating in air). Any residual thorium in the oxalate would be removed, if necessary, to below marketability limits by further simple washing of the oxalate product before calcination.
- NPV Sensitivity

A sensitivity analysis was conducted to estimate the magnitude of the sensitivity of the model as measured by NPV and IRR (where relevant). The Project's NPV sensitivity to the discount rate is shown below:

Discount rate	NPV ^c
%	US\$ M
5	783
8	512
10	393
12	304
15	210

c includes use of inferred resource data

This PEA's economic analysis showed that the project's economic performance is primarily influenced by REO pricing and recovery and that it is also influenced by reagent prices (and hence by the potential production of phosphate and ammonium sulphate co-products), as these are the major contributors to the operating cost of the project.

This PEA recommends further testwork to optimise and confirm optimal conditions, to verify recoveries of both the REO product and generation of potential valued-adding products including

phosphate fertiliser, scandium and the recycling of waste products in order to recover oxalic acid, the major reagent cost item.

A copy of the executive summary of the PEA is available on the Galileo website at www.galileoresources.com. This PEA, as well as conforming to the SAMREC Code also follows the guidelines of the CIM Definition Standards on Mineral Resources and Mineral Reserves.

Disclaimer Note on PEA

This PEA is preliminary in nature and is based on a number of assumptions that may be changed in the future as additional information becomes available. Mineral resources that are not mineral reserves do not have demonstrated economic viability. This PEA includes stockpiles, which are inferred mineral resources and require rigorous SAMREC compliant sampling applied to them in order for them to be categorized as mineral reserves, and there is no certainty that the PEA will be realized.

For further information, please contact:

Colin Bird, Chairman & CEO	Tel +44 (0) 20 7581 4477
Andrew Sarosi, Technical Director	Tel +44 (0) 1752 221937
Beaumont Cornish Limited: Nominated Advisor and Broker	Tel +44 (0)20 7628 3396
Roland Cornish/James Biddle	

Shore Capital Stockbrokers Limited: Joint Broker	Tel +44 (0)20 7408 4090
Jerry Keen/Toby Gibbs	

Gable Communications	Tel +44 (0)20 7193 7463
Justine James	M +44 (0) 7525 324431

A copy of the announcement is available on the Company's website www.galileoresources.com

Technical Sign-Off

Andrew Sarosi, Director of Galileo, who holds a B.Sc. Metallurgy and M.Sc. Engineering, University of Witwatersrand and is a member of The Institute of Materials, Minerals and Mining, is a 'qualified person' as defined under the AIM Rules for Companies and a competent person under the reporting standards. The technical parts of this announcement have been prepared under Andrew Sarosi's supervision and he has personally approved the release of this announcement.

Note to the Editors

Galileo Resources is a natural resource exploration company. The Company has an experienced management team with proven technical and commercial background. The flagship property is the Glenover Phosphate concession, which produced phosphate for many years. Phosphate however, is now subordinated to Rare Earth Elements (REEs). The project area is known to contain REEs and that the grades, if of sufficient size and continuity may well lead to a medium-sized operation for the production of REOs. Galileo is earning up to 51% interest in the Project.

In Zambia, the Company can acquire a 35% earn-in interest with option to purchase an additional 15% interest in the rare-earth Nkombwa Hill Project prior to feasibility study. Intensive surface sampling over the last 18 months has identified two drill-ready targets having significant levels of REE mineralisation. Kilogram-scale outcrop (rock chip) samples have returned rare earth contents of up to 23.6% TREO; exploration samples collected over the entire carbonatite complex that contain more than 1% TREO average 3.58% TREO.

Technical Glossary

Acid cracking a process of disintegrating minerals in ore by the addition of acid and heating

Calcination: a thermal treatment process in presence of air applied to ores and other solid materials to bring about thermal decomposition

CIM Canadian Institute of Mining, Metallurgy and Petroleum

Phosphate (P_2O_5): an oxide of phosphorus

Rare earths or

rare earth elements (REE): a set of sixteen chemically similar elements in the periodic table made up of the fourteen stable lanthanoids lanthanum to lutetium, plus yttrium and scandium. On the basis of their chemical properties, the REE may be subdivided into the light REE (LREE), being the elements from lanthanum to gadolinium; and the heavy REE (HREE), the remaining seven lanthanides terbium to lutetium and yttrium.

REO (rare earth oxide): the oxide form of the rare earth elements

SAMREC Code: South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves

Th: The element Thorium

TREO: total rare earth oxides

The economically significant rare earth elements include:

La: Lanthanum Used extensively as a catalyst in the refining of crude oil; its ability to store 400 times its volume of hydrogen is utilised in rechargeable NiMH batteries that are an essential component of hybrid motor vehicles; La changes the refractive index of glass and is used in the manufacture of lenses for digital cameras.

Ce: Cerium Primary uses are in high quality polishing of glass, silicon wafers, solar cells; in auto catalytic converters; rich red colour pigments; low energy light bulbs.

Pr: Praseodymium As an additive Pr gives a pure yellow colour to glass and brilliant pastel greens and yellows for glazes; can be used along with Nd in permanent magnets (see below).

Nd: Neodymium Major application is in the manufacture of NdFe(iron)B(boron) permanent magnets (neo-magnets), the most powerful permanent magnets currently known. NdFeB magnets are essential in new "clean energy" technology such as wind turbines and hybrid and electrical motor vehicles; their high strength have allowed the miniaturising of hard disc drives and personal audio devices. Nd, with Y, is widely used in the manufacture of lasers.

Eu: Europium Widely used as a phosphor: Eu alloys uniquely provide a perfect red colour for LED, LCD and plasma television and monitor screens; also used in thin film superconductor alloys and in lasers

Gd: Gadolinium Uses include neutron capture capability and in compounds as a contrasting agent in radiography and magnetic resonance imaging in medical diagnostics

Sm: Samarium Alloyed with cobalt, Sm forms a strong permanent magnet that has the highest resistance to thermal demagnetization.

Y: Yttrium Uses include lasers, as host for europium in TV red phosphor; alloyed with boron and cobalt high temperature superconductors and microwave filters

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