



**ASX: ADV** 

#### **Capital structure:**

Ordinary shares 366.7m

Options (Unlisted) 68.4m (various)

**Undiluted Market Cap:** A\$3.2m

#### **Shareholders:**

Institutional 13% Board/Mgt 19% Retail 68%

Top 20: 56%

Ardiden Limited Level 1, 981 Wellington St West Perth WA 6005 Australia

Tel: +61 (0) 8 6555 2950 Fax: +61 (0) 8 9321 3102 info@ardiden.com.au

www.ardiden.com.au

# DRILLING CONFIRMS POTENTIAL OF CANADIAN FLAKE GRAPHITE PROJECT

Assays confirm extensive surface graphite persists at depth with beneficiation testing planned to confirm proportion of high value jumbo and large flake

### **Highlights**

- Assay results from maiden 833m diamond drill program at the 100% owned Manitouwadge Graphite Project in Ontario, Canada confirm the continuity of previously identified surface graphite at depth.
- Similar grades intersected to those reported from previous trenching and channel samples, with assay results including:
  - 9.7m @ 2.42% graphitic carbon (Cg) from 34.7m including 4.7m @ 4.06%
     Cg from 34.7m (MG-02);
  - 6.7m @ 2.41% Cg from 29m (MG-07);

**ASX Announcement** 

- 5.2m @ 1.99% Cg from 24.2m and 4.0m @ 2.00% Cg from 32.4m (MG-09); and 4.0m @ 2.05% Cg from 102m (MG-01).
- Assays also indicate the presence of anomalous levels of Cu, Ni, Mo and Zn associated with pyrrhotite, pyrite and rare chalcopyrite in some samples.
- The drill core will now undergo beneficiation testing to confirm the proportions of jumbo and large flake graphite present in the project.
- Previous testing indicates a significant proportion of the graphite is jumbo flake or large flake in size and is amenable to low cost gravity and flotation beneficiation. Jumbo and large flake graphite is in strong demand.
- Subject to the results of beneficiation testwork and further work on mining and processing costs, the project demonstrates potential for a shallow surface mining operation extracting high-value jumbo and large flake graphite.

Ardiden Limited (ASX: ADV) is pleased to advise that it has the maiden diamond drilling program at its 100%-owned **Manitouwadge Graphite Project** in Ontario, Canada has confirmed the continuity of previously identified outcropping graphite at depth.

The grades achieved were similar to those reported from previous trenching and channel sampling programs at surface, and are comparable to other graphite deposits in Ontario being developed by TSX-listed companies such as Zenyatta Ventures and Northern Graphite.

The drill program was designed to test graphite prospectivity at identified EM conductors on the project and has been successful in confirming the presence of extensive zones of near-surface graphite mineralisation. In addition, the drilling encountered sulphide mineralisation associated with anomalous levels of copper, nickel, molybdenum and zinc which, given its proximity to an historical base metals mine, may present an additional exploration opportunity alongside the graphite potential.

The next stage of testing at the Manitouwadge Project, which is expected to be finalised in the next few weeks, is to undertake beneficiation testing on the drill core material. Beneficiation testwork on previous trenching and channel sampling programs indicated that the graphite from the Manitouwadge project is amenable to low-cost gravity and flotation beneficiation with a significant proportion of the graphite being high value jumbo and large flake graphite.

A petrographic report undertaken on drill core from this program also provided visual evidence of the presence of jumbo and super-jumbo flake graphite from the recently completed drill program. The sample shown was taken from MG-02 which also reported some of the higher assay grades (see below) from the current program.

Beneficiation testing will confirm the proportion of flake sizes across the various core samples and test whether the high proportion of jumbo and large flake graphite at surface continues at (relatively shallow) depths.

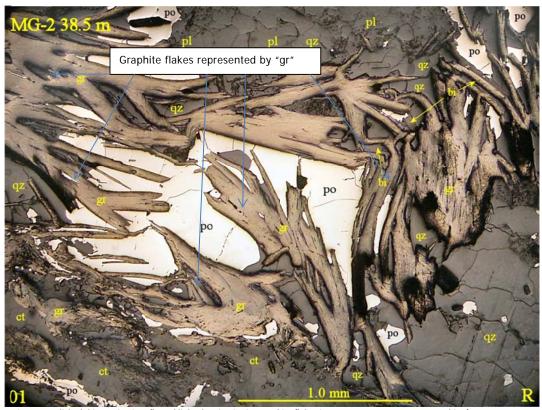


Figure 1: Polished thin section in reflected light showing in situ graphite flake size. Source: Vancouver Petrographics (MG-02 at 38.5m

Figure 1 shows graphite flakes from Manitouwadge measuring up to 1mm (1,000 microns) in length, which is classified as super-jumbo size. Super-jumbo and jumbo sized graphite flakes are expected to be subject to increasing demand over the next decade for use in new technologies such as lithium-ion batteries and electric vehicles, indicating strong potential demand for future graphite production from Manitouwadge.

Jumbo flake (>300 microns) graphite trades for up to US\$2,000/ tonne, which is 2-3 times the average price that fine (75-150 microns) & medium (150 – 180 microns) flake graphite can achieve.

The importance of exposure to the larger flake sizes is shown in the forecast (see Figure 2 below) from Toronto-based industrial minerals experts, Stormcrow Capital:

Figure 2: USD/ tonne forecasts by flake size from industrial minerals experts, Stormcrow Capital, "Industry Report: Graphite – A Stress Test on Future Graphite Pricing", June 2014

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Jumbo	3365	2135	1577	1726	1884	1676	1555	2596	3573	6175
Large	2514	1595	1178	1192	976	996	684	811	947	1165
Medium	2138	1514	1025	991	959	867	521	500	508	517
Small	1375	1089	855	874	806	784	476	481	487	493
Very Fine	930	689	505	524	509	493	342	347	353	359

#### March 2015 Diamond Drilling Program

A map of the drill hole locations from the March 2015 program and the locations of the channel sampling & trenching programs (from October 2014 and July 2012, respectively) is shown in Figure 3 below.

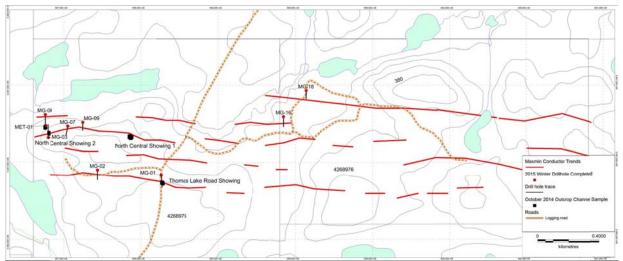


Figure 3: Map of March 2015 drill program showing drill-hole locations and locations of previous channel sampling/ trenching programs

The winter drilling programme at Manitouwadge was undertaken to test the depth continuation of graphite occurrences sampled at surface and to test unexposed EM conductors (Table 1). Three drill holes, MG-01, MG-03 and MG-04, were designed to pass directly underneath three different channel sample profiles at the Thomas Lake Road showing and the North Central showing 2.

The results from the drill program are similar to testing undertaken in recent trenching and channel sampling programs (Table 2).

Table 1 – Drill-hole details and significant intervals

Hole ID	Easting	Northing	Elevation	Dip	Azimuth	ЕОН	From (m)	Length (m)	Cg %
MG-01	598129	5466917	358 m	-45	173	108 m	88.0	1.2	2.27
							102.0	4.0	2.05
MG-02	597716	5466950	359 m	-45	180	87 m	34.7	9.7	2.42
						Including	34.7	4.7	4.06
MG-03	597395	5467158	362 m	-45	358	117 m	102.7	3.0	1.79
MG-04	597377	5467309	355 m	-45	182	142	115.7	5.0	1.90
MG-07	597526	5467233	360 m	-45	194	79	6.5	2.6	1.30
							29.0	6.7	2.41
							50.3	2.1	1.48
							60.5	1.6	1.26
MG-09	597622	5467258	347 m	-45	178	69	24.2	5.2	1.99
							32.4	4.0	2.00
MG-16	598923	5467294	336 m	-45	182	93	58.9	0.6	2.42
MG-18	599068	5467465	341 m	-45	173	82	NSI		
MG-18A	599504	5467389	NR	-45	180	33	Abandoned		
MET-01	597380	5467237	352 m	-85	219	23	NSI		
	NSI – no significant intercept; NR – not recorded								

Table 2 – Channel sample details and significant intervals

Zone	Azimuth	Easting	Northing	Length (m)	Cg
					%
Thomas Lake Road showing	350	598140	5466861	3	4.33
			including	1	5.06
North Central showing 1 – east pits 1	30-45	597934	5467156	8	2.27
North Central showing 1 – east pits 2	10	597926	5467163	8	2.16
North Central showing 2	360	597402	5467182	7	2.35
North Central showing 2 – west extension	360	597376	5467223	4	4.48
			Including	1	10.8
The coordinates given mark the so	outhern end	of each cha	nnel sample p	orofile	

The drilling results are slightly lower in grade compared to the channel sample data from similar locations. Overall, the grade ranges and composite intervals with grades >1% Cg are similar for both outcrop and drill sections, which may indicate that the graphite is relatively consistent in grade. Consistency in flake size is to be confirmed from beneficiation testing of drill core material.

The graphitic gneiss is typically vertical or near vertical in attitude and outcrop sampling was orientated perpendicular to the strike of the gneissic banding. The graphitic gneiss is often associated with EM conductors having lengths ranging from a few hundred metres to in excess of 1km.

Hole MG-18A was abandoned when it encountered a thick layer of glaciolacustrine material. No definitive explanation for the conductor was obtained from drill hole MG-18, collared from an alternative site. The Company considers that this conductor, which has a strike length of at least 2km, remains untested.

The Cg (Graphitic carbon) grades are comparable to other listed graphite companies with projects in Ontario including TSX listed companies Zenyatta Ventures and Northern Graphite (see Figure 4).

Figure 4: TSX listed companies with projects based in Ontario, Canada

	Symbol						Resources (m t)	Grade (Cg %)		Grade (Cg %)
Company Name	(TSX)	Project	Location	Mkt C	ap (A\$m)	1	Measured & Indicated <sup>2</sup>		Inferred	
Zenyatta Ventures	ZEN.V	Albany	Ontario, Canada	\$	111.56		25.1	3.89%	20.1	2.20%
Northern Graphite	NGC.V	Bissett Creek	Ontario, Canada	\$	36.69		69.8	1.74%	24	1.65%
1. based on closing price on 10 April 2015 on TSX @AUD:CAD = \$1.0361										
2. Zenyatta resource is in Indicated category. Northern Graphite is in Measured and Indicate				ated						

Beneficiation testing will shortly commence at Activation Laboratories in Thunder Bay, Canada, with results expected in the next few weeks. Graphite concentrates will also be forwarded to customers and traders for market and pricing feedback.

#### **Base Metal Geochemical Anomalies Associated with Sulphide Minerals**

Massive to discontinuous bands of pyrrhotite up to 25cm wide with minor pyrite and trace chalcopyrite were encountered in several drill holes, particularly drill holes MG-01 and MG-02. A number of these samples were also sent for ICP testing and returned anomalous Ni, Cu, Mo and Zn results ranging from background to highly anomalous.

- . Results included the following:
  - Ni range of 11 to 556 ppm
  - Cu range of 21 to 771 ppm
  - Mo range of <2 to 345 ppm
  - Zn range of 16 to 164 ppm

The Company is yet to undertake an assessment of the base metal anomalies.

Further updates will be provided as information comes to hand.

Board of Directors
Ardiden Ltd

**ENDS** 

#### **About Ardiden**

Ardiden owns 100% of the Manitouwadge graphite project.

The project has proven outcropping graphite, and initial metallurgical test work on samples taken from site indicates that up to 55% of the graphite is large or jumbo flake size, which is the highest value and most sought after graphite flake size. With its use in new technologies such as batteries and electric vehicles, demand for graphite is expected to rapidly expand over the next decade.

Exploration conducted by Noranda, including aerial electromagnetic (EM) surveys focused on the discovery of VHMS deposits. A ground horizontal loop electromagnetic survey (HLEM) undertaken by Rare Earth Metals Inc identified six significant conductors on the property.

A maiden drilling program of 833m of diamond core drilling has been undertaken by Ardiden Ltd to test the EM conductors.

The information in this report that relates to Exploration Results is based on information reviewed by Dr Dennis Arne who is a Registered Professional Geoscientist of the Australian Institute of Geoscientists, and a Professional Geoscientist registered in the province of British Columbia, Canada. Dr Arne is a Principal Consultant to CSA Global, has more than five years relevant exploration experience, and qualifies as a Competent Person as defined in the 2012 edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Dr Arne consents to the inclusion of the information in this report in the form and context in which it appears.

#### **Forward-Looking Statement**

This announcement may contain some references to forecasts, estimates, assumptions and other forward-looking statements. Although the company believes that its expectations, estimates and forecast outcomes are based on reasonable assumptions, it can give no assurance that they will be achieved. They may be affected by a variety of variables and changes in underlying assumptions that are subject to risk factors associated with the nature of the business, which could cause actual results to differ materially from those expressed herein. All references to dollars (\$) and cents in this presentation are to Australian currency, unless otherwise stated. Investors should make and rely upon their own enquires and assessments before deciding to acquire or deal in the Company's securities.

## JORC Code, 2012 Edition - Table 1 report template

## Section 1 Sampling Techniques and Data

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

Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul> <li>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.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>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 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.</li> </ul>	<ul> <li>Half core split perpendicular to foliation.</li> <li>Channel samples were cut with a portable diamond saw.</li> </ul>
Drilling techniques	<ul> <li>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).</li> </ul>	Diamond BQTK (40.7 mm).
Drill sample recovery	<ul> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>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.</li> </ul>	<ul> <li>Core recoveries were recorded for all core recovered. These are typically greater than 95% but drop to 70-80% in fault zones.</li> </ul>
Logging	<ul> <li>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.</li> </ul>	<ul> <li>All core recovered has been logged for lithology, structure and an estimate of the abundance of graphite and sulphide minerals noted.</li> </ul>

Criteria	JORC Code explanation	Commentary
Sub-sampling techniques and sample preparation	<ul> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>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.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul> <li>Split half core was collected for analysis.</li> <li>100g of coarse crusher material was split off for pulverization and graphite analysis for drill core samples. 250 g was used for the channel samples.</li> <li>Coarse crusher duplicate samples from the drill core samples are within 5% relative difference of each other.</li> <li>The sample interval and size is appropriate for this style of graphite occurrence.</li> </ul>
Quality of assay data and laboratory tests	<ul> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>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.</li> <li>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.</li> </ul>	<ul> <li>The samples were analyzed in an induction furnace following acid treatment of the samples to remove all non-graphite C. The CO<sub>2</sub> generated from the high temperature combustion of graphite is measured by absorption of infrared radiation to provide a total graphite C analysis.</li> <li>Base metals were analyzed by ICP following an aqua regia digestion.</li> <li>Accuracy of the graphite and base metal analyses was monitored using certified reference materials, both independently and by ActLabs. The graphite drill data show a relative bias typically &lt;2%.</li> <li>20 pegmatite field blanks were submitted with the samples and all results are below detection (&lt;0.05% C).</li> </ul>
Verification of sampling and assaying	<ul> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	<ul> <li>Several graphite drill intersections were viewed by a company director, James Thompson, and verified by the competent person for this report. The competent person visited the site during channel sampling.</li> <li>Core logs have been recorded in digital spreadsheets.</li> </ul>
Location of data points	<ul> <li>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.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	<ul> <li>Collar locations were surveyed in with a handheld Garmin CSx 76 GPS using averaging of 100 waypoints and are adequate for exploration drilling.</li> <li>All coordinates are given in UTM NAD83 Zone 16.</li> <li>All holes were surveyed multiple times using a single shot downhole</li> </ul>

Criteria	JORC Code explanation	Commentary
		survey instrument.
Data spacing and distribution	<ul> <li>Data spacing for reporting of Exploration Results.</li> <li>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.</li> <li>Whether sample compositing has been applied.</li> </ul>	<ul> <li>Continuity of graphite horizons has been tested over a strike length of up to 400 m by drilling. This strike length extent can be extended by including outcrop channel sampling.</li> </ul>
Orientation of data in relation to geological structure	<ul> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>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.</li> </ul>	<ul> <li>Core has been drilled perpendicular to the general E-W strike of subvertical graphite horizons at an inclination of 45 degrees. True widths are estimated to be approximately 0.7 of down-hole core lengths.</li> <li>Channel samples were cut perpendicular to the strike of the graphitic gneiss and are approximately true widths.</li> <li>The sampling is considered to be optimal for this style of graphite occurrence.</li> </ul>
Sample security	The measures taken to ensure sample security.	<ul> <li>Samples were taken directly from the field to the Activation Laboratories Ltd facility in Thunder Bay, Ontario.</li> </ul>
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	<ul> <li>Channel sampling has generally confirmed the graphite grades initially suggested by outcrop chip sampling.</li> </ul>

## Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	<ul> <li>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</li> <li>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.</li> </ul>	Claims 4268975 and 4268976 are wholly owned by Ardiden and are currently in good standing.
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	<ul> <li>Previous exploration work on the claims was carried out by Rare Earth Minerals Inc. and reported in Felix, 2012, Technical report on the Manitouwadge graphite exploration property at Manitouwadge, Ontario, Canada. 35 p.</li> </ul>

Criteria	JORC Code explanation	Commentary
Geology	Deposit type, geological setting and style of mineralisation.	Meta-sedimentary graphite
Drill hole Information	<ul> <li>A summary of all information material to the understanding of the exploration results including a 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 metres) 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> <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 why this is the case.</li> </ul>	<ul> <li>See Table 1 in the body of this report for drill hole locations and significant intercepts.</li> <li>See Table 2 in the body of this report for channel sample locations and significant intercepts.</li> </ul>
Data aggregation methods	<ul> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>Where aggregate 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.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul> <li>1 m channel samples have been composited using a cut-off grade of 1 % C in graphite.</li> <li>Drill hole intercepts have been composited using weighted lengths, a cut-off of 1% C and up to 3 m of internal dilution.</li> </ul>
Relationship between mineralisation widths and intercept lengths	<ul> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').</li> </ul>	<ul> <li>Channel samples have been collected perpendicular to the strike of graphite gneiss horizons that are steeply dipping. Sampled thickness will be close to true thicknesses.</li> <li>Drill holes were orientated perpendicular to the strike of the graphitic gneiss and inclined at 45 degrees. A correction factor of approximately 0.7 should be applied to down-hole core lengths to estimate true widths.</li> </ul>
Diagrams	<ul> <li>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 plan view of drill hole collar locations and appropriate sectional views.</li> </ul>	See Figure 3 of this report.
Balanced reporting	<ul> <li>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</li> </ul>	<ul> <li>Significant intervals from sampling diamond core and outcrop are presented in Tables 1 and 2, respectively. Graphitic C grades range from below the detection limit of 0.05% to a maximum of 10.8%.</li> </ul>

Criteria	JORC Code explanation	Commentary
		Base metal values are reported as ranges.
Other substantive exploration data	Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; 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.	Sulphide mineralization is not always directly associated with the graphitic gneiss and may be responsible for some conductors.
Further work	<ul> <li>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	Further beneficiation test work is planned.