MILLENNIUM
MINERALS LIMITED

ASX Code: MOY

Corporate Details

Ordinary Shares:
791,970,324

Market Capitalisation:
~$170 million

Cash and bullion at 30 June 2018:
~$13.6 million

Debt at 30 June 2018:
NIL

ASX Code: MOY

Board of Directors

Greg Bittar
Non-Executive Chairman

Bruno Lorenzon
Non-Executive Director

Tim Kennedy
Non-Executive Director

Peter Lester
Non-Executive Director

Management

Peter Cash
Chief Executive Officer

Dean Will
Chief Operating Officer

Ray Parry
Chief Financial Officer and Company Secretary

Contact Details

Unit 7, 140 Abernethy Road
BELMONT WA 6104

Telephone:

+ 61 (08) 9216 9011

Facsimile:

+ 61 (08) 9481 0288

Email: info@mmltd.com.au

Website:

millenniumminerals.com.au

17 September 2018

New high-grade intercepts of up to 42.35g/t upgrade discovery potential at Golden Eagle SW

Results from step-out drilling confirm presence of high-grade gold mineralisation at new target area 1.8km south-west of the Golden Eagle deposit

- **Mapping and re-interpretation of historical exploration results indicates the presence of a highly prospective shear zone over a potential strike extent of 800m.**
- **The first step-out drill hole on the newly identified shear zone has intersected two significant zones of high-grade gold mineralisation:**
  - ***1m @ 34.00g/t Au from 26m; and***
  - ***5m @ 17.86g/t Au from 62m, including:***
  - ***2m @ 42.35g/t Au***
- **The discovery of high-grade mineralisation is an exciting development which confirms the presence of a significant gold mineralising system at Golden Eagle SW.**
- **The new result supports the emergence of this conceptual target area as a potentially significant new discovery, supported by a combination of 3D magnetic inversion, structural analysis and soil geochemistry.**
- **Follow-up exploration is continuing, comprising a gravity survey and additional drilling.**

Millennium Minerals Limited (ASX: MOY) ("**Millennium**" or the "**Company**") is pleased to advise that step-out drilling has intersected exceptionally high-grade mineralisation at the emerging Golden Eagle South West prospect, 1.8km south-west of the large-scale Golden Eagle deposit at its 100%-owned Nullagine Gold Project in WA's East Pilbara (Figure 4).

Hole GERC13440 was drilled 80 metres north-east of previously-reported reconnaissance hole GEX391, which returned 12m @ 0.87g/t gold from 184m, including 1m @ 3.13g/t gold from 191m (see ASX Announcement 27 August 2018).

The step-out hole has intersected two high-grade zones of gold mineralisation, with assay results of:

- **1m @ 34.00g/t Au from 26m**; and
- **5m @ 17.86g/t Au from 62m**, including
  - **2m @ 42.35g/t Au**.

Hole GERC13440 was drilled to target an interpreted north-northeast trending mineralised structure identified through a re-interpretation of existing drilling data and mapped lineaments from aerial imagery. The combination of these datasets defines a potential strike extent for the mineralised zone intersected in GERC13440 of 800 metres.

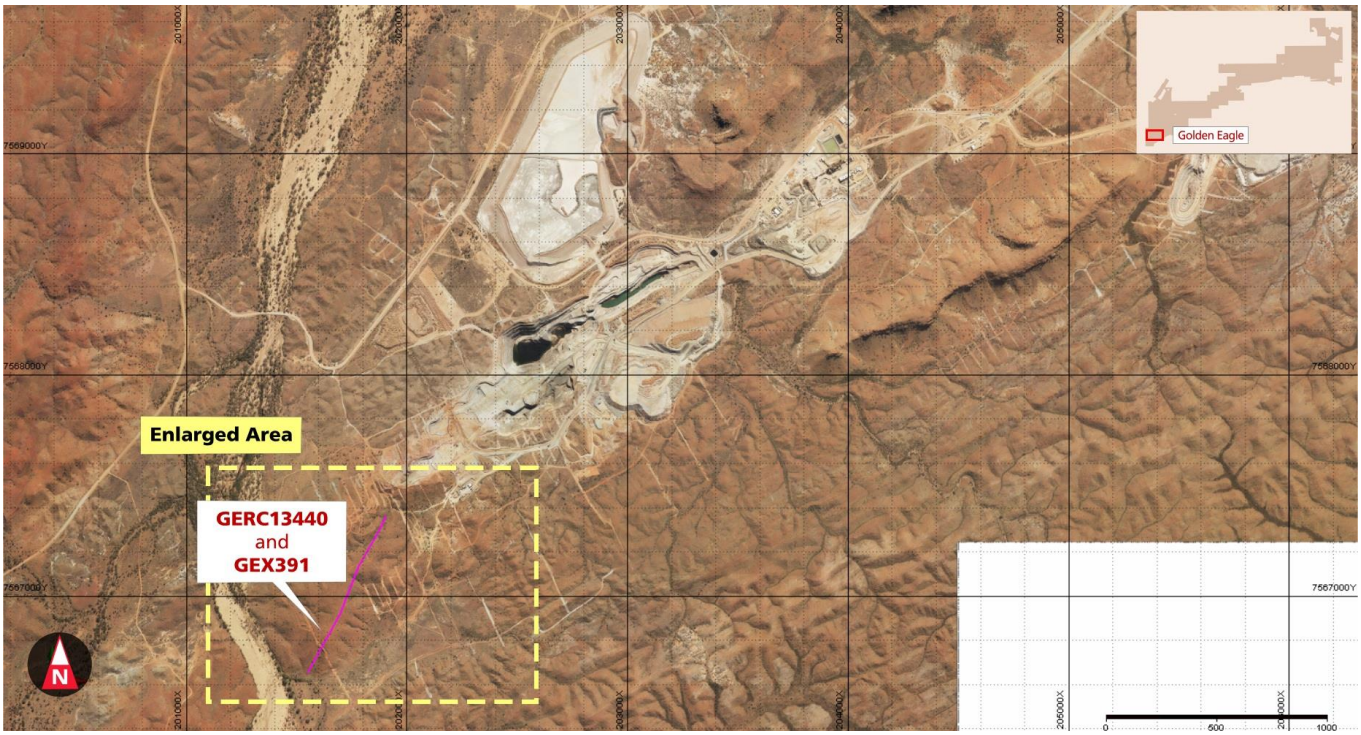

Figure 1: Golden Eagle South West prospect showing location of the recent reconnaissance drilling relative to the Golden Eagle deposit. Enlarged area shown in Figures 2 and 3.

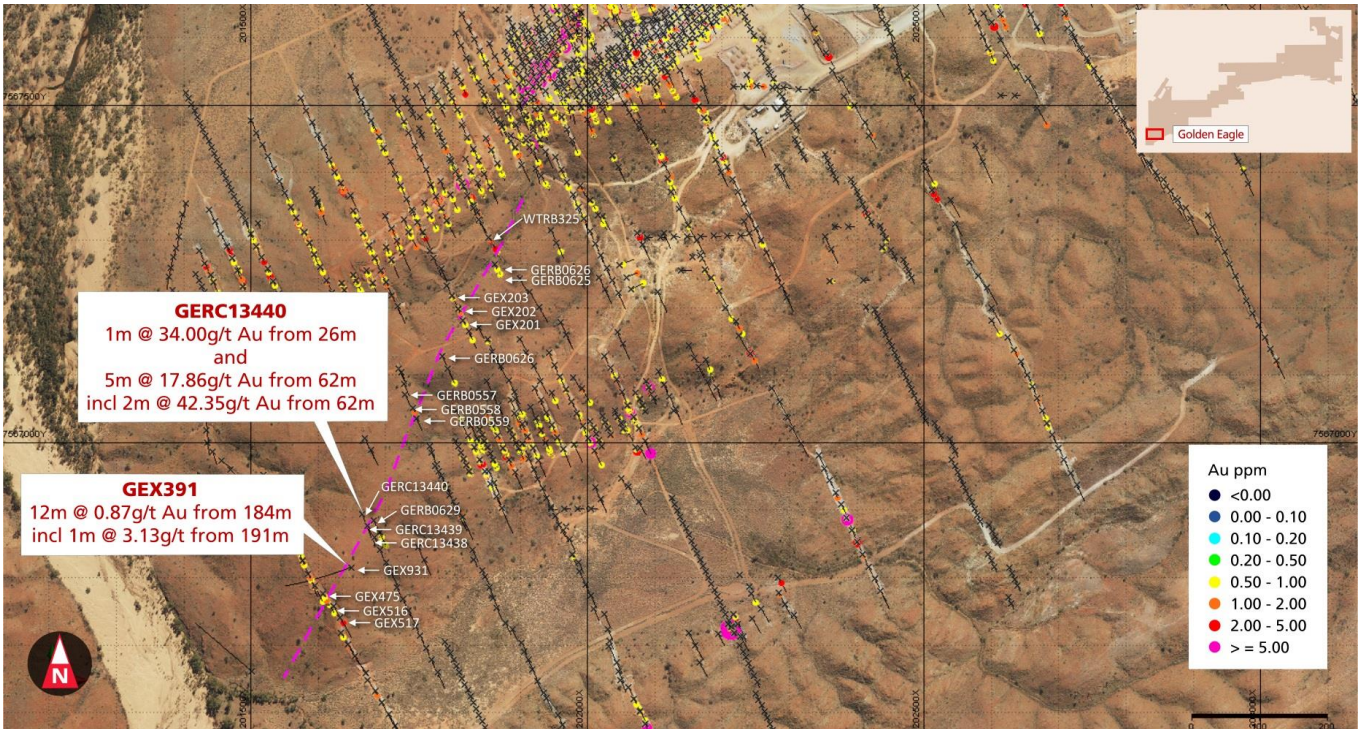

Figure 2: Golden Eagle South West prospect showing recent reconnaissance drilling and the location of the holes GEX931 and the more recent hole GERC13440 reported in this announcement.

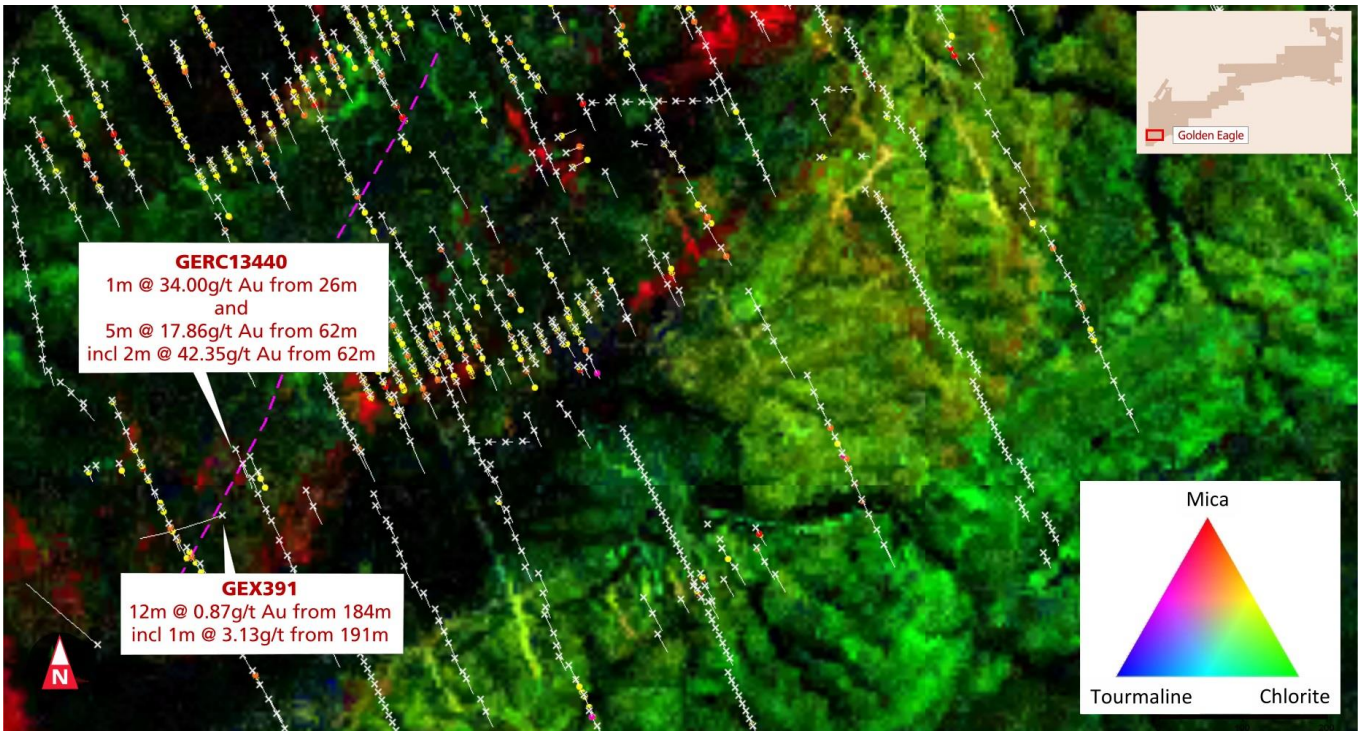

Figure 3: Golden Eagle South West prospect showing the shear zone extents and mica alteration.

In addition, the north-northeast orientation of the interpreted mineralised structure is considered highly encouraging, as it supports the theory of the presence of high-grade cross-cutting mineralised structures at Golden Eagle that run oblique to the main north-east trending mineralised lodes (see ASX Announcement 10 September 2018).

The mineralisation intersected in GERC13440 is interpreted to be on the same shear zone as the results reported from GEX931 on 27 August 2018. This included shallow intercepts of 6m @ 1.21g/t Au from 29m, including 1m @ 3.53 g/t Au from 32m.

Ongoing work at Golden Eagle SW will focus on testing high-grade mineralisation associated with cross-cutting structures as well as deeper sulphide mineralisation which was never followed-up in historical RAB drilling and rock chip sampling in this area due to the lack of a processing solution for sulphide material at the time.

Millennium is currently upgrading the existing CIL processing plant at Nullagine to facilitate the treatment of sulphide ore and has therefore reinitiated analysis of historical sulphide results.

Management Comment

Millennium Chief Executive Peter Cash said latest high-grade drilling results confirmed that Golden Eagle South West was rapidly emerging as a potentially exciting new discovery at Nullagine.

"This represents another really exciting development for Millennium – confirming the presence of high-grade gold mineralisation 1.8km from our flagship Golden Eagle deposit," he said.

"The latest drilling also provides significant momentum to our new interpretation of the existence of high-grade cross-cutting structures that could significantly upgrade the Golden Eagle mining inventory.

"We are now working to pursue the mineralised trend along strike from Hole GERC13440, and will be actively drilling this area over the remainder of 2018 to rapidly assess its potential," he said.

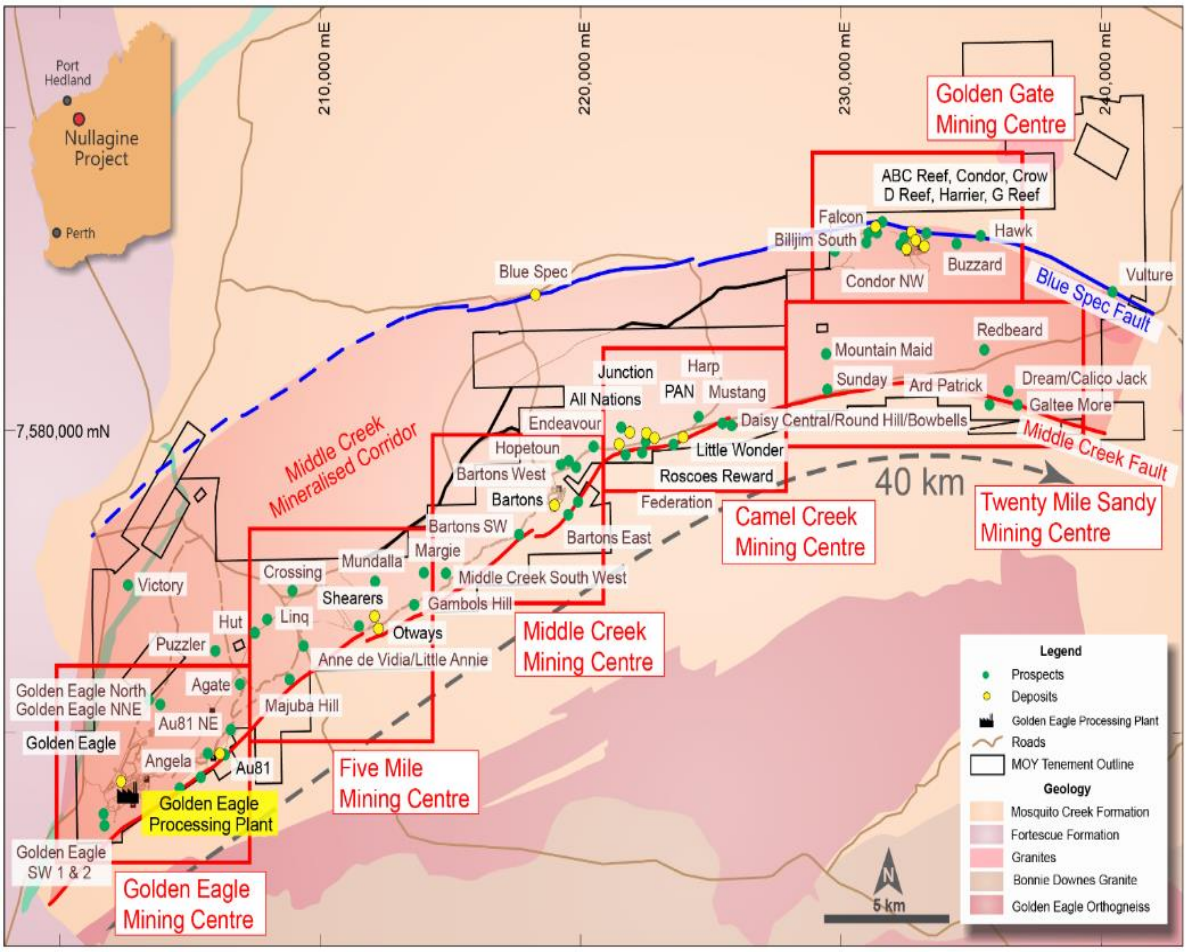

Figure 4: Nullagine Project Location Plan over regional geology

ENDS

For further information:

Millennium Minerals Limited:

Peter Cash
Chief Executive Officer
+61 8 9216 9011

For media inquiries:

Kate Bell / Nicholas Read
Read Corporate
+61 8 9388 1474

Competent Persons Statements – Exploration Results

The information in this report that relates to Exploration Results is based on information compiled by Mr James Farrell (MAusIMM(CP), MAIG), a geologist employed full-time by Millennium Minerals Limited. Mr Farrell is a Member and Chartered Professional of the Australasian Institute of Mining and Metallurgy and has sufficient experience that is relevant to this style of mineralisation 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 Farrell consents to the inclusion in the report of the matters in the form and context in which it appears.

Appendix 1 – Table of significant results for Golden Eagle

Hole_ID	GDA East	GDA North	RL	Azi	Dip	Depth (m)		From (m)	To (m)	Width (m)	Grade (g/t Au)	Gram-metres
GERC13436	201701	7566823	423	155	-60	54		28	29	1	0.7	0.7
GERC13437	201692	7566841	424	155	-60	54		14	15	1	1.04	1
								30	31	1	1.97	2
GERC13438	201684	7566859	428	155	-60	54		0	1	1	0.58	0.6
								4	5	1	0.89	0.9
								8	9	1	1.03	1
								13	14	1	4.06	4.1
								30	31	1	0.54	0.5
								39	41	2	0.54	1.1
GERC13439	201674	7566876	429	155	-60	66		7	8	1	1.92	1.9
								50	52	2	0.64	1.3
GERC13440	201665	7566894	428	155	-60	78		4	5	1	0.69	0.7
								26	27	1	34	34
							Incl.	26	27	1	34	34
								33	35	2	0.77	1.5
								43	44	1	0.57	0.6
								62	67	5	17.86	89.3
							Incl.	62	64	2	42.35	84.7
								75	76	1	0.55	0.6

AA= Awaiting Assays. NSA = No Significant assays. Intersections are calculated with 0.5g/t Au lower cut-off and a maximum of 2 consecutive metres of internal dilution. Higher grade intersections are calculated with 3g/t Au lower cut-off and a maximum of 2 consecutive metres of internal dilution.

Appendix 2 – Table of relevant historic results for Golden Eagle

Hole_ID	GDA East	GDA North	RL	Azi	Dip	Depth (m)		From (m)	To (m)	Width (m)	Grade (g/t Au)	Gram-metres
GEX201	201815	7567181	419	155	-60	54		14	16	2	0.81	1.6
GEX202	201807	7567199	414	155	-60	54		1	2	1	0.68	0.7
								13	14	1	1.85	1.9
GEX203	201799	7567218	411	155	-60	54		3	4	1	0.79	0.8
								8	9	1	0.72	0.7
								49	50	1	0.61	0.6
GEX475	201594	7566788	427	155	-60	54		1	7	6	0.77	4.6
								51	54	3	1.04	3.1
GEX516	201606	7566777	424	150	-60	66		12	15	3	0.79	2.4
								24	29	5	0.97	4.9
								41	42	1	0.51	0.5
								65	66	1	0.76	0.8
GEX517	201623	7566758	421	150	-60	66		57	58	1	2.41	2.4
GERB0557	201729	7567071	427	155	-60	40				NSA		NSA
GERB0558	201741	7567051	426	155	-60	40		12	16	4	1.65	6.6
								20	24	4	0.67	2.7
GERB0559	201746	7567035	425	155	-60	40				NSA		NSA
GERB0625	201792	7567110	429	155	-60	50		48	50	2	0.5	1
GERB0626	201784	7567128	429	155	-60	70				NSA		NSA
GERB0629	201682	7566885	430	155	-60	70		40	44	4	0.7	2.8
								56	60	4	0.73	2.9
WTRB325	201853	7567305	416	150	-60	50		5	6	1	1.05	1.1
								10	11	1	2.05	2.1
								38	39	1	2.88	2.9
								42	43	1	1.25	1.3
								46	49	3	0.62	1.9

AA= Awaiting Assays. NSA = No Significant assays. Intersections are calculated with 0.5g/t Au lower cut-off and a maximum of 2 consecutive metres of internal dilution. Higher grade intersections are calculated with 3g/t Au lower cut-off and a maximum of 2 consecutive metres of internal dilution.

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.*	• *Samples were collected using Reverse Circulation (RC) and Rotary Air Blast (RAB) drilling.* • *The second sample split of RC samples is routinely weighed to ensure that the sample splitter on the RC drill rig is set up appropriately.* • *Standard samples were inserted to the RC sampling stream at a ratio of 1:50.* • *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 2-3 kg sub-sample. All sub-samples were fully pulverised at the laboratory to >85% passing 75 µm, to produce a 50 g charge for Fire Assay with AAS finish.* • *Blade and hammer RAB drilling was carried out in 2003 by Wedgetail Exploration NL.* • *Four metre composite RAB samples were collected in calico bags and analysed by Ultratrace Laboratories, Perth.* • *The four metre composite RAB samples were analysed using Aqua Regia ICPOES for Au, Cu, Ni and As. Samples assaying above 0.2 g/t Au were then resampled on a metre basis and analysed for Au using Fire Assay ICPOES for Au only.*
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).*	• *RC drilling was carried out with a 5.5-inch face-sampling bit.* • *RAB blade drilling was carried out to refusal depth. RAB hammer was used where required due to the presence of quartz veins or silica alteration in the host rocks.*
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 the rig geologists. Overall sample weight and quality were good to very good (2 to 3.5 kg).* • *ALS records RC sample weights on receipt of samples. This was used to help track sample recovery.* • *There is no correlation between RC sample recovery and gold grade.* • *RAB drilling was completed dry. Where water was encountered during drilling, the RAB holes were terminated.*
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 RC drilling has been captured in chip trays for reference.* • *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.* • *All of the intersections were logged, including historical RAB drill holes).*

Criteria	JORC Code Explanation	Commentary
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 the moist and wet samples were 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.* • *RAB samples were pulverised using an LM5 until 95% passed 75µm from which a 40g charge was taken for analysis.*
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 50 g charge Fire Assay with AAS finish was used to determine total Au content of the RC samples.* • *Commercially prepared, predominantly matrix-matched low, medium & high value certified reference QAQC standards were inserted at a rate of 1:50 into the RC sample stream.* • *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 µm 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.* • *The four metre composite RAB samples were analysed using Aqua Regia ICPOES for Au, Cu, Ni and As. Samples assaying above 0.2 g/t Au were then resampled on a metre basis and analysed for Au using Fire Assay ICPOES for Au only.* • *QAQC for the RAB results was not reported by Wedgetail Exploration NL and the quality of the RAB samples and sample results is uncertain.* • *Twinning of historical RAB holes with RC by Millennium has shown that the RC results and modern fire assay Au results are often higher than historical Au grades from RAB drilling and Aqua Regia analysis.*
Verification of sampling and	• *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
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 RC twin holes were drilled in the programme.* • *The RC sampling is directly uploaded to the LogChief software and it is synchronised to the database.* • *Assay results have not been 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 to a ±10 mm positional precision. All collars were 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 for the RC holes were completed using a using a gyroscope and are considered to be accurate.* • *RAB drill hole locations were surveyed by Tracer Surveys using a RTK GPS.* • *Downhole surveying of the RAB drill holes was completed using an Eastman type single shot downhole camera at approximately every 40m.*
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.*	• *The two drill holes collars were 215 m apart and were designed to test a zone of variable magnetism associated with NE-trending structures.* • *None of the reported sample intervals were composited. Data aggregation for reporting is described in this table.*
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.*	• *Drilling was designed perpendicular to targets associated with interpreted NE-trending structures. However, there is currently insufficient information to confirm the orientation of the reported mineralisation.*
Sample security	• *The measures taken to ensure sample security.*	• *Samples were given a unique identification number, 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. Any discrepancies are corrected 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 Nullagine Gold Project prospects and deposits 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.* • *M46/186 (100% MML);* • *M46/267 (100% MML);* • *M46/300 (100% MML);* • *These tenements are located within the Palyku title claim (WC99/16) and there is a $10/oz royalty payable to Tyson Resources Pty Ltd.*
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• *Millennium has reviewed exploration undertaken by other parties at Nullagine. Previous work has not assessed exploration targets similar to those described in this announcement.*
Geology	• *Deposit type, geological setting and style of mineralisation.*	• *The Nullagine Gold Project deposits are structurally controlled, sediment-hosted, lode gold style deposits. They are all situated in the Mosquito Creek Basin that consists predominantly of Archean aged, turbidite sequences of sandstone, siltstone, shale and minor conglomerate 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.*
		• *A summary of the reported drilling is provided in a table and includes: 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.*	• *All of the exploration prospects have their significant intersections reported with a lower cut-off grade of 0.5 g/t Au and maximum of two consecutive metres of internal dilution. Higher grade intersections use a lower cut-off grade of 5 g/t Au and maximum of two consecutive metres internal dilution.* • *All RC samples reported were one metre in length.* • *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').*	• *The drilling was planned perpendicular to the strike of interpreted mineralised structures; however, in early exploration the dip direction is sometimes uncertain. It is not known whether the reported drilling is unbiased or drilled sub-parallel to the mineralisation which would result in longer and higher-grade intersection than the true intercept.* • *Quoted widths are downhole widths.*
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 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.*	• *All of the current drill results have been reported for the project.*
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.*	• *Outcrops of quartz veins have been previously mapped at Golden Eagle. Mineralisation is primarily associated with a combination of quartz veining, shearing, strong sericite alteration and strong limonite staining or pyrite-arsenopyrite content.*
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.*	• *Further drilling is proposed to follow up on the intersected mineralisation.* • *A gravity survey will commence in the coming weeks. This survey will support the interpretation of geology, alteration and structures associated with the mineralisation in three dimensions.*