mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

NAME OF APPLICANT: SAAM MINERALS (PTY)LTD

REFERENCE NUMBER:

PROSPECTING WORK PROGRAMME

SUBMITTED FOR A PROSPECTING RIGHT APPLICATION WITHOUT BULK SAMPLING

AS REQUIRED IN TERMS OF SECTION 16 READ TOGETHER WITH REGULATION 7(1) OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT (ACT 28 of 2002)

STANDARD DIRECTIVE

All applicants for mining rights are herewith, in terms of the provisions of Section 16 and in terms of Regulation 7(1) of the Mineral and Petroleum Resources Development Act, directed to submit a Prospecting Work Programme, strictly under the following headings and in the following format together with the application for a prospecting right.

1. **REGULATION 7.1.(a): FULL PARTICULARS OF THE APPLICANT**

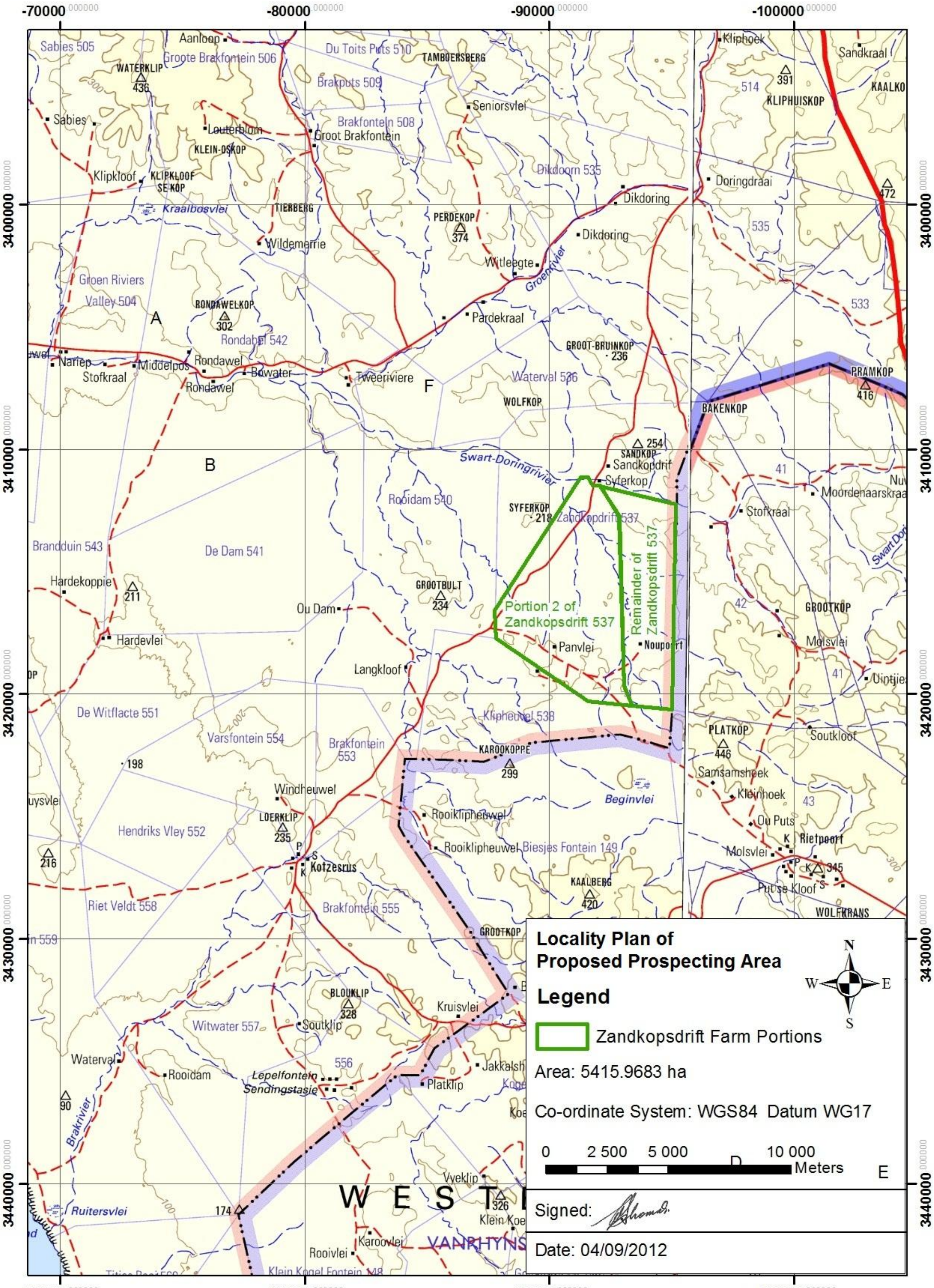
Table 1: Applicant's Contact Details

ITEM	COMPANY CONTACT DETAILS
Name	Cyril Thomas
Tel no	021 446 6040
Fax no:	021 446 6050
Cellular no	083 626 1318
E-mail address	cthomas@frontierrareearths.co.za
Postal address	P. O. Box 8399 Foreshore, Cape Town 8012

Table 2: Consultant's Details

ITEM	CONSULTANT CONTACT DETAILS (If applicable)
Name	Not applicable
Tel no	
Fax no:	
Cellular no	
E-mail address	
Postal address	

2. REGULATION 7(1)(b): PLAN CONTEMPLATED IN REGULATION 2(2) SHOWING THE LAND TO WHICH THE APPLICATION RELATES


Locality Plan of
Proposed Prospecting Area
Legend
Zandkopsdrift Farm Portions
Area: 5415.9683 ha
Co-ordinate System: WGS84 Datum WG17
0
2 500
5 000
10 000
Meters
Signed:
Date: 04/09/2012
N
S
E
W
Portion 2 of
Zandkopsdrift 537
Remainder of
Zandkopsdrift 537
-70000
-80000
-90000
-100000
3400000
3410000
3420000
3430000
3440000

3. REGULATION 7(1)(c): THE REGISTERED DESCRIPTION OF THE LAND TO WHICH THE APPLICATION RELATES

Remainder Portion and Portion 2 of the farm Zandkopsdrift No 537, situated in Namaqualand District, Northern Cape Province.

4. REGULATION 7(1)(d) and (e): THE MINERAL OR MINERALS TO BE PROSPECTED FOR

Table 4.1: Minerals to be prospected for

ITEM	DETAIL
Type of mineral(s)	Heavy Minerals (General)
Type of minerals continued	Leucoxene (Heavy Mineral)
Type of minerals continued	Monazite (Heavy Mineral)
Type of minerals continued	Rutile (Heavy Mineral)
Locality **(Direction and distance from nearest town)**	The nearest major town is Garies, some 35km on a gravel road to the north.
Extent of the area required for prospecting	5415.9683 hectares
Geological formation	Quaternary-Recent soil and sediments accumulations overlying the Mesklip Gneiss surrounding the Zandkopsdrif Carbonatite Complex

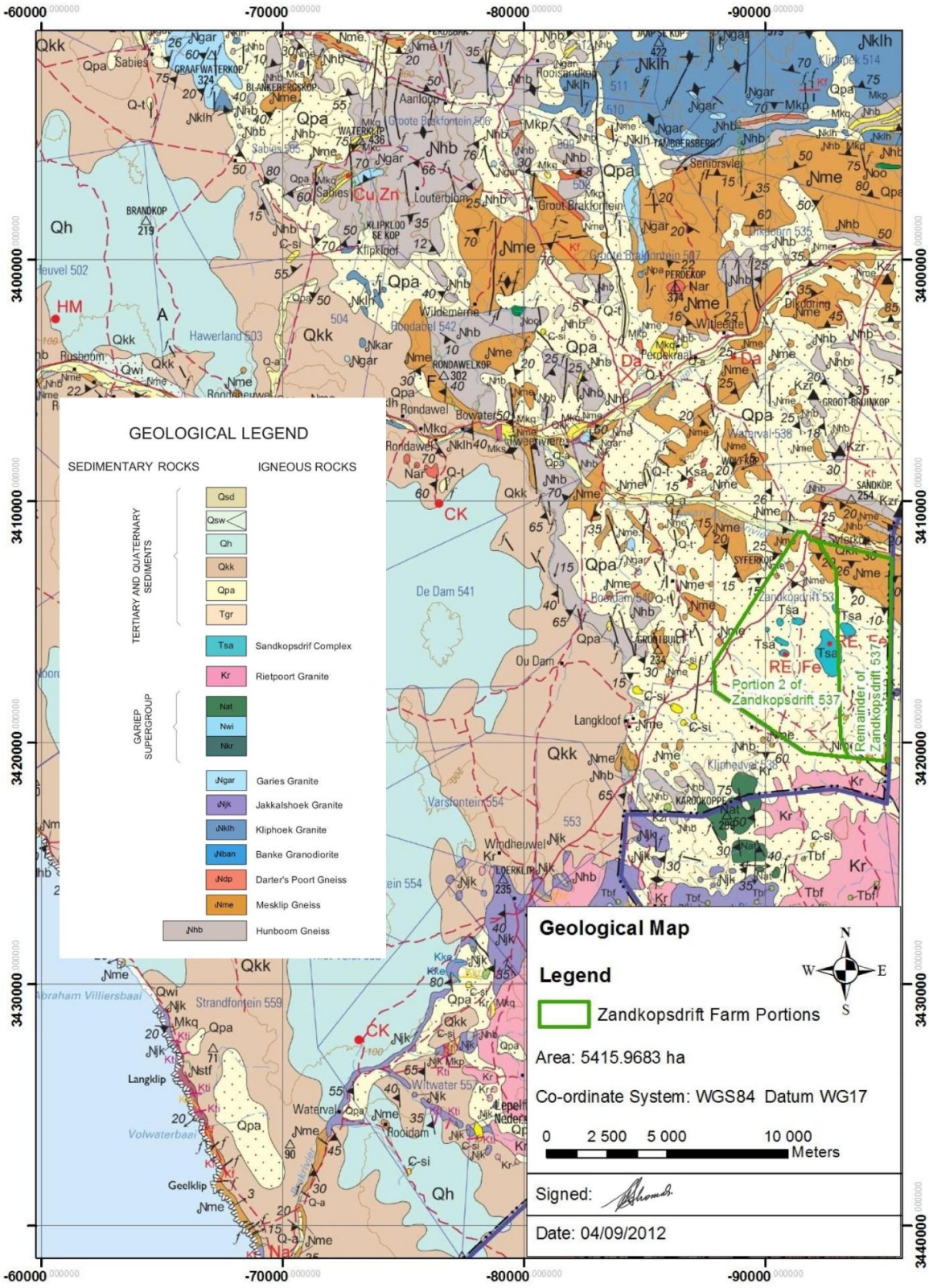
4.2 Description why the Geological formation substantiates the minerals to be prospected for (provide a justification as to why the geological formation supports the possibility that the minerals applied for could be found therein)

The soil and sediment accumulations particularly in the flood plains of the stream flowing from the Zandkopsdrif carbonatite are known to contain monazite and crandallite from the diamond exploration work carried out by ASAM Minerals (Mr. Hugh Jenner-Clarke) intermittently over 4 decades. It is believed that the Zandkopsdrif Carbonatite Complex is part of the 140 million year old Kogel Fontein Alkali Complex to the south. Since the emplacement of the pipe approximately 150 metres of material has been weathered and eroded and removed along streams and rivers. From the drilling work carried out by Saam Minerals' sister company, Sedex Minerals, on the carbonatite, economic grades and

tonnages of rare earth elements contained in the monazite and crandallite have been proven. These minerals were released from the carbonatite during the weathering and erosion of the removed 150m and as they are resistant and heavy, these heavy minerals may have accumulated in economic concentrations in the surrounding sediments, especially as noted above, in the flood plains of the streams surrounding the carbonatite.

4.3 Attach a geological map that justifies the description why there is a possibility that the minerals applied for could occur on the land concerned.

See geological map on next page.


-60000
-70000
-80000
-90000
3400000
3410000
3420000
3430000
3440000
GEOLOGICAL LEGEND
SEDIMENTARY ROCKS
IGNEOUS ROCKS
TERTIARY AND QUATERNARY SEDIMENTS
Qsd
Qsw
Qh
Qkk
Qpa
Tgr
Tsa Sandkopsdrif Complex
Kr Rietpoort Granite
GARIEP SUPERGROUP
Nat
Nwi
Nkr
Ngar Garies Granite
Njk Jakkalshoek Granite
Nklh Kliphoek Granite
Nban Banke Granodiorite
Ndp Darter's Poort Gneiss
Nme Mesklip Gneiss
Nhb Hunboom Gneiss
Geological Map
Legend
Zandkopsdrift Farm Portions
Area: 5415.9683 ha
Co-ordinate System: WGS84 Datum WG17
0 2 500 5 000 10 000
Meters
N
W
E
S
Signed:
Date: 04/09/2012
Portion 2 of Zandkopsdrift 537
Remainder of Zandkopsdrift 537
De Dam 541
Ou Dam
Varsfontein 554
Strandfontein 559
Hawerland 503
Langkloof
Langklip
Geelklip
Volwaterbaai
Abraham Villiersbaai

5. REGULATION 7(1)(f): A DESCRIPTION OF HOW THE MINERAL RESOURCE AND MINERAL DISTRIBUTION OF THE PROSPECTING AREA WILL BE DETERMINED

AND

REGULATION 7(1)(h): ALL PLANNED PROSPECTING ACTIVITIES MUST BE CONDUCTED IN PHASES AND WITHIN SPECIFIC TIMEFRAMES

AND

REGULATION 7(1)(i):TECHNICAL DATA DETAILING THE PROSPECTING METHOD OR METHODS TO BE IMPLEMENTED AND THE TIME REQUIRED FOR EACH PHASE OF THE PROPOSED PROSPECTING OPERATION

Refer to Table 5.1 for details.

The table below incorporates the information required in respect of Regulations 7(1)(f), 7(1)(h) and 7(1)(i):

Table 5.1

Phase	Activity	Skill(s) required	Timeframe	Outcome	Timeframe for outcome	What technical expert will sign off on the outcome?
1	**Non-Invasive Prospecting** Investigation and compilation of the historical data	Geologist	Months 0-6	Report and map showing heavy mineral potential	Month 6	Geologist
2	**Invasive Prospecting** Grid soil sampling, pitting and analysis	Geotechnical team	Months 7-24	Report and maps emphasising most prospective areas	Month 24	Geologist
3	**Invasive Prospecting** RC Percussion drilling to bedrock, analysis and modelling	Geologist, field assistants and drilling company	Months 25-36	Code compliant resource estimate	Month 36	Independent Resource Consultant
4	**Invasive Prospecting** Infill drilling, analysis and resource modelling	Geologist, field assistants and drilling company	Months 37-48	Measured, Indicated and Inferred resource estimate	Month 48	Independent Resource Consultant
5	**Non-Invasive Prospecting** Composite high grade drill samples	Metallurgist	Months 49-52	Beneficiation flow sheet	Month 52	Independent Metallurgical Group
6	**Non-Invasive Prospecting** Mine and plant design	Mining engineers metallurgists	Month 53-60	Preliminary Economic Assessment technical report	Month 60	Independent Mining Consultants

6. REGULATION 7(1)(g): A DESCRIPTION OF THE PROSPECTING METHOD OR METHODS TO BE IMPLEMENTED

(i) DESCRIPTION OF PLANNED NON-INVASIVE ACTIVITIES:

(These activities do not disturb the land where prospecting will take place e.g. aerial photography, desktop studies, aeromagnetic surveys, etc)

The area under application has already been surveyed in detail by ground traverses and airborne magnetic and radiometric surveys under Saam Minerals' sister company, Sedex Minerals' existing prospecting right. The survey data is available and ready for further examination relevant to this application.

In addition the area has also been flown using LIDAR techniques and the detailed topographic and vegetation cover maps are available.

Finally the ASAM minerals reports covering the heavy mineral trails found in the area are available to the exploration team.

Phase 1 of the non-invasive prospecting work will take approximately four months and will compile the relevant data and observations from the recent and historical survey work. The deliverables will be a detailed report and maps highlighting areas with the best potential to contain the alluvial monazite and crandallite mineralisation.

Phase 5 of the non-invasive prospecting will consist of off-site metallurgical test work, at Mintek or similar facility. This work will investigate the best ways to beneficiate the monazite and crandallite minerals and to characterise the composition of the waste material that would be destined for tailings dam storage. A suitably sized and representative sample for the metallurgical test work will be obtained from compositing all the borehole intersections.

Phase 6 of the non-invasive prospecting will be developing a preliminary economic assessment further discussed in Section 6 (iii).

(ii) DESCRIPTION OF PLANNED INVASIVE ACTIVITIES:

(These activities result in land disturbances e.g. sampling, drilling, bulk sampling, etc)

Phase 2 of the invasive prospecting will initially consist of soil sampling on a regular grid over areas that have been defined as showing heavy mineral potential from the review of the current and historical work. The samples will have to be taken from the "B" soil horizon, which is below the wind-blown sand that is common in this area. This may involve digging a small shallow hole (<1m deep) to sample the correct horizon. The hole will be rehabilitated immediately after the sample is taken. The sample lines will be traversed by foot so no new

tracks will be formed by the field vehicles. The samples will be analysed for their heavy mineral content with particular reference to monazite and crandallite and also for their rare earth element content by hand held Niton X-Ray fluorescence instrument. The data will be interpreted and an anomaly map developed of the most prospective areas.

It should be clearly noted that each step or phase of the prospecting activities depends on encouraging results from the previous step.

Phase 3 of the invasive prospecting will be to drill the most promising areas on a coarse grid (~100m x 100m). The drilling method will be Reverse Circulation (RC) to eliminate sample contamination as far as possible. The drill rig will be truck-mounted with a compressor and will be positioned on the drill site using GPS techniques. As the shallow holes will only be drilled to bedrock it is anticipated that the usual accompanying vehicles carrying drill rods and additional heads etc. will not be required on site resulting in significantly less environmental disturbance. RC is a dry drilling technique and no water will be required at the drill site. Once the holes have been drilled the collar positions will be surveyed by a professional surveyor. The holes will be logged and sampled every metre by a geologist and geotechnical team.

As per Saam Minerals' standard operating procedures the drill site will be photographed before, during and after drilling and after rehabilitation of the site. A permanent record will be kept on file of these activities.

The samples will be analysed in an appropriate certified laboratory for their heavy mineral and rare earth element content. The results will be interpreted and an ore-body map developed. If the grades and volumes are encouraging the data will be provided to an independent Consultant to estimate the overall grade and resource tonnages using code compliant (Canadian National Instrument 43-101) resource calculation techniques. This will provide a reliable estimate of what the deposit contains and should enable a clear decision as to the future work required on the programme.

Phase 4 of the invasive prospecting activities will be to carry out infill drilling to further constrain and define the ore-body. The same procedures as for Phase 3 will be followed except the drill spacing will be closer (50m x 50m) grid or possibly even closer (20m x 20m grid) in some high priority areas. The data consisting of borehole logs, geochemistry and mineralogy at 1 metre intervals, collar position and other pertinent information will be provided to the independent Consultant to upgrade the grade and tonnages of the resource. If, at this time, the resource is considered attractive to the company then Phase 5 will be implemented to develop a metallurgical flow sheet to extract the minerals of interest.

(iii) DESCRIPTION OF PRE-/FEASIBILITY STUDIES

(Activities in this section includes but are not limited to: initial, geological modeling, resource determination, possible future funding models, etc)

Phase 6 of the non-invasive prospecting activities will consist of a Preliminary Economic Assessment (PEA) of the deposit. Saam Minerals' sister company, Sedex Minerals, already has a published PEA for the development of the Zandkopsdrift mine where the Zandkopsdrif Carbonatite will be mined and the rare earth minerals beneficiated and cracked on site. The PEA for this current application will make use of the facilities already owned or planned by the company from these early studies.

Commitment to provide addendums in respect of additional prospecting activities

I herewith commit to provide the Department of Mineral Resources with an addendum in respect of both the EM Plan and Prospecting Work Programme regarding any future in-fill prospecting required but not described above, prior to undertaking such activities. The addendum will cover all the Regulations as per the Prospecting Work Programme.

I agree that the addendums will provide for similar activities only and if the scope changes I would be required to apply in terms of Section 102 of the MPRDA for an amendment of the Prospecting Work Programme

Mark with X

ACCEPT	**X**

7. REGULATION 7(1)(j)(i):DETAILS WITH DOCUMENTARY PROOF OF THE APPLICANT'S TECHNICAL ABILITY OR ACCESS THERETO TO CONDUCT THE PROPOSED PROSPECTING OPERATION

7.1 Competencies to be employed in terms of the Mine Health and Safety Act

COMPETENCIES TO BE EMPLOYED (List the legal appointments that will be made in terms of the Mine Health and Safety Act, appropriate for the type of operation)
The prospecting activities will not require more than 20 workers, hence no legal appointments will be required. However, Saam Minerals will appoint its Exploration Manager to ensure compliance to the relevant Mine Health and Safety Act sections applicable to exploration activities.

I herewith confirm that I, in Table 9.1 have budgeted and financially provided for the required skills listed above.

CONFIRMED (Mark with an **X**)	**X**

7.2 List of Appropriate equipment at your disposal (If Applicable)

Table D: Appropriate Equipment Available

Scintillometers (RadEye PRD units)
Magnetometers (Geotron)
Niton hand held X-Ray fluorescence units for analytical purposes
Binocular Microscopes
Suitable field vehicles
GPS's positioning equipment and Geological software
Personal safety equipment

7.3 Technical skills provided Free of Charge

7.3.1 Information (CV's) in respect of skills already acquired (append)

7.3.2 Copy of the relevant contractual agreements between the service provider and the applicant relative to the duration of the planned prospecting period, where applicable.(append)

7.3.3 ALL other evidence of Technical Ability (append)

TECHNICAL CAPABILITY

Geological Staff

Saam Minerals' technical ability is based on the accumulated exploration knowledge and experience which is available to it through Frontier Rare Earths' Director of Exploration, Mr. Hugh Jenner-Clarke, and his geological staff. Saam Minerals is a subsidiary of Frontier Rare Earths Ltd (formerly known as Frontier Minerals Ltd).

Since 1994, Mr. Jenner-Clarke and his geological staff have provided offices in Cape Town and Springbok and geological, technical and field exploration services to Firestone Diamonds plc through Asam Minerals, Mr. Jenner-Clarke's geological consulting company. During 2006, Firestone Diamonds established its own separate offices in Cape Town and Springbok and hired additional staff to allow it to manage its own exploration programmes. As a result, Asam Minerals no longer provides geological services to Firestone Diamonds, and is now dedicated to supporting Frontier Rare Earths and its subsidiaries. Mr. Jenner-Clarke is a graduate in geology (Honours) from London University. He has over 40 years experience in the minerals industry as a geologist and exploration manager. His company, Asam Minerals, was responsible for the discovery of the Baken and Octha Diamond Mines in the Northern Cape Province and the Lorelei mine in Namibia. He has worked on exploration and mining projects in South Africa, Namibia, Botswana, Australia, and the USA.

Saam Minerals' technical ability is also based on the exploration knowledge and experience of Frontier's Exploration Manager, Dr Stuart Smith, who will be responsible for the development and management of detailed exploration programmes for the company's projects. Dr. Smith is a graduate in geochemistry (Ph. D.) from the University of Cape Town. He was a research scientist at the University of Cape Town for 13 years and published 18 papers in the fields of Archaean geology, stable isotope geochemistry and mineralization processes. The next 10 years were spent as exploration manager on alluvial and marine diamond deposits in South Africa and Namibia. He joined Frontier in 2007 as exploration manager. A copy of Dr. Smith's CV is attached under Annexure A.

Field Staff

Frontier's geological staff is supported on the ground by a highly experienced team of field staff, which is probably one of the most experienced in Namaqualand. All members of the field staff are HDSA's who have been long-time residents of the Springbok area in Namaqualand and whose working lives have been exclusively spent in mineral exploration and mining.

Frontier will have three independent field exploration teams based at its Springbok office to carry out exploration at the company's exploration projects in the region. These teams will be led by three very experienced field exploration team managers. These personnel have been widely trained in exploration techniques and procedures over many years of working closely with a succession of highly competent exploration geologists. In addition to their field skills they all have considerable experience of drilling and exploration plant operations. The field staff's combined years of experience makes it possible for

the company to conduct exploration rapidly and effectively. All members of the team have been trained in modern exploration technologies. Wherever possible, additional staff required for the field exploration teams will be employed from the local area.

Offices and equipment
All of Frontier's exploration field staff are highly mobile and have been provided with field vehicles, GPS's, scintillometers and sampling and prospecting equipment which include magnetometers for geophysical surveying and a Niton X-Ray fluorescence unit for analyzing various minerals. This specialized equipment provides a very efficient means for the field staff to explore the company's prospecting permit areas. They have an operating base at the company's Springbok office and workshop, from which they can source supplies, equipment, fuel and obtain maintenance and repair services.

Contractors and consultants
To the extent that additional specialised geological, exploration or resource evaluation expertise is required, this will be provided either by "The MSA Group", 20B Rothesay Avenue, Craighall Park, Johannesburg 2196 (Tel: 011 880-2184) or similar consulting group such as The Snowden Group.

The MSA Group will also be used to undertake Environmental Impact Studies, Scoping Studies and to compile EMP's as and when required.

Drilling operations will be outsourced to an experienced exploration drilling contractor, under the supervision of Frontier's geological and field exploration staff. The preferred contractor would be either "Blue Chip Mining and Drilling", P.O. Box 818, Kuruman, 8460 (tel. 053 712 2858) or Aarboor Drilling Contractors in Springbok (Tel. 027 712 1964).

Geochemical analysis of material recovered from field sampling, trenching and drilling will be carried out by Scientific Services cc of Unit 3, Technosquare, 42 Morningside Road, Ndabeni 7405 (Tel: 021 531-7166).

Geophysical interpretations will be carried out as required by Remote Exploration Services, from geophysical data generated from surveys done by Frontier's field staff.

Attached under "Annexure A" are company profiles of the various contractors and consultants which Saam Minerals may be using.

8. REGULATION 7(1)(j)(ii):DETAILS WITH DOCUMENTARY PROOF OF A BUDGET AND DOCUMENTARY PROOF OF THE APPLICANT'S FINANCIAL ABILITY OR ACCESS THERETO

AND

9. REGULATION 7(1)(k) A COST ESTIMATE OF THE EXPENDITURE TO BE INCURRED FOR EACH PHASE OF THE PROPOSED PROSPECTING OPERATION **(remember to also include prospecting fees)**

Refer to Table 9.1 for details.

Table 9.1

ACTIVITY	YEAR 1 Expenditure (R')	YEAR 2 Expenditure (R')	YEAR 3 Expenditure (R')	YEAR 4 Expenditure (R')	YEAR 5 Expenditure (R')
REHABILITATION FEES	25 000				
PROSPECTING FEES	5 500	8 250	11 000	13 750	16 500
PHASE 1 (4 months)					
Desktop study and compilation of historical data,	50 000				
PHASE 2 (12 months)					
Soil sampling and rehabilitation-field teams	160 000	80 000			
Assay by Niton	-	-			
Interpretation and report		60 000			
PHASE 3 (12 months)					
Initial RC drilling (100m x100m) grid, 50 holes to average 5m		50 000	25 000		
Site establishment/de-establishment		20 000		20 000	
Assay		16 000	8 000		
Rehabilitation		9 000	3 000		
Resource modelling			100 000		
PHASE 4 (12 months)					
Infill RC drilling, (50mx50m grid), 250 holes to average 5m			250 000	125 000	
Assay			42 000	21 000	
Rehabilitation			20 000	7 000	
Resource modelling				250 000	
PHASE 5 (12 months)					
Metallurgical work and development of flow sheet				400 000	200 000
PHASE 6 (8 months)					
Commencement of PEA study					250 000
Annual Total	**240 500**	**243 250**	**459 000**	**836 750**	**466 500**
				Total Budget	**2 246 000**

NOTE! If any person (including the applicant) provides services in any job or skills category at a reduced rate or free of charge, then such person's Curriculum Vitae (CV) must be attached as documentary proof of the technical ability available to the applicant.

10. FINANCIAL ABILITY TO GIVE EFFECT TO THE WORK PROGRAMME

10.1 The amount required to finance the Work Programme.

(State the amount required to complete the work)

R 2 246 000.00

10.2 Detail regarding the financing arrangements

(Elaborate on the financing arrangements, in terms of where the finance will be sourced, extent to which the financing has been finalized and on the level of certainty that such financing can be secured.)

FINANCIAL CAPABILITY

The funding required for Saam Minerals' prospecting project will be financed by its parent company, Frontier Rare Earths Ltd. Frontier listed on the Toronto Stock Exchange in November 2010 and at the time of listing raised approximately $62m in new equity funds, mainly from Canadian and US financial institutions and approximately 500 private investors to evaluate and develop the Zandkopsdrift rare earth project as well as to invest in other mineral projects in South Africa.

Attached under "Annexure B" is a copy of Frontier's last audited financial statements, published at the end of March 2012.

The cost estimates for all proposed work programmes in respect of all the other prospecting rights and prospecting right applications submitted by Frontier and its associated companies amount to approximately R18.5 million for the next 3 years. It is expected that after three years, further finance will be introduced through the introduction of new shareholders, however, should this not take place, Frontier would very comfortably be able to finance the exploration projects for its associated companies.

10.3 Confirmation of supporting evidence appended

(Attach evidence of available funding and or financing arrangements such as balance sheets, agreements with financial institutions, underwriting agreements, etc. and **specifically confirm** in this regard what documentation has been attached as appendices).

Attached under "Annexure B" is a copy of Saam Minerals' parent company, Frontier Rare Earths Ltd's, last audited financial statements published at the end of March 2012.

11 Confirmation of the availability of funds to implement the proposed project.

Refer to clauses 10.2 and 10.3 above.

12 I herewith confirm that I have budgeted and financially provided for the total budget as identified in Regulation 7(1)(k).

Confirmed (Mark with an X)	**X**

13 REGULATION 7(1) (m): UNDERTAKING, SIGNED BY THE APPLICANT, TO ADHERE TO THE PROPOSALS AS SET OUT IN THE PROSPECTING WORK PROGRAMME

Table: 13.1

Herewith I, the person whose name and identity number is stated below, confirm that I am the Applicant or the person authorised to act as representative of the Applicant in terms of the resolution submitted with the application, and undertake to implement this prospecting work programme and adhere to the proposals set out herein.	
Full Names and Surname	Cyril Victor Thomas
Identity Number	610129 5085 08 8

END