23 August 2017

Bartons Drilling Update

Millennium Minerals Limited (**Millennium** or **Company** – ASX: MOY) is pleased to advise that it has received the results of multi-element assay data from reverse circulation (RC) hole BARD0233 at its Nullagine Gold Project in WA's Pilbara.

BARD0233 was drilled as part of the ongoing program designed to further define and extend gold mineralisation for the Companys maiden JORC 2012 Indicated and Inferred Mineral Resource estimate for Bartons underground (see ASX Release 7 August 2017) at Nullagine.

These latest results confirm BARD0233 unexpectedly intersected a 3m-zone from 270m down-hole of high-grade copper-lead-zinc-gold-silver mineralisation in association with elevated levels of other elements. Within the 3m intersection, a 1m intercept containing pre-dominantly massive chalcopyrite and pyrite was observed (***Figure 1***).

The geological and structural context of these results is not yet fully understood by the Company. Assay results include (***Appendix 2***):

- **3m @ 5.45% Cu, 8.52g/t Au, 141.4g/t Ag, 4.3% Zn** and **0.6% Pb** from 270m (down-hole) and 230m (vertical depth) including:
- **1m @ 11.75% Cu, 15.70g/t Au, 238g/t Ag, 6.1% Zn** and **0.6% Pb** from 270m

This is the first intersection of high-grade (>1% Cu) primary copper mineralisation observed at Nullagine.

Figure 1 – Sieved reverse circulation drill chips from BARD0233 (270-271m) showing chalcopyrite

Corporate Details

Ordinary Shares:
780,917,069

Market Capitalisation:
~$150 million

Cash and bullion at 30 June 2017:
~$27.7 million

Debt:
NIL

ASX Code: MOY

Board of Directors

Greg Bittar
Non-Executive Chairman

Michael Chye
Non-Executive Director

Tim Kennedy
Non-Executive Director

Peter Lester
Non-Executive Director

Management

Peter Cash
Chief Executive Officer

Dean Will
Chief Operating Officer

Richard Hill
Chief Financial Officer

Pierre Malherbe
Company Secretary

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While the Company's exploration strategy remains focused on unlocking the full value of its large gold mineral resource inventory, the grade and tenor of the gold and base metal mineralisation intersected is considered encouraging and worthy of follow-up work.

Background

Small base metal occurrences have been observed within the Mosquito Creek Belt historically and previous explorers have undertaken base metal exploration with no economic discoveries reported to date.

The Bartons gold deposit is associated regionally with the NE-trending section of the ENE-trending Middle Creek Fault Zone. Gold mineralisation is associated with a -60° SE dipping, broad (15-20m) sericite-altered shear zone with the highest gold grades associated with 0.5-2m wide quartz lodes.

The high-grade Cu-Pb-Zn-Au-Ag mineralisation is located in the interpreted footwall position of the Bartons main lode. Stratigraphically, the mineralisation sits on the contact of a fine shale-siltstone unit (above) and medium sandstone unit (below) (***Figure 2 and 3***) and remains unconstrained.

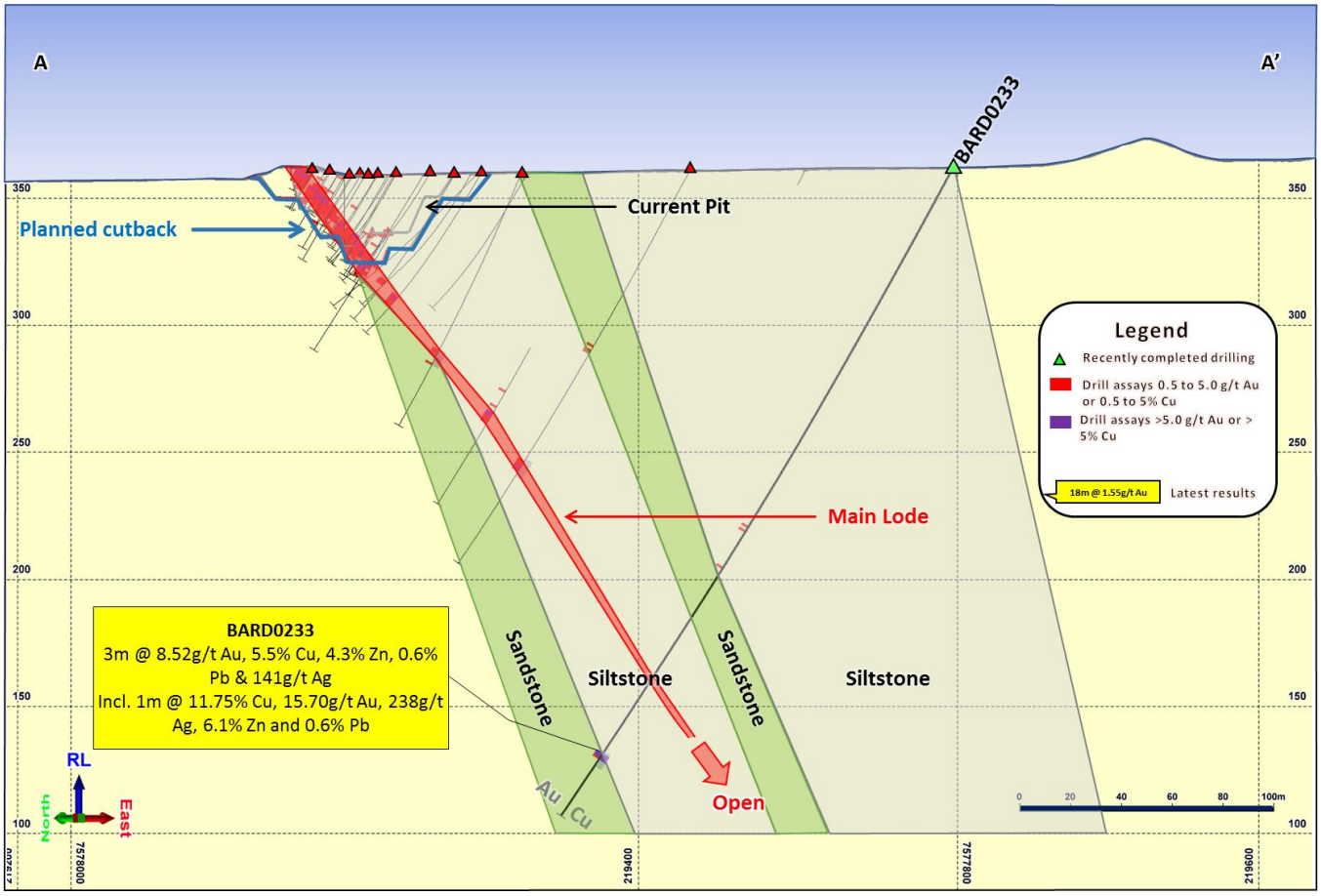

Figure 2 – Bartons cross section as noted in figure 3 plan view

Next Steps

A follow-up RC hole with a diamond tail designed to twin the intercept in BARD0233 and provide orientation information is planned to commence within the next week (***Figure 2***).

In parallel with this follow-up drilling, a series of down-hole electromagnetic (DHEM) surveys of BARD0233 and surrounding holes will be undertaken in the coming weeks to assist in defining potential follow-up drill targets.

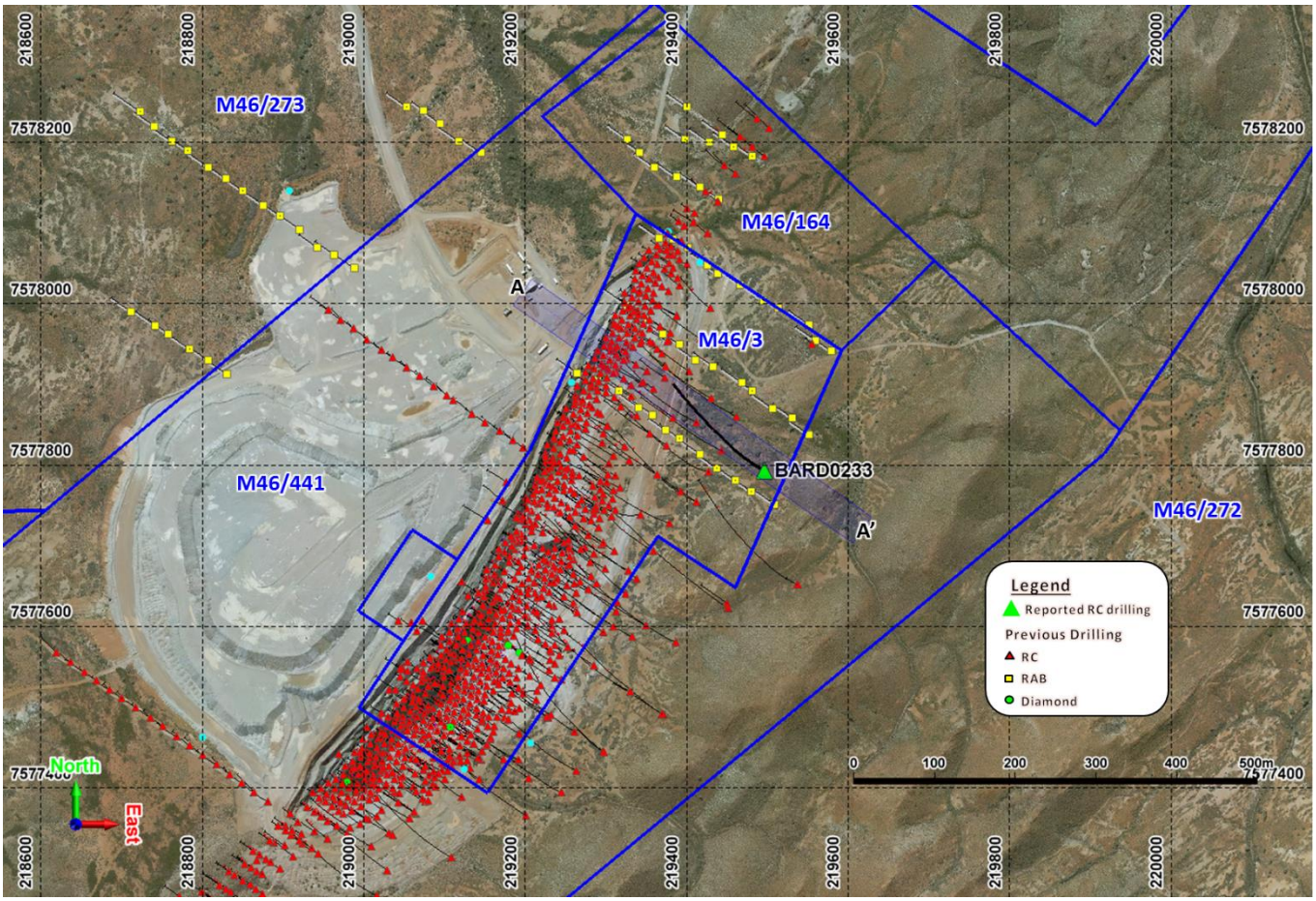

Figure 3 – Bartons Project plan view showing location of Figure 2 cross section

ENDS

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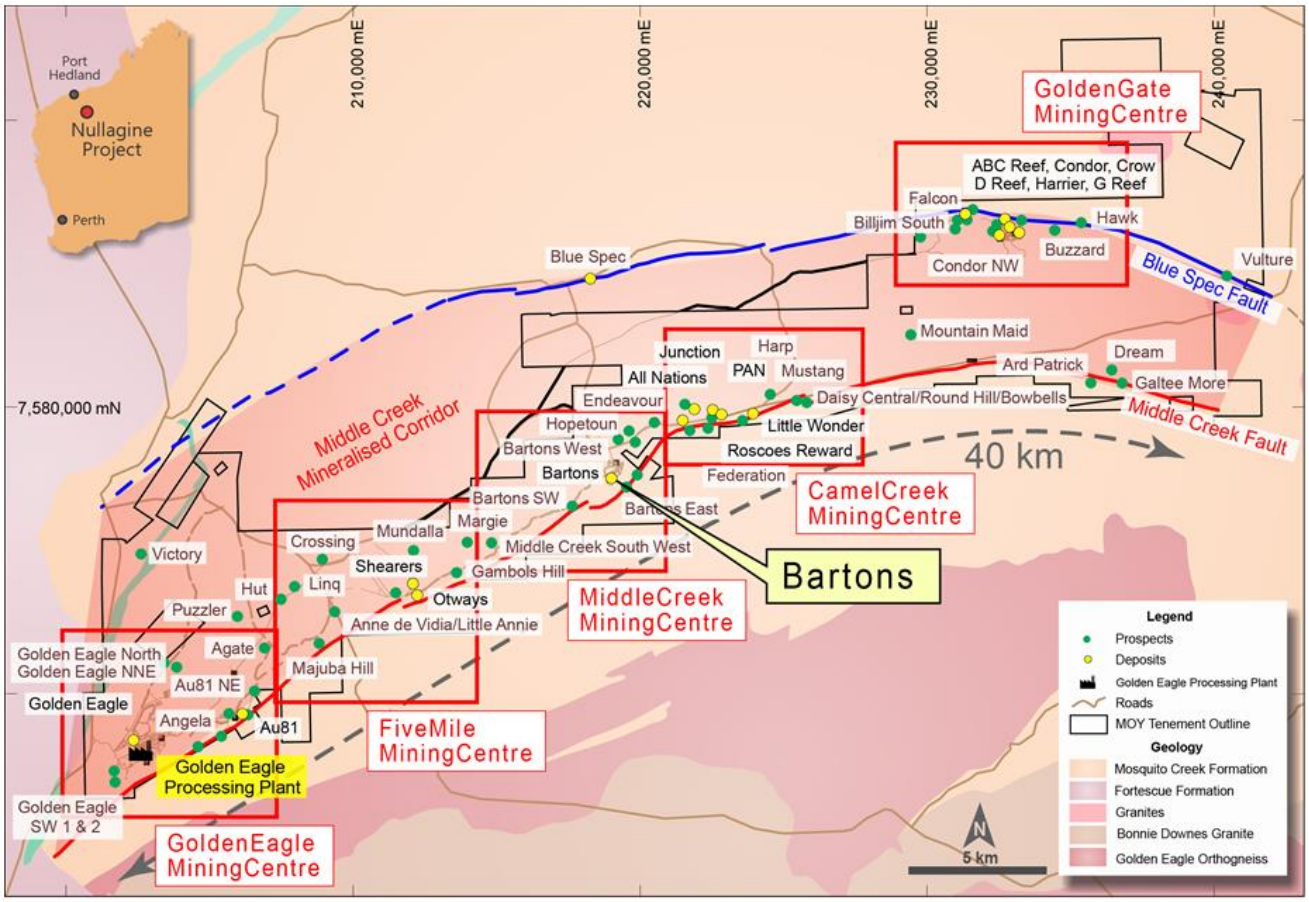
Competent Persons Statements – Exploration Results

Mr Andrew Dunn (MAIG), a geologist employed full-time by Millennium Minerals Limited, compiled the technical aspects of this Report. Mr Dunn is a member of the Australian Institute of Geoscientists and has sufficient experience that is relevant to this style of mineralization and type of deposit under consideration and to the activity that is being reported on 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 Dunn consents to the inclusion in the report of the matters in the form and context in which it appears

Appendix 1: Nullagine Gold Project Location Plan over regional geology



Appendix 2: Table of results

SampleID	Hole_ID	mFrom	mTo	Au_ppm	As_ppm	Cu_ppm	Hg_ppm	Ag_ppm	Bi_ppm	Pb_ppm	Zn_ppm	Sb_ppm	Cd_ppm	S_pct
NX1104457	BARD0233	269	270	0.03	211	119	0.104	-0.5	4	18	149	24	-0.5	0.12
NX1104458	BARD0233	270	271	15.7	23100	117500	41.3	238	200	6280	61000	3340	197.5	30.5
NX1104459	BARD0233	271	272	8.21	18250	35900	39.3	151	113	9050	58400	2340	157.5	16.65
NX1104461	BARD0233	272	273	1.65	4010	10100	7.76	35.1	25	1730	10550	573	29.5	3.68
NX1104462	BARD0233	273	274	0.49	1190	4070	2.44	10.2	9	453	3020	153	8.8	1.19
NX1104463	BARD0233	274	275	0.26	696	2340	1.275	4.8	5	223	1590	72	4.1	0.71
NX1104464	BARD0233	275	276	0.12	422	1125	0.606	2.3	4	120	842	34	2	0.44

Prospect	**Hole_ID**	**GDA East**	**GDA North**	**RL**	**Azi**	**Dip**	**Depth (m)**
Bartons Underground	BARD0233	219496	7577793	362	300	-62	300

Appendix 3: JORC 2012 Edition - Table 1

JORC 2012 Edition - Table 1

Section 1 Sampling Techniques 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.* • *Include reference to measures taken to ensure sample representatively and the appropriate calibration of any measurement tools or systems used.* • *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.*	• *No surface samples were used in any estimation of Mineral Resources or Ore Reserves.* • *Sampling for BARD0233 was carried out using the Reverse Circulation (RC) drilling.* • *Au standard samples were inserted to the sampling stream at a ratio of 1:50. No multi-element standards were inserted.* • *RC drilling was carried out with a 5.5 inch face-sampling bit, 1m samples collected through a cyclone and cone splitter to form a 2-3kg sub-sample. All sub-samples were fully pulverised at the laboratory to >85% passing-75um, to produce a 50g charge for Fire Assay with AAS finish. Multi-element samples were taken from the master pulps. Minimum sample size of 1 gram was digested by Four Acid solution and analysed by ICP-AES. Samples with significant base metal results were re-analysed using an 0.40g charge, Four Acid digest and ICP-AES finish (Ore grade method).*
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 (RC) drilling was carried out with a 5.5 inch face-sampling bit.*
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *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.*	• *A record of the RC sample recovery and moisture content was recorded by on rig geologists. Overall sample weight and quality were good to very good (2 to 3.5 kg).* • *ALS records sample weights on receipt of samples. This was used to help track sample recovery.* • *There is no observed correlation between sample recovery and gold grade.*
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.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• *All of the drilling has been captured in chip trays.* • *Geological logging is both qualitative and quantitative in nature. Logging is carried out for lithology, colour, grain size, regolith, alteration, weathering, veining and mineralisation. Sulphide and vein content were logged as a percentage of the interval.* • *RC chip trays are retained at site.*

Criteria	JORC Code Explanation	Commentary
		• *All of the intersections were logged.*
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *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.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• *One metre RC samples were split using a rig mounted cone splitter. The vast majority of the samples were dry with moist and wet samples recorded.* • *The sample sizes are industry-standard and considered to be appropriate to correctly represent mineralisation at the deposits based on: the style of mineralisation, the thickness and consistency of the intersections, the sampling methodology and assay ranges for gold.* • *Field duplicates were taken from the second aperture of the cone splitter at a rate of 1 in 50 with additional field duplicates taken in the expected mineralised zones.*
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.* • *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.* • *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.*	• *The industry best practice standard assay method of 50g charge Fire Assay with AAS finish was used to determine total Au content.* • *Four Acid digest with ICP-AES was used to determine total base metal content.* • *Commercially prepared, predominantly matrix-matched low, medium & high value certified reference QAQC standards were inserted at a rate of 1:50 into the sample stream for Au analysis. No base metal standards were inserted for the analysis.* • *The QAQC results from this protocol were considered to be acceptable.* • *No geophysical tools were used to determine any element concentrations used for these results.* • *Sample preparation checks for fineness were carried out by the laboratory as part of their internal procedures to ensure the grind size of 85% passing 75 microns was being attained. Laboratory QAQC involves the use of internal lab standards using certified reference material, blanks, splits and replicates as part of the in-house procedures.* • *Results highlight that sample assay values are accurate.*
Verification of sampling	• *The verification of significant intersections by either independent or alternative company personnel.*	• *Intersections were checked by alternative company personnel to check they were reported correctly.*

Criteria	JORC Code Explanation	Commentary
and assaying	• *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• *No twin holes were drilled in the programme. Previous significant intersections were verified with close spaced drilling.* • *Sampling is directly uploaded to the LogChief software and it is synchronised to the SQL database.* • *Assay results were not adjusted.*
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.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• *Post completion of the drilling the RC collars were surveyed with a Real Time Kinematic (RTK) DGPS device to a ±10mm positional precision. All collars are then validated against planned positions as a cross check. Surveyed collar co-ordinates are uploaded into the Company SQL database.* • *Grid datum is GDA94 51K (East Pilbara).* • *Downhole surveys were completed on all holes at 30m maximum downhole intervals with a preference of an initial survey at ~12m downhole. Surveys were taken using a single shot camera or via electronic multi-shot survey tool (Reflex), lithologies have negligible magnetic susceptibility (greywacke). BARD0233 was re-surveyed using a gyroscopic tool to check the quality of measurements.* • *Aerial Photogrammetry± LIDAR was produced by Fugro Surveys (±0.2m vertical & ±0.1m horizontal). Survey control points were marked out by licensed surveyor for the Fugro Survey. An error was noted in early RC drilling collar RL co-ordinates (ellipsoid not geoid model); these holes were adjusted to the Fugro DTM surface RL and recorded as DTM RL in the SQL database; the original survey RL was retained. Otherwise there was good agreement of surveyed collars and Fugro DTM.*
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *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.* • *Whether sample compositing has been applied.*	• *RC drilling was conducted at nominal 80 to 40m x 40m spacing to define the Bartons Au mineralisation.* • *Thus far the drill spacing has been sufficient to establish geological and grade continuity for the Au associated with the Bartons main lode. Insufficient drilling has intersected the base metal zone to confirm its orientation or continuity.* • *None of the reported sample intervals were composited.*
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *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.*	• *Geological mapping and structural measurements have been taken from the Bartons and largely confirms the interpreted orientation of Bartons Main lode mineralisation as defined by the drilling. Based upon the above information the drilling was largely perpendicular to the mineralisation.* • *There is no indication of the base metal mineralisation at the anticipated surface position. However, regionally there is an association of base metals with chert units.*

Criteria	JORC Code Explanation	Commentary
		• *No significant orientation bias has been identified in the data at this point.*
Sample security	• *The measures taken to ensure sample security.*	• *Samples were given an ID, cross checked by field personnel that they corresponded to the assigned interval. Samples were collected on completion of each hole and delivered to the onsite assay laboratory for dispatch to Perth. Monitoring of sample dispatch is undertaken for samples sent from site and to confirm that samples have arrived in their entirety and intact at their destination.* • *Sample security is managed with dispatch dates noted for each samples by the technician, this is checked and confirmed at the Perth laboratory on receipt of samples and discrepancies are corrected via telephone link up with the on-site and Perth laboratories.*
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data reviews.*	• *Internal lab audits conducted by Millennium have shown no material issues.*

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	• *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. 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.*	• *The Bartons deposit lie within fully granted Mining Leases within the Pilbara Gold Field (46), as detailed below. All the tenements are in good standing with no known impediments.* • *Bartons* - M46/3, M46/44[+] & M46/164 (100% MML);* **These tenements are located within the Njamal title claim (WC99/8).*
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• *Exploration by other parties has been reviewed and considered when exploring. Previous RAB & RC drilling. Millennium has re-drilled in areas that other parties had drilled to gain a greater confidence in those results. Previous base metal exploration is currently being reviewed.*
Geology	• *Deposit type, geological setting and style of mineralisation.*	• *The Nullagine Project Au deposits are structurally controlled, sediment hosted, lode Au style of deposit. They are all situated in the Mosquito Creek Basin that consists predominantly of Archean aged, turbidite sequences of sandstones, siltstones and shales. Previous explorers have noted an association between base metal occurrences and chert units.*

Drill hole Information	• *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:*
	  ○ *easting and northing of the drill hole collar*
	  ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*
	  ○ *dip and azimuth of the hole*
	  ○ *down hole length and interception depth*
	  ○ *hole length.*
	• *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.*
		• *Provided in a table that relates exploration results to the drill hole information including: hole co-ordinates, RL, dip, azimuth, end of hole depth, downhole length and interception depths.*
		• *All of the current drilling with results returned has been reported.*

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.* • *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.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• *Significant Au intersections reported with a lower cut-off of 0.5g/t Au and maximum of two consecutive metres of internal dilution. Higher grade intersections use a lower cut-off of 5g/t Au and maximum of two consecutive metres internal dilution.* • *Significant Cu intersections reported with a lower cut-off of 0.5% Cu and maximum of two consecutive metres of internal dilution. Higher grade intersections use a lower cut-off of 5% Cu and maximum of two consecutive metres internal dilution.* • *All samples reported were one metre in length. No aggregation methods were required to derive intersections.* • *No metal equivalents were used.*
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *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 selected historic exploration data related to the included targets and prospects are presented.* • *Most of the drilling is perpendicular to the mineralisation; however, in early exploration the dip direction is sometimes uncertain and thus holes some holes can be drilled sub-parallel to the mineralisation producing longer and higher grade intersection than the true intercept. Quoted widths are down-hole widths. True-widths are likely to be approximately 70-90% of down-hole widths for the Bartons Main Lode .* • *The orientation of the base metal intersection is unknown and hence the true width is also unknown.*
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 plan view of drill hole collar locations and appropriate sectional views.*	• *Significant base metal exploration results are tabulated in the release with drill hole plans to show them in context.* • *Representative maps have been included in the report along with documentation.*
Balanced reporting	• *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.*	• *Only the significant base metal drill results have been reported for the project due to selective assaying for them.*
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.*	• *The outcrops of quartz veins have been previously mapped at Bartons. The Bartons Main lode mineralisation is primarily associated with a combination of quartz veining, moderate foliation, strong sericite alteration and strong limonite staining or pyrite content. Higher grade mineralisation is associated with discrete quartz veining.* • *Previous base metal occurrences in the Mosquito Creek Basin have been associated with chert units.*

Criteria	JORC Code Explanation	Commentary
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.*	• *An RC hole with a diamond tail is planned to be drilled close to the base metal intersection to help determine its nature and orientation.*