ASX: DEG

ASX ANNOUNCEMENT

12 May 2022

Hemi pilot testwork confirms high recoveries at Brolga

Highlights

- The first pilot scale test in a series of pilot and bench scale variability tests has achieved an overall recovery of 91.9% on a 4.5 tonne sample of lower grade (0.9g/t Au) mineralisation from Brolga achieving a final reject tail grade of ~ 0.07 g/t Au.

- The pilot scale recovery correlates well with previous test results showing gold recovery increasing with increasing head grade due to the very low tail of 0.070 to 0.075 g/t Au
  - 93% recovery from ore grading 1.4g/t Au in the Mallina Gold Project Scoping Study[1]
  - 97.5% recovery in bench scale of 10kg sample from ore grading 2.6g/t Au [2].

- Brolga mineralisation was piloted first as it is likely to provide first production from Hemi:
  - The flowsheet for the pilot testwork comprised continuous sulphide flotation, followed by batch pressure oxidation of the flotation concentrate, and cyanide leaching of the pressure oxidation (POx) residue. The flotation tailings were treated by cyanide leaching.
  - A mass pull of 7% to 7.5% into the flotation concentrate achieved in the pilot test compares favorably with the scoping study mass pull outcome of 7.5%. This equates to flotation concentrate of between 700,000 to 750,000 tpa reporting to the POx circuit relative to the plant throughput of 10M tpa. This will have a positive benefit for capital and operating costs.

- Bench scale testwork to date on all Hemi deposits has provided similar recovery outcomes.

- Further pilot scale testing will be conducted on individual deposit and composite deposit samples and at various grades from Hemi:
  - A second pilot scale test will be undertaken on a combination of the Brolga, Diucon, Eagle and Falcon deposits at Hemi; and
  - Variability bench scale test work to continue across all the deposits at Hemi, with a focus on the Diucon and Eagle deposits, and the weathered ore domains.

- Concentrate generated from the pilot tests will be used in pressure oxidation optimisation testwork, Albion process testwork, and downstream processing testwork.

De Grey Managing Director, Glenn Jardine, commented:

"These new pilot testwork results on the 4.5 tonne bulk sample taken from the Brolga deposit continue to demonstrate high metallurgical recoveries across the deposits at Hemi. The metallurgical recovery at 91.9% on a feed grade of 0.9g/t Au is outstanding.

Our ongoing metallurgical testwork program continues to provide confidence in the process flowsheet to achieve high gold recoveries from Hemi and the regional deposits across the Mallina gold project."

Notes:

1 ASX announcement 5 October 2021

2 ASX announcement 9 July 2020

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Brolga Pilot Testwork

De Grey Mining Limited (ASX: DEG, "De Grey", "Company") is pleased to report the results of pilot scale metallurgical testwork from its Brolga zone at Hemi, undertaken at ALS Metallurgy in Perth. Hemi is located approximately 60km south of Port Hedland in Western Australia. The new testwork follows previously reported positive metallurgy results for the Brolga, Aquila, Crow and Falcon deposits at Hemi.

Testwork was conducted on a 4.5 tonne sample of fresh (primary) mineralisation from five diamond drill holes across the Brolga deposit (HEDD004, 007, 008, 009 and 022) as shown in Figure 1 and Appendix 1.

A potential flowsheet for the processing plant at Hemi is shown in Figure 2. This flowsheet shows the use of a high pressure grinding roller (HPGR) in the comminution circuit and pressure oxidation (POX) in the sulphide oxidation circuit. Options are available to the Company for the comminution and oxidation circuits. Options considered in the comminution circuit include a SAG-Ball arrangement as adopted in the scoping study, HPGR and Vertical Roller Mills. The Company is conducting a trade-off study between pressure oxidation and Albion oxidation for the sulphide oxidation circuit.

The pilot sample was crushed and homogenised prior to continuous pilot scale milling, classification and sulphide flotation. Flotation concentrate was sent for pressure oxidation then cyanide leaching of the oxidised residue. Flotation tails were also cyanide leached.

The results of the pilot testwork conducted on the Brolga bulk sample are summarised in Table 1 using the same presentation format as for previously released metallurgical testwork results. Flotation testwork was conducted at P_{80} grind size of 75 microns.

Table 1 Brolga Pilot Test Results on 0.9g/t Au bulk sample

Gold Recovery (%)					
Composite	**Flotation**	**POX**	**Flotation Concentrate x POX**	**Flotation Tail x CIL**	**Overall**
Day 1	89.8	94.6	85.0	7.1	92.1
Day 2	90.2	94.6	85.4	6.8	92.2
Day 3	88.5	94.6	83.7	8.0	91.7
Day 4	88.7	94.6	83.9	7.9	91.8
Average	**89.3**	**94.6**	**84.5**	**7.4**	**91.9**

Gold deportment to the flotation concentrate averaged 89.3% (column 1). Cyanidation leach tests on the POx residue of the flotation concentrate averaged a gold extraction of 94.6% (column 2). The combined gold recovery through sulphide flotation and oxidation was 84.5% (column 3). Cyanidation of the flotation tailings produced average gold extractions of 7.4% (column 4) of the overall feed. The combined overall gold recovery was 91.9% (column 5) with a combined tailings grade of 0.07g/t Au from the bulk sample feed grade of 0.9g/t Au.

Sulphide recovery into the flotation concentrate exceeded 95%. The concentrate generated in the pilot underwent a comprehensive program of eighteen bench scale pressure oxidation optimisation tests, which showed consistent sulphide oxidation greater than 99%.

The products generated in the pilot are being used for downstream testwork as part of ongoing metallurgical and process engineering studies, including a further Albion process test program.

The next pilot scale test will be undertaken on a combination of the Brolga, Diucon, Eagle and Falcon, deposits from Hemi, which would be processed in the first five years of mining. Variability bench scale test work continues across the all the deposits at Hemi, with a focus on the Diucon and Eagle deposits, and the weathered ore domains. Variability testwork was previously conducted[3] on primary mineralisation samples from Crow and Falcon achieving average metallurgy recoveries respectively of 94.2% and 96.8%. Testwork previously conducted[4] on a bulk composite of primary mineralisation from Aquila achieved an average recovery of 94.0%.

The Company is utilising multi-element analysis to determine mineralogical variability across and within the main intrusion zones at Hemi. This information is being used to build a geometallurgical model for the deposits. The multi-element data, mineralogical analysis and metallurgical testwork indicates that the metallurgical characteristics is similar across all of the deposits at Hemi.

Testwork Underway and Planned

Concentrate generated from the pilot tests is currently being used for downstream process testwork to support the feasibility study. Programs are being undertaken at ALS Perth and include pressure oxidation optimisation, thickener testing, cyanide leaching optimisation and mineralogical studies.

A parallel Albion process testwork program is being undertaken at Core Resources in Brisbane, with an engineering study to be completed by Glencore Technology.

Additional variability bench scale test work continues across the all the deposits at Hemi, with a focus on the previously untested Diucon and Eagle deposits, and the weathered ore domains. Testwork includes comminution, gravity gold recovery, flotation, pressure oxidation and cyanide leaching.

A second pilot campaign is planned which will comprise ore from Brolga, Diucon, Eagle and Falcon deposits. The program includes HPGR testing, followed by continuous milling and flotation, and downstream testing of the pilot products including oxidation and leaching.

Notes:
3 ASX announcement 21 September 2021
4 ASX announcement 10 May 2021

Figure 1: Location of metallurgical testwork samples at Hemi

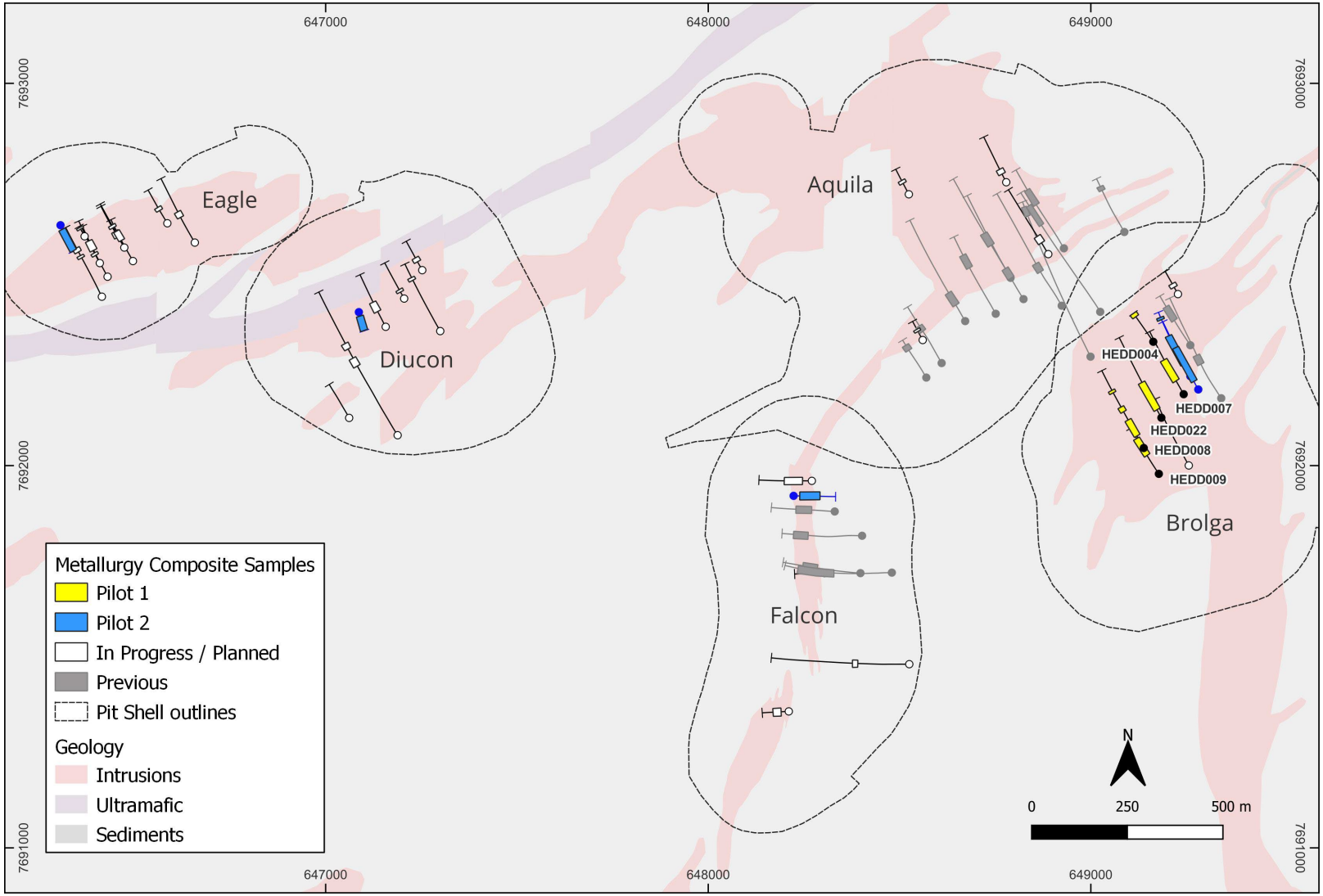
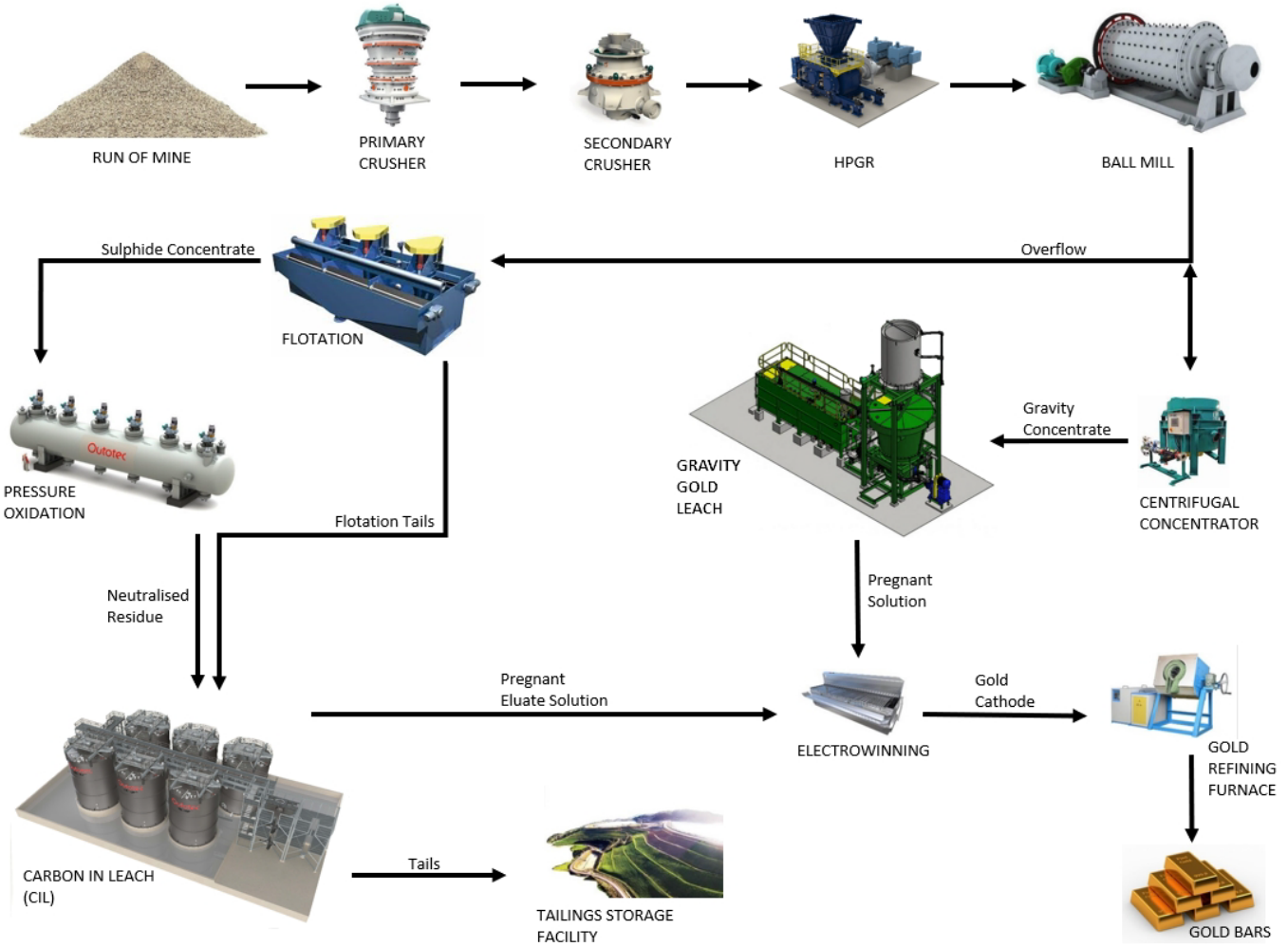


Figure 2: Simplified process flowsheet showing a high pressure grinding roller (HPGR) comminution option and a pressure oxidation (POX) sulphide oxidation treatment option



This announcement has been authorised for release by the De Grey Board.
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Competent Person's Statement

The information in this report that relates to exploration results is based on, and fairly represents information and supporting documentation prepared by Mr. Phil Tornatora, a Competent Person who is a member of The Australasian Institute of Mining and Metallurgy. Mr. Tornatora is an employee of De Grey Mining Limited. Mr. Tornatora has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resource and Ore Reserves". Mr. Tornatora consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

Previously released ASX Material References *that relates to Hemi Prospect includes:*

Studies:

- *De Grey Mining Mallina Gold Project Scoping Study, 5 October 2021*

Resources:

- *6.8Moz Hemi Maiden Mineral Resource drives Mallina Gold Project, 23 June 2021*
- *2020 Mallina Gold Project Resource update, 2 April 2020*

Metallurgical results announced for Hemi include:

- *High gold recoveries achieved at Falcon and Crow, 21 September 2021*
- *High gold recoveries achieved at Aquila, 10 May 2021*
- *Further metallurgical testwork confirms high gold recoveries, 16 February 2021*
- *High gold recoveries achieved at Hemi, 09 July 2020*

Appendix 1 – Metallurgical Sample Details – Mallina Gold Project

HoleID	Zone	Depth From (m)	Depth To (m)	Downhole Width (m)	Collar East (GDA94)	Collar North (GDA94)	Collar RL (GDA94)	Dip (degrees)	Azimuth (GDA94)	Hole Depth (m)	Hole Type
HEDD004	Brolga	168.0	191.0	23.0	649163	7692324	68	-61	326	191	DD
HEDD007	Brolga	81.0	204.0	123.0	649242	7692187	69	-61	330	354	DD
HEDD008	Brolga	72.0	169.0	97.0	649138	7692046	69	-61	329	450	DD
HEDD008	Brolga	219.0	246.0	27.0	649138	7692046	69	-61	329	450	DD
HEDD008	Brolga	330.0	343.0	13.0	649138	7692046	69	-61	329	450	DD
HEDD009	Brolga	118.0	232.0	114.0	649178	7691979	69	-59	326	300	DD
HEDD022	Brolga	44.0	194.0	150.0	649184	7692125	69	-58	331	417	DD

JORC Code, 2012 Edition – Table 1

Section 1 Sampling Techniques and Data

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

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (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 representivity 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.*	• All drilling and sampling was undertaken in an industry standard manner • Core samples were collected with a diamond rig drilling mainly NQ2 diameter core. • After logging and photographing, NQ2 drill core was cut in half, with one half sent to the laboratory for assay and the other half retained. HQ and PQ core was quartered, with one quarter sent for assay. Holes were sampled over mineralised intervals to geological boundaries on a nominal 1m basis. • Sample weights ranged from 2-4kg • RC holes were sampled on a 1m basis with samples collected from a cone splitter mounted on the drill rig cyclone. 1m sample ranges from a typical 2.5-3.5kg • Aircore samples were collected by spear from 1m sample piles and composited over 4m intervals. Samples for selected holes were collected on a 1m basis by spear from 1m sample piles. Sample weights ranges from around 1-3kg. • The independent laboratory pulverises the entire sample for analysis as described below. • Industry prepared independent standards are inserted approximately 1 in 20 samples. • The independent laboratory then takes the samples which are dried, split, crushed and pulverized prior to analysis as described below. • Sample sizes are considered appropriate for the material sampled. • The samples are considered representative and appropriate for this type of drilling. Diamond core and RC samples are appropriate for use in a resource estimate.
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.).*	• Diamond core diameters are - NQ2 (51mm), HQ3 (61mm), PQ (85mm). • Reverse Circulation (RC) holes were drilled with a 5 1/2-inch bit and face sampling hammer. • Aircore holes were drilled with an 83mm diameter blade bit.

Criteria	JORC Code explanation	Commentary
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.*	• Core recovery is measured for each drilling run by the driller and then checked by the Company geological team during the mark up and logging process. • RC and aircore samples were visually assessed for recovery. • Samples are considered representative with generally good recovery. Deeper RC and aircore holes encountered water, with some intervals having less than optimal recovery and possible contamination. • No sample bias is observed.
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.*	• The entire hole has been geologically logged and core was photographed by Company geologists, with systematic sampling undertaken based on rock type and alteration observed • RC and diamond sample results are appropriate for use in a resource estimation, except where sample recovery is poor. • The aircore results provide a good indication of mineralisation but are not used in resource estimation.
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.*	• Core samples were collected with a diamond drill rig drilling NQ2, HQ3 or PQ diameter core. After logging and photographing, NQ2 drill core was cut in half, with one half sent to the laboratory for assay and the other half retained. HQ and PQ core was quartered, with one quarter sent for assay. Holes were sampled over mineralised intervals to geological boundaries on a nominal 1m basis. • RC sampling was carried out by a cone splitter on the rig cyclone and drill cuttings were sampled on a 1m basis in bedrock and 4m composite basis in cover. • Aircore samples were collected by spear from 1m sample piles and composited over 4m intervals. Samples for selected holes were collected on a 1m basis by spear from 1m sample piles. • Industry prepared independent standards are inserted approximately 1 in 20 samples. • Each sample was dried, split, crushed and pulverised. • Sample sizes are considered appropriate for the material sampled. • The samples are considered representative and appropriate for this type of drilling • Core and RC samples are appropriate for use in a resource estimate. • Aircore samples are generally of good quality and appropriate for delineation of geochemical trends but are not generally used in resource estimates.

Criteria	JORC Code explanation	Commentary
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 samples were submitted to a commercial independent laboratory in Perth, Australia. • For diamond core and RC samples Au was analysed by a 50g charge Fire assay fusion technique with an AAS finish and multi-elements by ICPAES and ICPMS • Aircore samples were analysed for Au using 25g aqua regia extraction with ICPMS finish and multi-elements by ICPAES and ICPMS using aqua regia digestion • The techniques are considered quantitative in nature. • As discussed previously certified reference standards were inserted by the Company and the laboratory also carries out internal standards in individual batches • The standards and duplicates were considered satisfactory
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *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.*	• Sample results have been merged by the company's database consultants. • Results have been uploaded into the company database, checked and verified. • No adjustments have been made to the assay data. • Results are reported on a length weighted basis.
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.*	• Diamond and RC drill hole collar locations are located by DGPS to an accuracy of +/-10cm. • Aircore hole collar locations are located by DGPS to an accuracy of +/-10cm., or by handheld GPS to an accuracy of 3m. • Locations are given in GDA94 zone 50 projection • Diagrams and location table are provided in the report • Topographic control is by detailed airphoto and Differential GPS data.
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.*	• Drill spacing varies from 80m x 40m to 320m x 80m. • All holes have been geologically logged and provide a strong basis for geological control and continuity of mineralisation. • It has not yet been determined if data spacing and distribution of RC and diamond drilling is sufficient to provide support for the results to be used in a resource estimate. • Sample compositing has not been applied except in reporting of drill intercepts, as described in this Table
Orientation of data in relation to	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	• The drilling is believed to be approximately perpendicular to the strike of mineralisation where known and therefore the sampling is considered representative

Criteria	JORC Code explanation	Commentary
geological structure	• *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	of the mineralised zone. • In some cases, drilling is not at right angles to the dip of mineralised structures and as such true widths are less than downhole widths. This is allowed for when geological interpretations are completed.
Sample security	• *The measures taken to ensure sample security.*	• Samples were collected by company personnel and delivered direct to the laboratory via a transport contractor.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• No audits have been completed. Review of QAQC data has been carried out by database consultants and company geologists.

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 license to operate in the area.*	• Drilling occurs on various tenements held by De Grey Mining Ltd or its 100% owned subsidiaries. • The Hemi Prospect is approximately 60km SSW of Port Hedland.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• The tenements have had various levels of previous surface geochemical sampling and wide spaced aircore and RAB drilling by De Grey Mining. Limited previous RC drilling was carried out at the Scooby Prospect. Airborne aeromagnetics/radiometrics has been flown previously.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The mineralisation style is new to the Pilbara region and is interpreted to be hydrothermally emplaced gold mineralisation within intermediate intrusions that have intruded into the older Archaean Mallina basin sediments. •
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*	• Drill hole I information is provided in the report – reference Figure 1 and Appendix 1.

Criteria	JORC Code explanation	Commentary
	explain why this is the case.	
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.*	• No new exploration results are reported. • Intercepts are length weighted averaged. • No maximum cuts have been made. Metallurgical samples have been provided as whole core for this testwork.
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 drill holes are interpreted to be approximately perpendicular to the strike of mineralisation. • Drilling is not always perpendicular to the dip of mineralisation and true widths are less than downhole widths. Estimates of true widths will only be possible when all results are received, and final geological interpretations have been completed.
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.*	• Refer to plans and figures as provided in the report.
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.*	• No new exploration results are being reported. • All drill hole locations used in the metallurgical pilot testwork are shown within Figure 1 and Appendix 1. of this report. • The report is considered balanced and provided in context.
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.*	• Drilling is Resource drilling to 40m x 40m has been completed at Brolga. • Metallurgical test results are provided in the report.
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.*	• Follow up aircore drilling will be undertaken to test for strike extensions to mineralisation. • Programs of follow up RC and diamond drilling aimed at extending resources at depth and laterally are underway. • Metallurgical testwork is continuing across Mallina Gold Project zones including the Brolga, Diucon, Eagle and Falcon deposits