PRESS RELEASE ASX/TSX: CDV
29 August 2018 2018-15

CARDINAL EXTENDS NDONGO EAST DISCOVERY STRIKE LENGTH

Cardinal Resources Limited (ASX/TSX: CDV) (**"Cardinal"** or **"the Company"**) is pleased to announce further shallow gold intersections to the exploration drill results previously announced on 16 July 2018 from its new Ndongo East discovery on the Ndongo License. The Ndongo East prospect is located approximately 20km north of the Company's Namdini Gold Project which has a 6.5Moz Indicated Mineral Resource.

Highlights

- **Significant gold intersections include:**
  - **2m @ 27.0 g/t Au** from 10m in NDRC247
  - **6m @ 12.6 g/t Au** from 2m in NDRC275
  - **7m @ 2.2 g/t Au** from 55m in NDRC276
- **Shallow RC drilling has encountered multiple intercepts of near-surface gold mineralisation over a strike length of approximately 1.2km**
- **Prospectivity of Ndongo East enhanced by proximity to historic Nangodi Gold Mine on regional Nangodi Shear Zone**

Cardinal's Chief Executive Officer / Managing Director, Archie Koimtsidis stated:

"These latest shallow, significant gold intersections have provided a possible threefold extension to the original 400m strike length discovery zone to 1.2km in length.

"The Ndongo East prospect lies within a larger target area of approximately 7km in strike length which has yet to be RC drill tested.

"We are increasingly encouraged at how Ndongo East is evolving with the potential to add high-grade gold ounces to our 6.5Moz Namdini Gold Project located only 20km to the south and we expect the recommencement of the drilling as soon as possible after the wet season ends during October-November 2018".

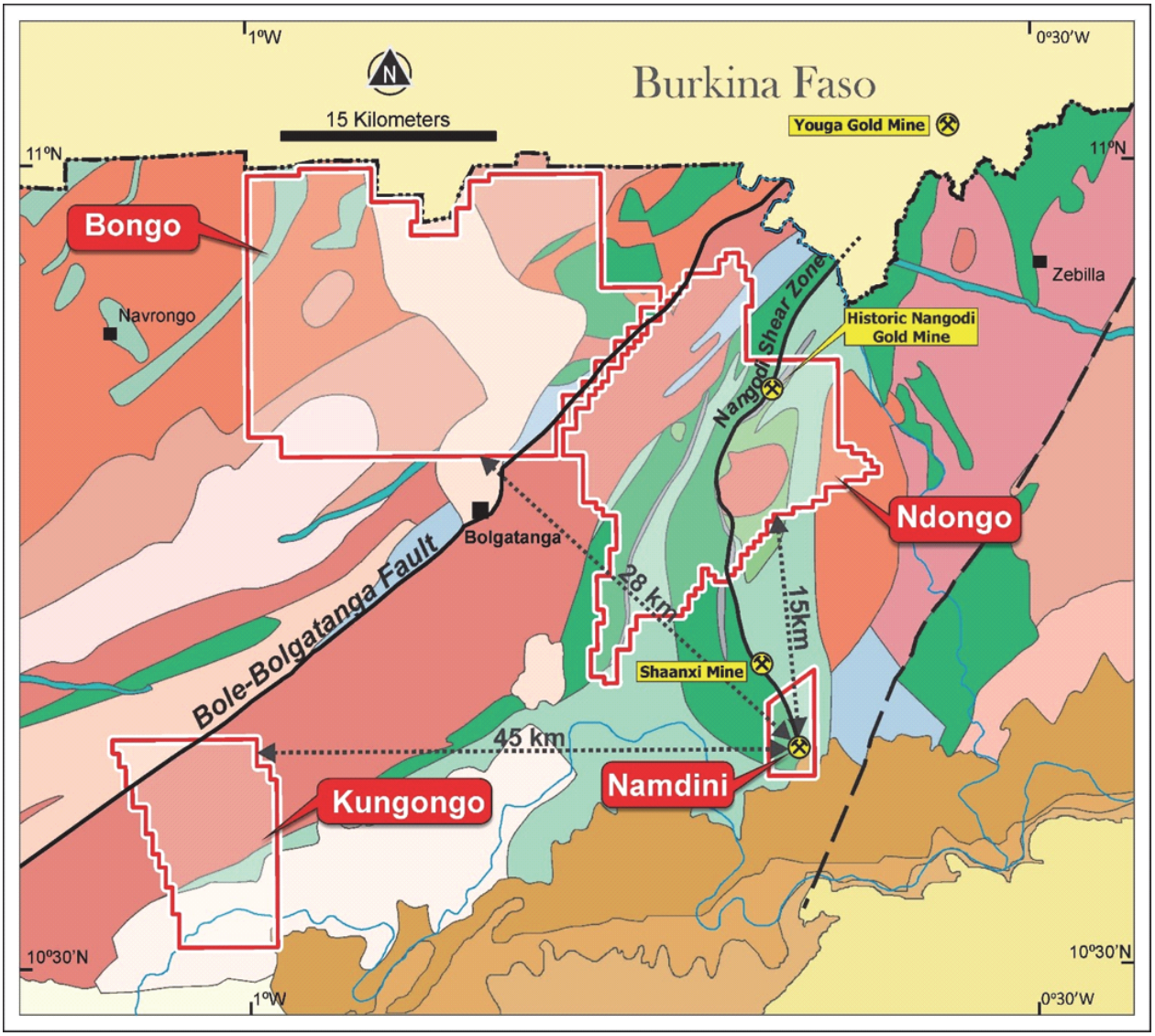

Figure 1: Cardinal's Bolgatanga Project (Ndongo, Bongo, Kungongo) and the Namdini Project

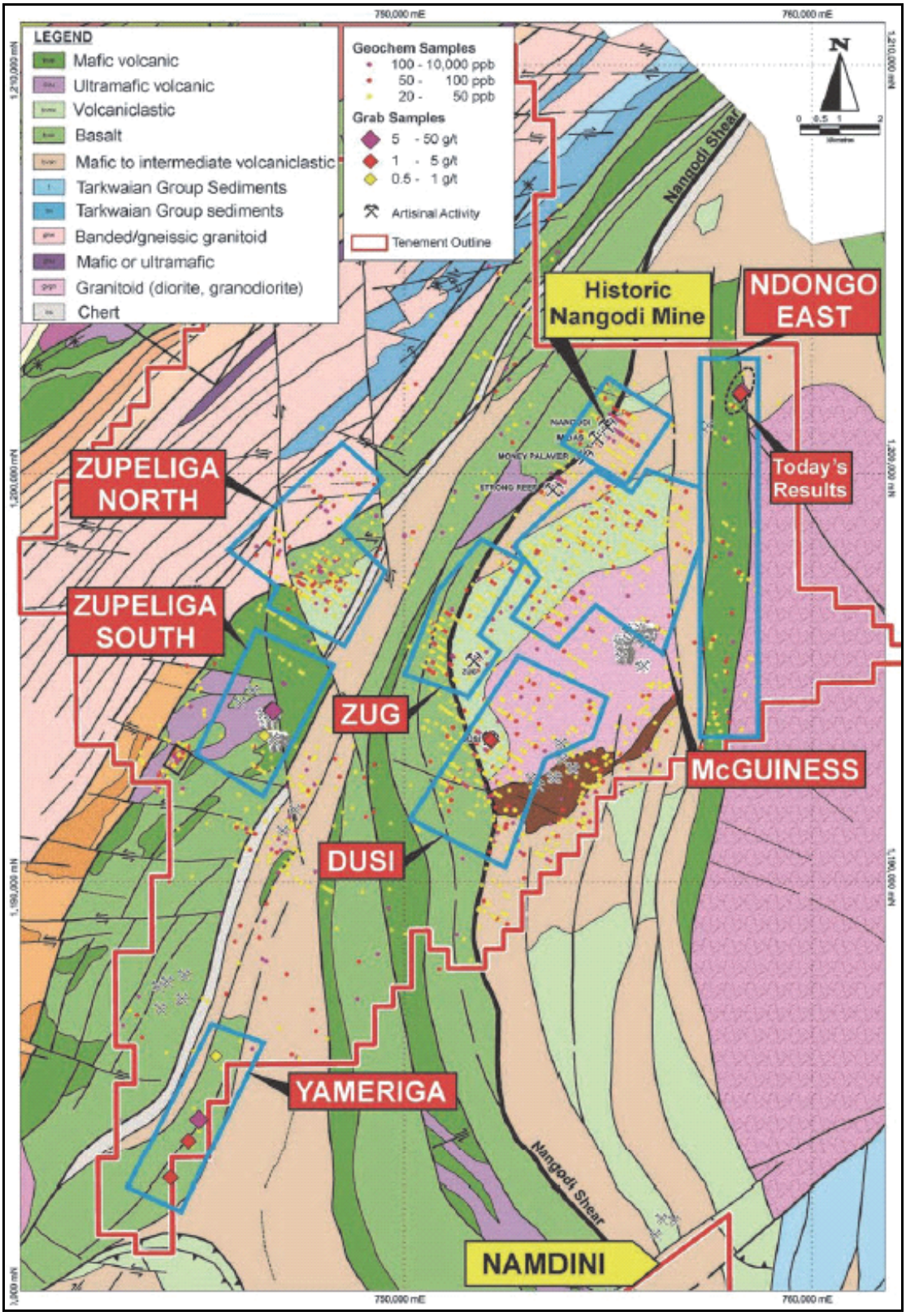

Figure 2: Ndongo Prospecting License with Exploration Prospects

Ndongo Prospecting License

The Ndongo Prospecting License covers an area of 295km^2, having been expanded by the purchase of two exploration license areas from Kinross Gold in August 2017 (Figure 1).

The license area is considered highly prospective for the discovery of economic gold mineralisation associated with the prolific Nangodi Shear Zone, a splay fault off the main regional-scale Bole-Bolgatanga Shear. The Nangodi Shear Zone is spatially related to no fewer than four significant gold discoveries, including the Company's Namdini Gold Project with 6.5Moz Indicated Mineral Resource, the Shaanxi Gold Mine, the historic Nangodi Gold Mine and the Youga Gold Mine in Burkina Faso, adjacent to the Ghana border. In addition, there are numerous historic shallow artisanal workings along many parts of this shear zone including the Dusi, Zug and McGuiness Prospects which all fall within Cardinal's license area (Figure 2).

Ndongo East Prospect

The Ndongo East Prospect is located within NE-SW trending Birimian metavolcanics and metasediments.

Previously announced drilling intersected higher-grade gold mineralised structures concentrated in the northern portion of the shear zone over a 400m strike length on coincident gold-in-soil and geophysical targets (*refer to Cardinal's ASX/TSX announcement 16 July 2018 "Cardinal Makes New Gold Discovery at Ndongo*").

Cardinal's most recent RC drilling along fence lines to test mineralisation further to the southwest along strike and at depth has proven encouraging as further significant intercepts within the mineralised structures suggest mineralisation continues. The furthest drill fence to the southwest intercepted a narrow zone of mineralisation of **2m grading 27.0 g/t Au** from 10m downhole in NDRC247 which indicates a strike potential of up to 1.2km of mineralised structures (Figure 3 and 5). Further infill drilling is planned to test this extended zone.

Drill Section E - E[1] is typical of the intersections encountered during the RC drilling, with gold mineralisation developed at, or near, the diorite-granodiorite contacts where competency differences create brittle fracturing which allows the ingress and precipitation of mineralising fluids (Figure 4). The mineralised horizons contain variable chlorite-silica-carbonate-sericite alteration with sulphides (mainly pyrite with very minor arsenopyrite).

The mineralised system is open along a northwest-southeast strike and at depth with multiple mineralised intersections (Figure 5 and Table 2).

We expect to recommence drilling after the wet season during October-November 2018 in order to test the strike and depth extents of the mineralised system.

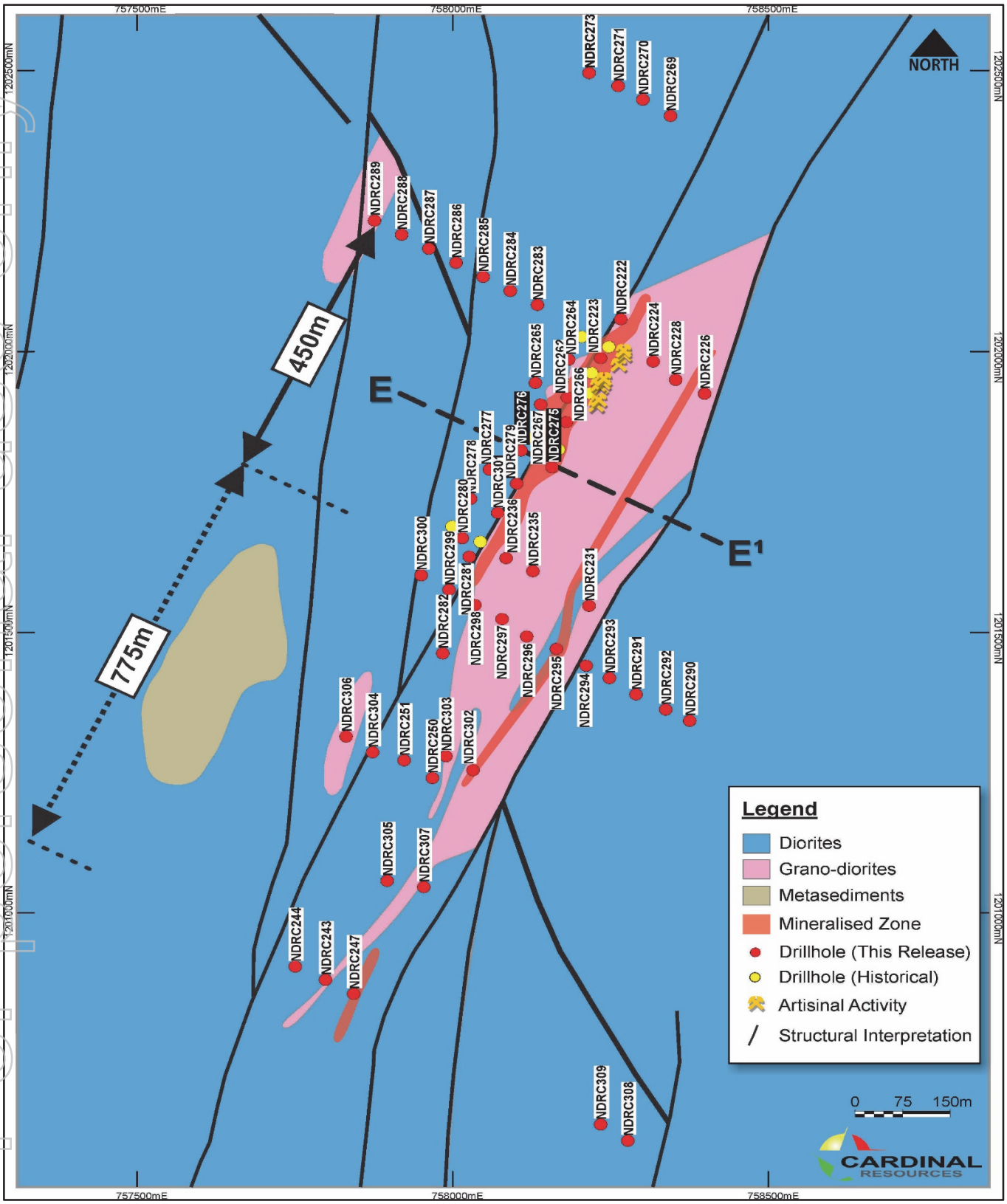

Figure 3: Ndongo East Prospect with RC Drill Locations and Interpreted Geology

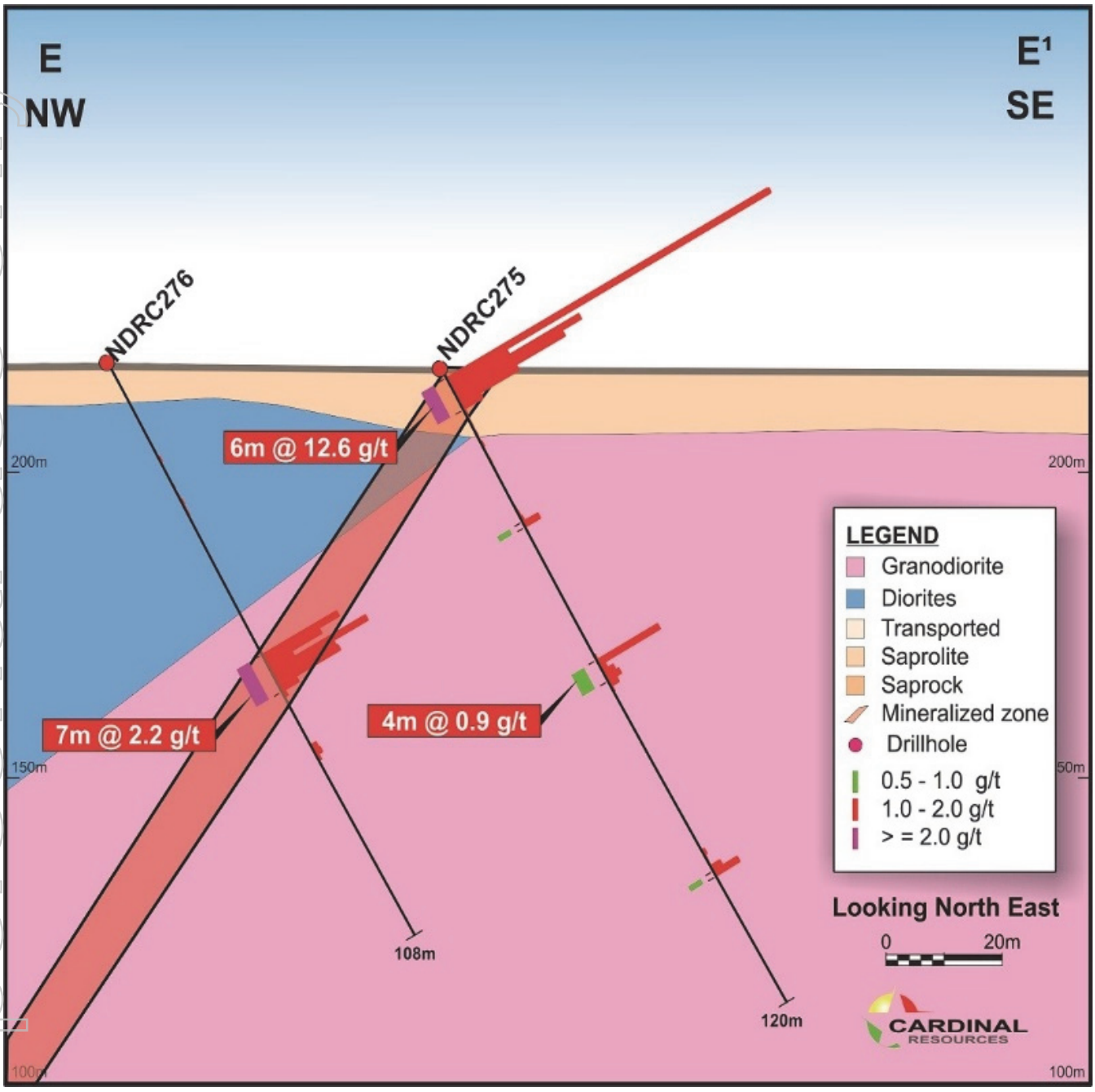

Figure 4: Ndongo East Prospect Typical Section

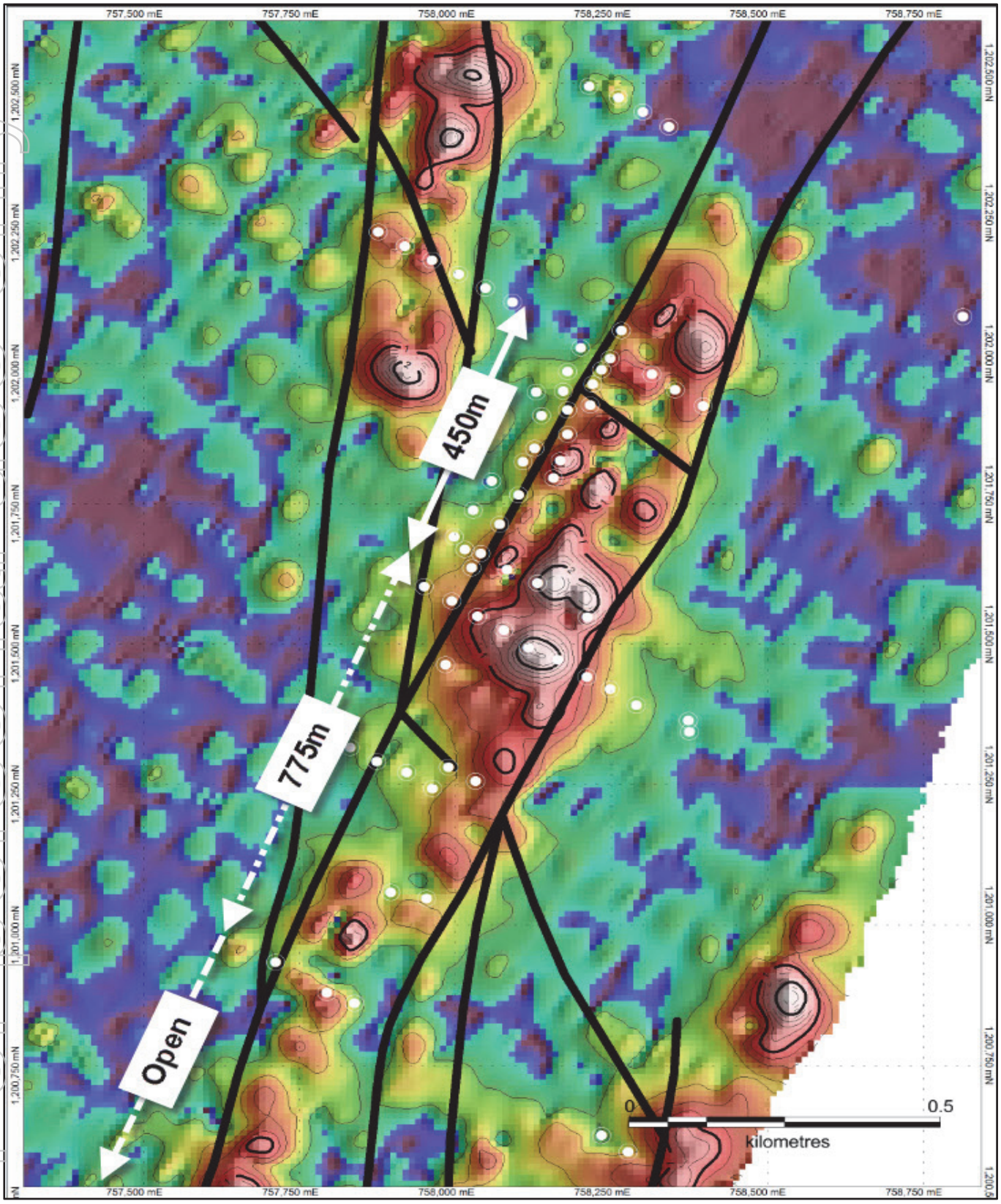

Figure 5: The analytic signal image of ground magnetic data showing North East-South West mineralised structures open along strike.

ABOUT CARDINAL

Cardinal Resources Limited (ASX/TSX: CDV) is a gold-focused exploration and development Company which holds interests in tenements within Ghana, West Africa.

The Company's Namdini Project has an **Indicated Mineral Resource** of **6.5Moz** of gold contained in 180Mt at 1.1 g/t Au at a cut-off of 0.5 g/t Au and an **Inferred Mineral Resource** of **0.5Moz** of gold contained in 13Mt @ 1.2 g/t Au at a cut-off of 0.5g/t Au.

The Company is focused on the development of the Namdini Project through advancing its PFS studies as well as gold exploration on its tenements located within close proximity to the Namdini Project.

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Competent Person's / Qualified Person's Statement

The information in this press release is based on information prepared by Mr. Paul Abbott, a full-time employee of Cardinal Resources, who is 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 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".

The information in this press release has been reviewed by Mr. Richard Bray, a Registered Professional Geologist with the Australian Institute of Geoscientists and Mr. Ekow Taylor, a Chartered Professional Geologist with the Australasian Institute of Mining and Metallurgy. Mr. Bray and Mr. Taylor have more than five years' experience relevant to the styles of mineralisation and type of deposits under consideration and to the activity which is 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" and as a Qualified Person as defined by the NI43-101 instrument. Mr. Bray and Mr. Taylor are full-time employees of Cardinal and hold equity securities in the Company. Mr. Bray and Mr. Taylor have consented to the inclusion of the matters in this report based on the information in the form and context in which it appears.

Disclaimer

This ASX / TSX press release has been prepared by Cardinal Resources Limited (ABN: 56 147 325 620) ("Cardinal" or "the Company"). Neither the ASX or the TSX, nor their regulation service providers accept responsibility for the adequacy or accuracy of this press release.

This press release contains summary information about Cardinal, its subsidiaries and their activities, which is current as at the date of this press release. The information in this press release is of a general nature and does not purport to be complete nor does it contain all the information, which a prospective investor may require in evaluating a possible investment in Cardinal.

By its very nature exploration for minerals is a high-risk business and is not suitable for certain investors. Cardinal's securities are speculative. Potential investors should consult their stockbroker or financial advisor. There are a number of risks, both specific to Cardinal and of a general nature which may affect the future operating and financial performance of Cardinal and the value of an investment in Cardinal including but not limited to economic conditions, stock market fluctuations, gold price movements, regional infrastructure constraints, timing of approvals from relevant authorities, regulatory risks, operational risks and reliance on key personnel and foreign currency fluctuations.

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Forward-looking statements

Certain statements contained in this press release, including information as to the future financial or operating performance of Cardinal and its projects may also include statements which are 'forward-looking statements' that may include, amongst other things, statements regarding targets, anticipated timing of the PEA on the Namdini project, estimates and assumptions in respect of 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. These 'forward – looking statements' are necessarily based upon a number of estimates and assumptions that, while considered reasonable by Cardinal, 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.

Cardinal disclaims any intent or obligation to update publicly or release any revisions to any forward-looking statements, whether as a result of new information, future events, circumstances or results or otherwise after today's date or to reflect the occurrence of unanticipated events, other than required by the Corporations Act and ASX and TSX Listing Rules. The words 'believe', 'expect', 'anticipate', 'indicate', 'contemplate', 'target', 'plan', 'intends', 'continue', 'budget', 'estimate', 'may', 'will', 'schedule' and similar expressions identify forward-looking statements.

All forward-looking statements made in this press release 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.

SCHEDULE 1
NDONGO LICENSE AREA DRILL RESULTS

Hole ID	Depth (m)	Dip (°)	Azimuth (°)	Grid ID	mEast	mNorth	mRL
NDRC216	120	-60	122	WGS84_30N	758,215	1,201,926	219
NDRC217	120	-60	120	WGS84_30N	758,220	1,201,962	220
NDRC218	130	-60	115	WGS84_30N	758,247	1,202,008	219
NDRC222	125	-60	120	WGS84_30N	758,266	1,202,057	220
NDRC223	125	-60	115	WGS84_30N	758,234	1,201,988	219
NDRC224	120	-60	120	WGS84_30N	758,317	1,201,982	218
NDRC226	120	-60	120	WGS84_30N	758,399	1,201,925	217
NDRC228	126	-60	115	WGS84_30N	758,353	1,201,950	218
NDRC230	130	-60	120	WGS84_30N	758,204	1,202,026	220
NDRC231	120	-60	115	WGS84_30N	758,216	1,201,548	217
NDRC235	196	-60	115	WGS84_30N	758,127	1,201,609	219
NDRC236	120	-60	115	WGS84_30N	758,084	1,201,632	220
NDRC237	150	-60	115	WGS84_30N	758,044	1,201,661	221
NDRC238	120	-60	115	WGS84_30N	757,999	1,201,689	222
NDRC241	126	-60	115	WGS84_30N	758,167	1,201,826	220
NDRC242	120	-60	115	WGS84_30N	758,127	1,201,847	221
NDRC243	137	-60	115	WGS84_30N	757,798	1,200,881	220
NDRC244	71	-60	115	WGS84_30N	757,750	1,200,905	220
NDRC247	124	-60	115	WGS84_30N	757,843	1,200,856	219
NDRC248	120	-60	115	WGS84_30N	758,173	1,201,949	220
NDRC250	120	-60	112	WGS84_30N	757,968	1,201,241	221
NDRC251	141	-60	115	WGS84_30N	757,923	1,201,273	221
NDRC262	78	-60	115	WGS84_30N	758,181	1,201,918	220
NDRC264	97	-60	112	WGS84_30N	758,183	1,201,986	220
NDRC265	120	-60	115	WGS84_30N	758,131	1,201,944	221
NDRC266	78	-60	115	WGS84_30N	758,180	1,201,875	220
NDRC267	91	-60	112	WGS84_30N	758,139	1,201,906	221
NDRC269	126	-60	115	WGS84_30N	758,345	1,202,419	217
NDRC270	100	-60	112	WGS84_30N	758,301	1,202,448	216
NDRC271	105	-60	115	WGS84_30N	758,262	1,202,472	217
NDRC273	102	-60	115	WGS84_30N	758,216	1,202,496	217
NDRC275	120	-60	115	WGS84_30N	758,159	1,201,797	220
NDRC276	120	-60	115	WGS84_30N	758,108	1,201,826	221
NDRC277	89	-60	115	WGS84_30N	758,061	1,201,791	222
NDRC278	100	-60	115	WGS84_30N	758,035	1,201,740	222

NDRC279	100	-60	115	WGS84_30N	758,103	1,201,765	221
NDRC280	90	-60	115	WGS84_30N	758,020	1,201,666	222
NDRC281	90	-60	115	WGS84_30N	758,030	1,201,637	221
NDRC282	80	-60	115	WGS84_30N	757,983	1,201,462	221
NDRC283	110	-60	115	WGS84_30N	758,137	1,202,084	221
NDRC284	120	-60	115	WGS84_30N	758,093	1,202,110	221
NDRC285	120	-60	115	WGS84_30N	758,050	1,202,134	221
NDRC286	120	-60	115	WGS84_30N	758,008	1,202,158	222
NDRC287	84	-60	115	WGS84_30N	757,964	1,202,183	222
NDRC288	84	-60	115	WGS84_30N	757,920	1,202,212	222
NDRC289	84	-60	115	WGS84_30N	757,879	1,202,236	222
NDRC290	109	-60	115	WGS84_30N	758,381	1,201,345	213
NDRC291	109	-60	115	WGS84_30N	758,293	1,201,391	214
NDRC292	115	-60	112	WGS84_30N	758,338	1,201,364	213
NDRC293	115	-60	115	WGS84_30N	758,247	1,201,422	215
NDRC294	112	-60	112	WGS84_30N	758,214	1,201,440	216
NDRC295	112	-60	115	WGS84_30N	758,165	1,201,472	217
NDRC296	110	-60	108	WGS84_30N	758,119	1,201,494	219
NDRC297	110	-60	108	WGS84_30N	758,079	1,201,525	219
NDRC298	110	-60	115	WGS84_30N	758,036	1,201,550	220
NDRC299	114	-60	112	WGS84_30N	757,995	1,201,577	220
NDRC300	121	-60	112	WGS84_30N	757,950	1,201,600	222
NDRC301	100	-60	112	WGS84_30N	758,073	1,201,717	221
NDRC302	64	-60	112	WGS84_30N	758,033	1,201,256	220
NDRC303	100	-60	112	WGS84_30N	757,990	1,201,281	220
NDRC304	100	-60	115	WGS84_30N	757,874	1,201,288	222
NDRC305	121	-60	115	WGS84_30N	757,898	1,201,061	221
NDRC306	120	-60	112	WGS84_30N	757,834	1,201,314	223
NDRC307	96	-60	112	WGS84_30N	757,956	1,201,046	219
NDRC308	120	-60	112	WGS84_30N	758,278	1,200,594	213
NDRC309	120	-60	115	WGS84_30N	758,236	1,200,623	213

Table 1: Meta-Data Listing of Drill Holes

Hole ID	mFrom	mTo	mWidth	Au g/t
NDRC223	6	9	3	0.8
NDRC223	34	38	4	1.2
NDRC223	66	67	1	1.2
NDRC224	0	1	1	0.9
NDRC226	47	48	1	0.8
NDRC228	53	54	1	1.5
NDRC228	58	60	2	0.8
NDRC228	88	89	1	0.7
NDRC235	145	146	1	1.2
NDRC235	150	151	1	1.3
NDRC236	50	51	1	0.8
NDRC247	10	12	2	27
NDRC247	87	88	1	0.6
NDRC250	68	69	1	1.0
NDRC250	97	98	1	0.7
NDRC262	44	48	4	2.2
NDRC264	55	56	1	0.7
NDRC264	71	73	2	3.2
NDRC265	83	86	3	2.2
NDRC266	29	30	1	1.9
NDRC266	67	68	1	1.0
NDRC267	21	24	3	1.4
NDRC267	68	74	6	5.2
NDRC275	2	8	6	12.6
NDRC275	29	30	1	0.6
NDRC275	55	59	4	0.9
NDRC275	95	96	1	1.0
NDRC276	55	62	7	2.2
NDRC279	26	27	1	0.5
NDRC281	49	59	10	1.6
NDRC281	80	81	1	0.8
NDRC282	61	63	2	0.8
NDRC284	43	44	1	0.7
NDRC295	18	19	1	0.6
NDRC295	21	22	1	1.2
NDRC295	25	26	1	0.7
NDRC296	75	76	1	0.8
NDRC298	43	44	1	0.9
NDRC301	38	42	4	1.0
NDRC301	76	77	1	2.6
NDRC302	5	8	3	2.9
NDRC302	34	35	1	0.6

Table 2: Summary of Individual Intercepts

Notes:

- Samples analyzed for Au (SGS Lab FAA505 method) which is a 50g fire assay fusion with AAS instrument finish.
- Grid coordinates are in WGS84 Zone 30 North.

APPENDIX 1

JORC CODE 2012 EDITION
TABLE 1 REPORTING OF EXPLORATION RESULTS

Section 1 – Sampling Technique and Data

Criteria	JORC Code Explanation	Commentary
Sampling techniques	Nature and quality of sampling (e.g. 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.	Reverse Circulation (RC) drill samples are collected by using downhole sampling hammers with nominal 127 to 140mm diameters. Samples are collected through a cyclone and immediately weighed to determine recoveries; the entire sample is then split by a three-tier riffle splitter. Two samples (~2.5-3.0 kg) are collected, one for the lab, the other a duplicate stored at the Bolgatanga sample shed.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	Sampling is guided by Cardinal Resources protocols and Quality Control procedures as per industry standard. To ensure representative sampling, 1m RC samples are collected from a cyclone, passing them through a three-tier riffle splitter, and taking duplicate samples every 20th sample.
	Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m 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 (e.g. submarine nodules) may warrant disclosure of detailed information.	The determination of mineralisation is based on observed alterations and lithological differences. RC samples are crushed through a RSD Boyd crusher to -2mm, then a <1kg split sample is pulverised via LM2 Ring Pulveriser to a nominal 85% passing -75µm. A 200 g sub-sample is taken from the pulverised material for analysis. A 50 g charge weight is fused with litharge-based flux, cupelled and the prill dissolved in aqua regia. The gold tenor is then determined by AAS.
Drilling techniques	Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. 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.).	Reverse circulation drilling uses sampling hammer of nominal 127 to 140mm diameter. Drill holes are inclined at -45^{o} to -60^{o} angles for optimal zone intersection. All RC drill collars are surveyed using Trimble R8 RTK GPS with downhole surveying every 30m using Reflex digital surveying instruments.
Drill sample recovery	Method of recording and assessing core and chip sample recoveries and results assessed.	The method of recording RC chip sample data is to enter the relevant data onto a hand-held Motion F5te Tablet PC

		using a set of standard templates supplied by Maxwell Geoservices, Perth (Maxwell). Reverse circulation sampling is good. RC chips are logged, weighed and captured to the database. RC sample recoveries are assessed by weighing 1m samples from the cyclone on a scale in the field and comparing with the theoretical volume contained in a 1m x 140mm diameter hole to calculate an estimated percentage sample recovery.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	At the reverse circulation rig, sampling systems are routinely cleaned to minimise the opportunity for contamination and drilling methods are focused on sample quality. The measures taken to maximize RC sample recovery are through a cyclone and a 3-tier riffle splitter. Each 1m sample is passed twice through the splitter before sampling to ensure maximum homogenisation of each sample and to collect an unbiased representative sample to be assayed. The reverse circulation rigs have auxiliary compressors and boosters to help maintain dry samples. Where wet samples are encountered, the reverse circulation drilling is discontinued.
	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 relationship is seen to exist between RC sample recovery and grade, and no sample bias has occurred due to preferential loss/gain of any fine/coarse material due to the acceptable sample recoveries obtained by the drilling methods employed.
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.	All RC drill samples are fully logged according to observed lithology and alteration directly to a digital format on a Field Toughbook laptop logging system following procedures and using Cardinal geologic codes. Data is imported into Cardinal's central database after validation in LogChief™. All RC chip geological logging is to a level of detail to support Mineral Resource estimation when required.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.	Logging is both quantitative and qualitative. RC chips in trays are photographed both in dry and wet form.
	The total length and percentage of the relevant intersections logged.	All RC holes are logged in full and to the total length of each drill hole.
Sub-sampling techniques and sample preparation	If core, whether cut or sawn and whether quarter, half or all core taken.	No core was drilled.
	If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry.	RC samples are split using a three-tier riffle splitter. The majority of RC samples are dry. On occasions that wet samples are encountered, they are dried prior to splitting with a riffle splitter.

	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	RC drill samples are sorted and dried in an oven for eight hours and weighed. They are then crushed to -2mm using a RSD Boyd crusher and a <1.0kg split is taken. The reject sample is retained in the original bag and stored. The split is pulverised in a LM2 to a nominal 85% passing 75µm and a 200g sub-sample is used for analysis. All preparation equipment is flushed with barren material prior to commencement of the job.
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Cardinal Resources has protocols that cover the sample preparation at the laboratories and the collection and assessment of data to ensure that accurate steps are used in producing representative samples for the analytical process. Key performance indices include: • Contamination index of 95% (that is at least 95% of blanks pass); failures can only be attributed to probable minor laboratory contamination. • Crushed Size index of 95% passing 2 mm (1:50 sample screened). • Grind Size index of 85% passing 75 microns (minimum 1:50 sample screened). • Check Samples returning at worst 20% precision at 90th percentile and bias of 5% or better. Crusher and pulveriser are flushed with barren material at the start of every batch.
	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.	RC sampling is carried out in accordance with Cardinal protocols as per industry best practice. Quality control procedures adopted for all sub-sampling stages to maximize representativeness of samples is to insert commercial certified reference material (CRM) for standards and blanks every 20 samples. The Laboratory assays duplicate samples of each sample batch (20%) so that representation of the samples can be checked. Field duplicates have been taken and analysis of results have shown the sampling to be representative. The measures described above are not applicable for Rock Chip sampling.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	Measures taken to ensure that the RC sampling is representative of the in-situ material collected are to take field duplicate samples every 20th sample. Approximately 3kg samples from the splitter are retained from each sample and stored at the company's secured premises for possible re-assay. Results of field duplicates, standards and blanks are all evaluated to ensure that the results of each assay batch are acceptable for the RC drill samples.

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.	All samples are analysed for gold by lead collection fire assay of a 50 g charge with AAS finish; the assay charge is fused with the litharge-based flux, cupelled and prill dissolved in aqua regia and gold tenor determined by flame AAS. The analytical method is considered appropriate for the mineralisation style and is of industry standards. The quality of the Fire Assaying and laboratory procedures are considered to be entirely appropriate for the rock samples submitted.
	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.	No hand held geophysical tools are used.
	Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	Sample preparation checks for pulp fineness are carried out by the laboratory as part of their internal procedures to ensure the grind size of 85% passing 75µm is being attained. Laboratories' QAQC involves the use of internal lab standards using certified reference material (CRM) and blanks. Cardinal's QAQC protocol is considered industry standard with CRMs submitted on a regular basis with routine samples. The CRMs having a range of values and blanks are inserted in the ratio of 1:20. Duplicates are taken at the riffle splitter every 20th sample. No duplicate samples are taken from core samples. Pulps are submitted to a secondary laboratory for checks on accuracy and precision of the primary laboratory. Coarse rejects are submitted back to the primary laboratory to assess the adequacy of the sub-sampling process.
Verification of sampling and assaying	The verification of significant intersections by either independent or alternative company personnel.	Significant intersections from RC samples have been verified by alternative company personnel.
	The use of twinned holes.	None of the drill holes in this report are twinned.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	Primary data are captured on field tough book laptops using LogChief™ Software. The software has validation routines and data is then imported onto a secure central database.
	Discuss any adjustment to assay data.	The primary data is always kept and is never replaced by adjusted or interpreted data.
Location of data points	Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.	RC drill hole collar coordinates are surveyed using handheld Garmin GPSmap 62s GPS within ±3m accuracy. All drill collars are accurately surveyed using Trimble R8 RTK GPS system within ±10mm of accuracy (X, Y, Z).

		Coordinates are based on three control stations established at Namdini by Sahara Mining Services. Downhole survey on RC drill holes is completed by using Reflex Ez-Shot survey instrument at regular 30 m intervals.
	Specification of the grid system used.	Coordinate and azimuth are reported in UTM WGS84 Zone 30 North.
	Quality and adequacy of topographic control.	Topographic control at Ndongo was supplied by Southern Geoscience Consultants (Perth) using satellite imagery.
Data spacing and distribution	Data spacing for reporting of Exploration Results.	The RC drilling was carried out on variably spaced fence lines (30m to 775m apart) with hole spacing of 50m along lines testing mineralisation to a vertical depth of approximately 200m and covering a strike length of 1.25km
	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.	Exploration is at the early stage, and as such drill data spacing and distribution are insufficient to establish geological and grade continuity that are appropriate for reporting Mineral Resources and Ore Reserves.
Orientation of data in relation to geological structure	Whether sample compositing has been applied.	No sample compositing has been applied.
	Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.	RC drillholes are orientated to achieve intersection angles as close to perpendicular to the mineralisation as practicable based on ground magnetic modelling data. Some sampling bias may occur. Systematic geological mapping and diamond drilling are required to determine the true orientation of dips and structures of the mineralisation.
	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 significant orientation-based sampling bias is known at this time.
Sample security	The measures taken to ensure sample security.	An independent Ghanaian security contractor is used to ensure sample security. The field technicians and geologists ensure the rock chip samples are logged, prepared and stored under security until collected for delivery to the laboratories. At the time of sample collection, a sign-off process between Cardinal and the laboratory delivery truck driver ensures that samples and paperwork correspond. The samples are then transported to the laboratory where they are receipted against the dispatch documents. The assay laboratories are responsible for the samples from

		the time of collection from Cardinal until final results are returned and checked by Cardinal Geologists. Sample pulps and coarse rejects are retained by the laboratories and are shipped back to Cardinal after final results are returned where they are stored under security.
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	Sampling techniques are of industry standards. Data is audited by Maxwell Geoservices (Perth), who have not made any other recommendations.

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 Exploration Permit is on PL9/22, PL9/13 and PL9/19 licenses over an area of 295 sq. km located in the North-East region of Ghana.
	The security of the tenure held at the time of reporting along with any known impediments to obtaining a license to operate in the area.	All tenements are current and in good standing.
Exploration Done by Other Parties	Acknowledgment and appraisal of exploration by other parties.	Exploration in the region has been undertaken by a number of groups including: • 1933 - Colonial discovery of Gold at Nangodi. • 1934 to 1942 - Nangodi Mine production and other small development projects in the area (e.g. Zug, Pelungu, Money Palava). • 1992 to 1994 - BHP conducted regional exploration programmes including regional stream sediment and broad soil sampling to follow-up on stream sediment anomalies. Project was abandoned when BHP withdrew from activity in West Africa. • 1996 to 1997 – Africwest was granted regional Reconnaissance License and undertook extensive soil sampling at Nangodi. • 2006 - Etruscan (JV with Red Back): Conducted data review and compilation, soil and rock sampling and RAB drilling. Identified blind mineralisation at Zupeliga. • 2011 - Abzu (JV with Red Back): Completed data compilation, RC/diamond drilling at Nangodi and Zoog.

		• 2012 - Abzu (JV with Red Back): Conducted trenching, rock sampling, ground geophysics survey (magnetic and EM) and geologic mapping.
Geology	Deposit type, geological setting and style of mineralisation	RC samples were collected within sheared and folded rocks containing sulphides; mainly pyrite with minor arsenopyrite. The geological setting is a Paleoproterozoic Greenstone Belt comprising Birimian metavolcanics, volcaniclastics and metasediments located along portion of the regional Bole-Bolgatanga Shear Zone and a splay off this Shear Zone (the Nangodi Shear Zone). The style of mineralisation is yet to be determined.
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: • Easting and northing of the drill hole collar • Elevation or RL (Reduced Level – elevation above sea level in meters) of the drill hole collar • Dip and azimuth of the hole • Down hole length and interception depth • Hole length	A summary of drill hole information is provided in this document.
	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 why this is the case.	There has been no exclusion of information.
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 yet 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	Aggregated intercepts incorporating short lengths of high grade results within the lithological units are calculated to include no more than intervals of 3m below grades of <0.5 g/t Au when assay results are reported.

	aggregations should be shown in detail.	
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	No metal equivalents are used in the intersection calculation.
Relationship between mineralisation widths and intercept lengths	These relationships are particularly important in the reporting of exploration results.	The relationship between mineralisation widths and intercept length from RC drilling are not yet known.
	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 with respect to the drill hole angles is not yet known.
	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').	The geometry of the mineralisation is unknown; only downhole length is reported (no true width of mineralisation is reported).
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 locality map is included within the body of the accompanying document.
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.	The accompanying document is considered to represent a balanced report.
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.	Other exploration data collected is not considered material to this document at this stage. The interpretation of the geological observations shown in the cross sections are subject to possible change as new information is gathered. Further data collection will be reviewed and reported when considered material.
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). Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	Geological mapping, surface rock sampling, trenching, geophysical surveys and RC drilling are continuing. Further RC drilling is required along strike and at depth to further delineate this gold mineralised zone and to determine whether more sub-parallel mineralised horizons can be located.