

FRONTIER RARE EARTHS LIMITED
NEWS RELEASE

December 23 2010

Zandkopsdrift pre-feasibility study work programme to commence in January 2011

Toronto, Ontario – **Frontier Rare Earths Limited** (TSX:FRO) (TSX:FRO.WT) (“Frontier” or the “Company”) is pleased to announce that the pre-feasibility study (“PFS”) work programme planned for its Zandkopsdrift rare earth element project in the Northern Cape Province of South Africa is expected to commence on schedule in January 2011.

Zandkopsdrift is one of the largest known undeveloped rare earth deposits outside China. A NI 43-101 compliant independent technical report (“ITR”) prepared by independent consultants, The MSA Group (Pty) Ltd. (“MSA”), in October 2010 identified an indicated resource of approximately 23 million tonnes at an average grade of 2.32% TREO⁽¹⁾, representing 532,000 tonnes of contained TREO and an additional inferred resource of approximately 21 million tonnes at an average grade of 1.99% TREO, representing 415,000 tonnes of contained TREO (both applying a 1% cut-off). This resource is considered by the Company to be large enough to target supplying up to 20,000 tonnes per annum of REO, which is comparable to the largest rare earth projects currently being developed. Frontier’s objective is to become one of the leading producers of rare earths outside China and one of the early new western producers of rare earths.

The Company is also pleased to provide an update on corporate developments since the Company’s listing on the Toronto Stock Exchange on November 17, 2010.

Zandkopsdrift pre-feasibility study

The Company’s objective is to complete a PFS on Zandkopsdrift by the end of 2011. Following completion of the Company’s listing on the Toronto Stock Exchange on November 17, 2010, planning has now been completed and work is ready to commence in respect of the metallurgical and resource development aspects of the PFS.

Metallurgical testwork

SGS Minerals Services (“SGS”) of Lakefield, Ontario have been appointed by Frontier to act as metallurgical consultants for the PFS. SGS were previously responsible for the metallurgical section of the ITR, which was comprised of a review of historical metallurgical and mineralogical work undertaken by Anglo American, Frontier and others. SGS are considered to be one of the world’s leading metallurgical consultants in the rare earths sector and are currently engaged on a number of rare earths projects.

SGS will undertake bench scale flotation, leaching and separation tests on representative samples of material from Zandkopsdrift with the objective of identifying the optimal flowsheet for extracting the contained rare earth elements. Approximately 1,000 kg of material will be provided to SGS for these tests. This material will be recovered from PQ3 core drilling that is scheduled to commence in January 2011 and to be completed during Q1 2011.

Resource Development

MSA, who were responsible for preparation of the ITR, have been appointed to manage the geological and resource estimation elements of the PFS. The principal objective of MSA's work will be to convert the higher grade 'B' and 'C' zones at Zandkopsdrift to the measured category and to convert the balance of the Zandkopsdrift resource to the indicated category. Approximately 20,000 metres of reverse circulation and core drilling is planned to be carried out, with drilling expected to commence in January 2011 and continue for a period of approximately six months.

Pre-feasibility study manager

Discussions are currently under way with a number of companies in relation to management of the PFS, and the Company expects to make an appointment in this regard in Q1 2011.

Financial

Following the Company's initial public offering in November 2010 and the recently announced partial exercise of the overallotment option by the Underwriters, the Company has received total net proceeds (after underwriter's fees) of approximately C\$57.9m. The Company's current cash balance is approximately C\$56.8m. Management is confident that the Company is now adequately funded to advance the Zandkopsdrift project through completion of the PFS and, assuming a positive outcome, completion of a definitive feasibility study.

Board

The Board of Frontier has now been enlarged by the formal appointment of three new non-executive Directors as outlined in the Company's prospectus dated November 8, 2010. Biographical details of these directors are summarised below.

Anu Dhir B.A., J.D.

Anu Dhir holds a Bachelor of Arts degree from the University of Toronto and a law degree (Juris Doctor) from Quinnipiac University, Connecticut, United States. Ms. Dhir has extensive experience in international business, operations and legal affairs in the mining, oil and gas and technology sectors. Ms. Dhir previously served as Vice President, Corporate Development and Company Secretary at Katanga Mining Limited, a TSX-listed company and is currently Managing Director of Miniq Limited. Ms Dhir is a non-executive director of Anoraq Resources Corporation, a South African platinum group metals producer listed on the Toronto Stock Exchange, NYSE Amex Equities and the Johannesburg Stock Exchange and is a non-executive director of Compass Asset Management in Kazakhstan.

Edward 'Eamonn' Grennan B.Sc., M.Sc.

Eamonn Grennan has over 40 years of experience as an exploration manager, geologist, consultant and lecturer. Mr. Grennan has worked on and managed exploration programmes on four continents for a range of international clients and his experience covers industrial minerals, aggregates, precious metals and base metals. His academic experience includes lecturing in a number of leading Irish third level institutions in applied geochemistry, mining engineering, economic geology and environmental science. Mr. Grennan is a former president of the Irish Association for Economic Geology and is currently an independent consultant geologist.

Crispin Sonn B.A., B.Comm.

Crispin Sonn holds a Bachelor of Arts degree from the University of Cape Town and an Honours degree in Business and Administration from the University of Stellenbosch. Since 2003, Mr. Sonn has held various positions at Old Mutual South Africa, a subsidiary of Old Mutual plc, the largest integrated financial services company in South Africa. Mr. Sonn is an executive director of Old Mutual South Africa with responsibility for corporate affairs, marketing and communications, and is Chairman of the Old Mutual Foundation, the philanthropic arm of the Old Mutual group. Mr. Sonn is

a non-executive Director of CapeSpan (Pty) Ltd, the largest fresh produce sourcing and distribution company in South Africa and was the founding Chairman of FoodBank South Africa.

Notes:

(1) Total Rare Earth Oxides (TREO) refers to the rare earth elements from lanthanum to lutetium, plus yttrium, expressed as oxides.

About Frontier Rare Earths Limited (TSX: FRO) (TSX: FRO.WT)

Frontier Rare Earths Limited is a mineral exploration and development company focused exclusively on rare earth elements in Southern Africa. Frontier's principal asset is the Zandkopsdrift rare earth deposit in the Namaqualand region of the Northern Cape Province of the Republic of South Africa. With an indicated resource of approximately 23 million tonnes at an average grade of 2.32% TREO, representing 532,000 tonnes of contained TREO and an additional inferred resource of approximately 21 million tonnes at an average grade of 1.99% TREO, representing 415,000 tonnes of contained TREO (both applying a 1% cut-off), Zandkopsdrift is believed to be one of the largest undeveloped rare earth resources outside of China classified under international resource reporting standards. Frontier's objective is to become one of the leading producers of rare earths outside of China and one of the early new western producers of rare earths. Frontier is well funded with cash resources of C\$56.8 million and has no debt.

Shares Outstanding: 89,562,780

For further information visit our website at www.frontierrareearths.com,

For questions and comments, please e-mail the Company at IR@frontierrareearths.com or contact James Kenny, CEO, at +352 208 80249.

Cautionary Notes

Forward-looking Information

Certain information contained or incorporated by reference in this news release, including any information as to the Company's strategy, projects, plans, prospects, future outlook, anticipated events or results or future financial or operating performance, constitutes "forward-looking statements" within the meaning of Canadian securities laws. All statements, other than statements of historical fact, are forward-looking statements. Forward-looking statements can often, but not always, be identified by the use of words such as "plans", "expects", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates", "predicts", "potential", "continue" or "believes", or variations (including negative variations) of such words; or statements that certain actions, events or results "may", "could", "would", "should", "might", "potential to", or "will" be taken, occur or be achieved or other similar expressions concerning matters that are not historical facts.

Forward-looking statements are necessarily based on a number of factors, estimates and assumptions that, while considered reasonable by the Company, are inherently subject to significant business, economic and competitive uncertainties and contingencies. Such factors, estimates and assumptions include, but are not limited to, the Company's strategy, growth, development and acquisition opportunities, return on existing assets, operational excellence and financial management; the Company's expectations regarding its revenue, expenses and operations; the Company's anticipated cash needs and its estimates regarding its capital and operating expenditures, capital requirements, needs for additional financing and the Company's ability to raise additional capital; the Company's estimates of future cash flows, financial condition and operating performances of the Company and its subsidiaries; the estimation of mineral resources and the realization of mineral reserves based on mineral resource estimates and estimated future development, if any, and possible variations of ore grade or recovery rates; the Company's

competitive position and its expectations regarding competition from other producers globally; the Company's ability to maintain customer and supplier relationships; anticipated trends and challenges in the Company's business and the markets in which it operates, including with respect to potential new rare earth projects, supply outlook and growth opportunities; limitations of insurance coverage; the future price of and future demand for rare earth elements; economic and financial conditions; interest rates and foreign exchange rates; performance of counterparties in fulfilling their obligations; government regulation of mining operations, accidents, environmental risks, exploration risks, reclamation and rehabilitation expenses; title disputes or claims including Black Economic Empowerment initiatives; and the timing and possible outcome of pending regulatory and permitting matters. These risks and uncertainties are fully described in detail in the Company's prospectus dated November 8, 2010 which can be found on SEDAR at www.sedar.com. While the Company considers these assumptions to be reasonable based on information currently available to it, they may prove to be incorrect.

Readers are cautioned that forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of Frontier and/or its subsidiaries to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. Readers are cautioned that forward-looking statements are not guarantees of future performance. All of the forward-looking statements made or incorporated in this news release are qualified by these cautionary statements.

Although Frontier has attempted to identify statements containing important factors that could cause actual actions, event or results to differ materially from those described in forward-looking information, there may be other factors that cause actions, events or results to differ from those anticipated, estimated or intended. Forward-looking information contained herein are made as of the date of this document based on the opinions and estimates of management on the date statements containing such forward looking information are made, and Frontier disclaims any obligation to update any forward-looking information, whether as a result of new information, estimates or opinions, future events or results or otherwise. There can be no assurance that forward-looking information will prove to be accurate, as actual results and future events could differ materially from those anticipated in such information. Accordingly, readers should not place undue reliance on forward looking information.

Technical Information

Certain technical information in this news release has been summarized or extracted from the Technical Report entitled "Amended NI 43-101 Resource Estimate and Technical Report on the Zandkopsdrift Rare Earth Element (REE) Project, located in the Republic of South Africa dated September 28, 2010, as amended October 29, 2010 (the "Technical Report"). The Technical Report was prepared by Mike Venter, Mike Hall and Pete Siegfried of The MSA Group (Pty) Ltd. ("MSA") and James Brown of SGS Minerals Services, Canada ("SGS"). Each of Mike Hall, Pete Siegfried and James Brown are "qualified persons" and "independent" of Frontier, as defined in NI 43-101. Readers are cautioned not to rely solely on the summary of information contained in this release, but should read the Technical Report which is posted on the Company's website at www.frontierrareearths.com and filed on SEDAR at www.sedar.com and any future amendments to such report. Readers are also directed to the cautionary notices and disclaimers contained therein.