

26 February 2014

### INDUCED POLARISATION AND GROUND MAGNETIC SURVEYS COMMENCE AT NDONGO PROSPECT, GHANA

### **HIGHLIGHTS**

- Dipole-dipole ground Induced Polarisation (IP) and ground magnetics commences to further define drill targets at Ndongo Prospect, Ghana; and;
- Aerial survey, geological and soil geochemistry data indicate multiple N-NNE mineralised structures with a combined strike length of ~50 km.

Cardinal Resources Limited (ASX: CDV) ("Cardinal" or "the Company"), is pleased to announce that dipole-dipole ground induced polarisation (IP) and ground magnetics surveys have commenced over the Ndongo Central target within the Ndongo Prospect.

Analysis of the dipole-dipole IP and ground magnetics data will be combined with geochemical and aeromagnetic survey data to delineate and finalise initial drill targets.

A maiden drill program is planned to commence in late February 2014.

From Bolgatanga, Ghana, Managing Director Archie Koimtsidis said "The dipole-dipole IP and ground magnetics surveys will enable Cardinal to refine targets generated from the Company's aeromagnetic and geochemical databases, with follow up drilling using the recently acquired combination RC and diamond drill rig which is currently being commissioned at our base camp in Bolgatanga, Ghana.

"We are planning an initial 4,000m combined RC and diamond drill program as the first stage of the program. The assay reporting time at the SGS Laboratory in Ouagadougou, Burkina Faso, is expected to be approximately 2 weeks. We anticipate samples to be delivered on a weekly basis which will assist with prompt analysis and reporting of results."

### **NDONGO PROSPECT**

The 2013 airborne geophysical survey has identified up to ~50km strike length of multiple structures within the Ndongo Prospect. The 2013 soil geochemical program has delineated gold anomalism along ~8km of these structures, including an aeromagnetic and soil geochemical target along strike from the historical Nangodi Gold Mine and gold producing Shaanxi Gold Mine (Figure 1).

The 2013 ~11,000m soil geochemical campaign, using the Company owned custom-built soil geochemical drill rig that samples saprolite horizons, has identified three anomalous gold-in-soil zones within the Ndongo Prospect that collectively strike ~8km (Figure 2).



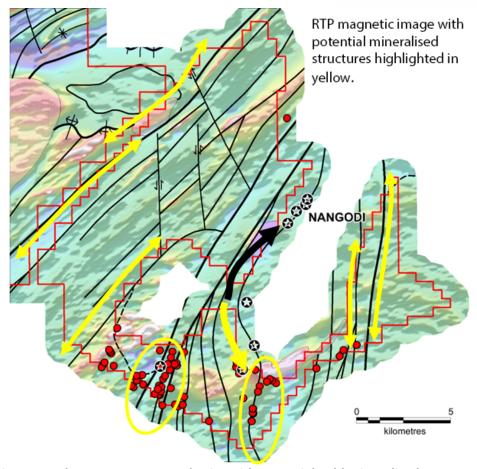


Figure 1: Ndongo Prospect geophysics with potential gold mineralised structures

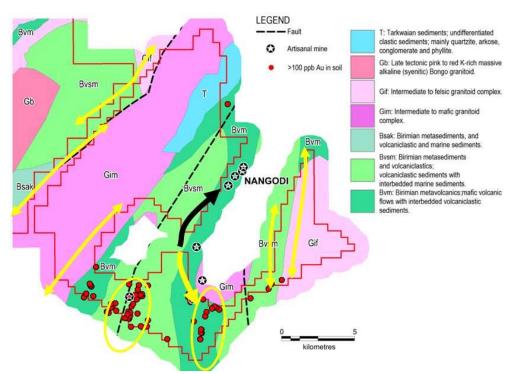


Figure 2: Ndongo Prospect geology with gold -in -soil geochemical results



Dipole-dipole ground induced polarisation (IP) and ground magnetics surveys have now commenced over the Ndongo Central target area. The locations of these surveys are shown in Figure 3 and Figure 4.

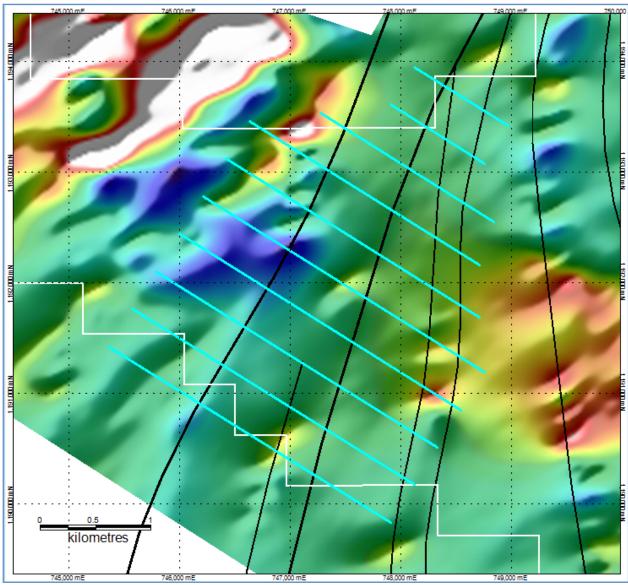


Figure 3: Ndongo Central ground initial dipole-dipole IP lines (blue) over reduced to pole total magnetic intensity image. Preliminary interpreted structures shown in black.

The ground geophysical surveys are being carried out by TTG Geoservices from Ouagadougou, Burkina Faso. The IP survey consists of ten initial 400m spaced lines to be followed by optional infill lines. The ground magnetic survey covers substantially the same area but using 50m line spacing.

IP surveys have been used very effectively in West Africa to map sulphidic resistive zones associated with gold mineralisation with associated sulphides and silica alteration/veins.



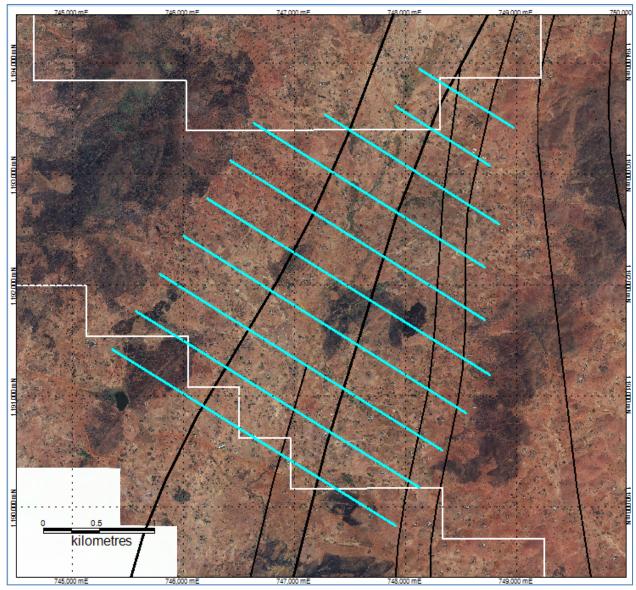


Figure 4: Ndongo Central ground initial dipole-dipole IP lines (blue) over satellite image. Preliminary interpreted structures shown in black.

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### **Competent Person's Statement**

The information in this report that relates to geophysical results and Interpretation is based on information compiled by Mr William Peters, a Consulting Geophysicist (Crosmin Pty Ltd) at Southern Geoscience Consultants. Mr Peters is a Fellow of the Australasian Institute of Mining and Metallurgy and Chartered Professional (Geology), and has sufficient experience which is relevant to the type of activity being undertaken to qualify as a Competent Person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Peters consents to the inclusion in this report of the matters reviewed by him in the form and context in which they appear.

Information in this report that relates to the Bolgatanga Project is based on information compiled by Mr Paul Abbott, a full time employee of Cardinal Resources Limited, who is a Fellow of the Australasian Institute of Mining and Metallurgy and a Member of the Geological Society of South Africa. Mr Abbott has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person, as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Abbott consents to the inclusion in this report of the statements based on his information in the form and context in which it appears.

### Disclaimer

Certain statements contained in this announcement, including information as to the future financial or operating performance of Cardinal Resources and its projects, are forward-looking statements that:

- may include, among other things, statements regarding targets, estimates and assumptions in respect of
  mineral reserves and mineral resources and anticipated grades and recovery rates, production and prices,
  recovery costs and results, capital expenditures, and are or may be based on assumptions and estimates
  related to future technical, economic, market, political, social and other conditions;
- are necessarily based upon a number of estimates and assumptions that, while considered reasonable by Cardinal Resources, are inherently subject to significant technical, business, economic, competitive, political and social uncertainties and contingencies; and,
- involve known and unknown risks and uncertainties that could cause actual events or results to differ materially from estimated or anticipated events or results reflected in such forward-looking statements.

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All forward looking statements made in this announcement are qualified by the foregoing cautionary statements. Investors are cautioned that forward-looking statements are not guarantees of future performance and accordingly investors are cautioned not to put undue reliance on forward-looking statements due to the inherent uncertainty therein.



### JORC Code, 2012 Edition – Table 1 Induced Polarisation Survey Commences at Ndongo Prospect, Ghana

### **Section 1 Sampling Techniques and Data**

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.	The Ndongo, Bongo and Kungogo Prospects, collectively known as the Bolgatanga Project area, are or will be sampled using hollow window sample tubes vertically hammered into the ground to collect undisturbed soil samples from the saprolite horizons on a grid, with baseline at 302° True North, of 200m x 50m, closing to 100m x 50m in anomalous areas.
		Samples are placed in metal core trays, photographed, logged and sampled, with samples taken at varying intervals, depending on visual differences and compositions within the saprolite horizons.
		Onsite XRF analysis of both the overburden and saprolite horizons is conducted using a hand-held Niton XL3t Analyser. The overburden is analysed with two readings taken every 0.5m; two readings are taken for each saprolite sample. These results are only used for onsite interpretation and the analyses are not reported.
		Sampling is carried out under QAQC procedures as per industry standards.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	Certified sample standards and in-house blanks are alternatively added in a ratio of 1 sample per every 15 samples.
		Hole collars are located using a Garmin 62S hand held GPS, which has an accuracy of +/- 3m.
	Aspects of the determination of mineralisation that are Material to the Public Report.	Sample intervals of the saprolite horizon vary from 0.4 – 1.5m maximum, and are selected on the basis of colour and textural differences. Separate samples are taken of saprock horizons.
	In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m	Samples are of variable weights, with a maximum of 3kgs, and are sent to SGS Laboratories, Ouagadougou, Burkina Faso, where they are dried, crushed and

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Criteria	JORC Code explanation	Commentary
	samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.	pulverised. A 250 gram split is retained as a reference, with the remainder, to a maximum of 2.5 kgs, subjected to a BLEG bottle roll technique over 24 hrs, with an AAS finish.
Drilling techniques	Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).	Vertical holes are drilled with HQ (0-1m), NQ (1-3m) and BQ (3-5m) sizes, using hollow window sample tubes. The entire soil sample is placed in a metal core tray.
Drill sample recovery	Method of recording and assessing core and chip sample recoveries and results assessed.	No sample losses occur as each metre drilled is recovered in the hollow tube.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	As drilling is from surface to a maximum depth of 5m, sample recovery is 100%. Drilling into the saprolite horizons ensures that representative samples are taken.
	Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	No sample bias occurs as there is no loss/gain of any material, and once the sample interval has been determined, the entire sample is taken for analysis.
Logging	Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.	Geological logging is carried out with soil colour, texture, consistency, grain size, quartz veins & foliations. Where saprock is encountered the rock type is noted.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	Logging is quantitative. Samples are photographed in the dry form.
	The total length and percentage of the relevant intersections logged.	All holes are logged in full.
Sub-sampling techniques and sample preparation	If core, whether cut or sawn and whether quarter, half or all core taken.	No core has been drilled
	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	Hollow window tubes are used. Samples are sampled dry.
	For all sample types, the nature, quality and appropriateness of the sample	Sample preparation is completed at SGS Laboratories, Ouagadougou, Burkina Faso. All preparation equipment is flushed with barren material prior to the



Criteria	JORC Code explanation	Commentary
	preparation technique.	commencement of sample preparation. The entire sample is dried, crushed to a nominal 2mm using a Jaw Crusher, and pulverised (85-90% passing 75 micron size fraction) using LM5 grinding mills. A 250 gram split is retained in a geochemical packet as a reference, with the remainder, to a maximum of 2.5 kgs, subjected to a BLEG bottle roll technique over 24 hrs, with an AAS finish.
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Field QC procedures involve the use of commercial certified reference material (CRM) for assay standards and in house blanks. The insertion rate is 1:15
	Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.	No duplicates are taken. 250g pulps are retained from each sample and stored on the company's premises for possible re-assay.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	The sample sizes are considered appropriate to give an accurate indication of gold mineralisation contained within the saprolite horizons.
Quality of assay data and laboratory tests	The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.	The analytical technique uses BLEG bottle roll over 24 hrs, with an AAS finish. The prepared samples (1.5-2.5 kgs) are bottle rolled with sodium cyanide and lime in a plastic bottle for 24 hrs. The bottle is removed from the rollers and allowed to settle. An aliquot of the clear solution is taken and DBIK/1% Aliquot 336 is added and shaken. The solution is aspirated into a Flame AAS, aerosolised, and mixed with the combustible gas, acetylene and air. The mixture is ignited in a flame whose temperature ranges from 2,100-2,800°C. Results have a lower gold detection limit of 1ppb. The AAS equipment is calibrated with each job.
		This technique is considered to approach a total digest of gold.
	For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.	Onsite XRF analysis of both the overburden and saprolite horizons is conducted using a hand-held Niton XL3t Analyser. The overburden is analysed with two readings, each of 30 seconds, taken at the beginning and end of every 0.5m. Two readings, each of 30 seconds, are taken for each saprolite sample once the samples have been placed in transparent bags. These results are only used for onsite interpretation and the analyses are not reported.  The instrument is serviced and calibrated once a year.



Criteria	JORC Code explanation	Commentary
	Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.	Sample preparation checks for fineness are carried out by the laboratory as part of their internal procedures to ensure the grind size of 85-90% passing 75 micron is being attained. Each batch of 100 samples has 5 checks (20%), with the grind size varying between 87-99% passing 75 micron, which is acceptable. Laboratory QAQC involves the use of internal lab standards using certified reference material and blanks.
		Certified reference materials, having a range of values, are inserted in the ratio of 1:30
		External laboratory checks are done on a three monthly basis through Laboratories Quality Services International (LQSI). Recent LQSI checks of CN Leach analyses on Low Grade Oxide Material produced acceptable levels of accuracy and precision.
Verification of sampling and	The verification of significant intersections by either independent or alternative company personnel.	No verification of anomalous geochemical results has been done by either independent or alternative company personnel.
assaying	The use of twinned holes.	No twinned holes have been drilled.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	Primary data was collected on a hand held Motion F5te Tablet PC using a set of standard templates supplied by Maxwell Geoservices, Perth (Maxwell). Daily data was synchronised and digitally captured by Maxwell for validation and compilation into Excel and Access spreadsheets and stored on the Cardinal servers located in Bolgatanga, Ghana, West Africa.
	Discuss any adjustment to assay data.	No adjustments were made to any assay data.
Location of data points	Accuracy and quality of surveys used to locate drill holes (collar and downhole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.	Hand held Garmin GPSmap 62s GPS's were used to locate collar positions, with an accuracy of +/-3m.  No down hole surveys were completed as holes were a maximum of 5m deep.
	Specification of the grid system used.	WGS84 Zone 30N, with baseline at 302° True North and lines at 200m intervals and stations at 50m along lines.
	Quality and adequacy of topographic control.	No topographic controls were required as this was a geochemical programme.



Criteria	JORC Code explanation	Commentary
Data spacing and distribution	Data spacing for reporting of Exploration Results.	The nominal drill hole spacing was 200m (northing) and 50m (easting), closing to 100m (northing) and 25-50m (easting) in anomalous areas.
	Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.	The data spacing and distribution is considered to be adequate to establish a degree of geological continuity for this geochemical programme.
	Whether sample compositing has been applied.	No sample compositing has been applied.
Orientation of data in relation	Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.	Vertical drill holes into the saprolite horizons achieves unbiased sampling of possible structures.
to geological structure	If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	No orientation based sampling bias has been identified in the data to date.
Sample security	The measures taken to ensure sample security.	Sample security is managed by Cardinal. Samples are stored at Cardinal's base camp located at Bolgatanga, Ghana, West Africa under security until collected by SGS Laboratories and transported to their Ouagadougou laboratory in Burkina Faso.
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	Sampling techniques and procedures, as well as data, are regularly reviewed internally. To date, no external audits have been completed.

### **Section 2 Reporting of Exploration Results**

(Criteria listed in section 1 will also apply to this section where relevant)

Criteria	JORC Code explanation	Commentary
Mineral Tenement and Land Status	Type, name/reference number, location and ownership including agreements or material issues with third parties including joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.	The Ndongo, Bongo and the Kungongo Prospects, collectively known as the Bolgatanga Project, are located in NE Ghana. Each license is held by Cardinal Resources Ghana Limited (Cardinal Ghana), a wholly owned subsidiary of Cardinal Resources Limited (Cardinal) (ASX: CDV).

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Criteria	JORC Code explanation	Commentary
		Ndongo Prospect – granted Prospecting license Bongo Prospect – granted Reconnaissance license Kungongo Prospect – granted Reconnaissance license
	The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	There are no known impediments to operate within the Bolgatanga Project granted license area.
Exploration Done by Other Parties	Acknowledgment and appraisal of exploration by other parties.	No previous systematic exploration has been undertaken.
Geology	Deposit type, geological setting and style of mineralisation	The geological setting is the Paleoproterozoic Nangodi Greenstone Belt comprising Birimian metavolcanics & metasediments, with felsic to intermediate intrusives.  The target deposit type is structurally controlled gold deposits, ranging from small-scale, high-grade shear-hosted quartz veins occurring along lithological contacts and within shear zones, to larger tonnage deposits associated with stock works in felsic to intermediate intrusives.
Drill hole information	A summary of all information material to the understanding of the exploration results including tabulation of the following information for all Material drill holes: <ul> <li>Easting and northing of the drill hole collar</li> <li>Elevation or RL (Reduced Level – elevation above sea level in meters) of the drill hole collar</li> <li>Dip and azimuth of the hole</li> <li>Down hole length and interception depth</li> <li>Hole length</li> </ul> <li>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain</li>	All geochemical results for the Ndongo Prospect have been reported in ASX announcements dated:  04.02.2013: Bolgatanga Project Geochemical Results 20.06.2013: Ndongo Geochemical Infill Results 26.09.2013: Bolgatanga Project – Ndongo West Geochemical Results



Criteria	JORC Code explanation	Commentary
Data aggregation methods	In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.	No weighting averaging techniques nor cutting of high grades have been undertaken.
	Where aggregated intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.	No aggregated intercepts were undertaken.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	No metal equivalent values are used for any reports.
Relationship between	These relationships are particularly important in the reporting of exploration results.	The geometry of the mineralisation is not yet known as no deep drilling has been done in the targeted areas.
mineralisation widths and intercept	If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.	The geometry of the mineralisation is not yet known.
lengths	If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').	Only down hole sample lengths are measured as geochemical sampling is completed to a maximum depth of 5m. True mineralisation widths are not yet known.
Diagrams	Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plane view of drill hole collar locations and appropriate sectional views.	Appropriate maps are included in this announcement
Balanced Reporting	Where comprehensive reporting of all Exploration Results is not practical, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	ASX announcements dated 20.06.2013 reported both low and high gold geochemical results in Figure 4. Mineralisation widths have not yet been determined.
Other substantive exploration data	Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observation; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.	Geophysical results are included as images. These are made from preliminary data and may change when final data is received. The structures shown are interpreted from preliminary data and are subject to possible change in final interpretation. Interpretation of airborne data is by its nature, subject to ambiguity.



Criteria	JORC Code explanation	Commentary
		No bulk sampling, metallurgical, mineralogical or geotechnical assessments have been completed.
Further Work	The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large – scale step – out drilling).	Ground geophysical surveys are planned over various areas to assess anomalous geochemical targets on Ndongo, with a combination of reverse circulation and diamond drilling to follow.
		Airborne geophysical targets on Ndongo North will be assessed with a combination of geochemistry, ground geophysics and drilling.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	Airborne geophysical targets will be assessed with a combination of geochemistry, ground geophysics and drilling.