

ASX: DEG

ASX ANNOUNCEMENT 16 February 2021

Further metallurgical testwork confirms high gold recoveries at the Mallina Gold Project

Highlights:

- Gravity testwork on three composite samples from Brolga achieved gold recoveries of 12.4%, 27.3% and 12.1%. Gravity testwork will continue on samples from Aquila, Crow and Falcon.
- Testwork assessing three separate potential oxidation processes; pressure oxidation (POX), Albion® and biological oxidation (BIOX®) achieved recoveries respectively of 97%, 98% and 94% on composite samples from Brolga. Testwork utilising the three oxidation processes will continue this quarter on samples from Aquila, Crow and Falcon.
- Overall gold recoveries of 95% have been achieved on samples from Brolga using a flowsheet combining gravity, flotation/oxidation and CIL in initial testwork to date.
- Flotation recoveries into gold rich concentrates were achieved at mass pulls of approximately 7.5%. This will lead to an oxidation circuit being approximately 15 times smaller than the frontend comminution and flotation circuits.
- A high-level trade-off study into the three potential oxidation processes of POX, Albion® and BIOX® has been conducted assessing the implications for capital and operating costs, commissioning, operability and metallurgical recoveries. Subject to further testwork, preferred oxidation process routes will be carried forward into further engineering studies.
- Comminution testwork on Brolga and Aquila deposit samples demonstrate mineralisation varies between medium to hard rock. Comminution testwork will be conducted on Crow and Falcon samples this quarter.
- A trade-off study considering a range of potential comminution circuits has been conducted considering the capital and operating costs, operability, flexibility and comminution indices. Further details provided herein.

De Grey Managing Director, Glenn Jardine, commented:

"The results from our ongoing metallurgical testwork program continue to give us confidence in the multiple pathways we have to achieve high gold recoveries from Hemi and the regional deposits at Mallina. Each of the potential oxidation processes delivered high recoveries, with POX and Albion® the standouts respectively at 97% and 98%. Further testwork and trade off studies underway will enable us to optimise the various aspects of our metallurgical program in terms of capital, operating costs, recoveries and operability."

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De Grey Mining Limited (ASX: DEG, "De Grey", "Company") is pleased to report positive results from the metallurgical testwork program at its Hemi and regional deposits, located approximately 60km south of Port Hedland in Western Australia.

The Company is undertaking a comprehensive metallurgical testwork program across each of the mineralised zones at Hemi (Brolga, Aquila, Crow and Falcon) and the regional deposits of Mallina and Withnell. The other main regional deposits of Toweranna and Wingina are free milling and will be able to be treated through a conventional CIL circuit.

Gravity Testwork

Recovery of free gold through a gravity process using a Knelson gravity concentrator was tested on three composite samples of Brolga mineralisation. The samples returned gravity recovery results of 12.4%, 27.3% and 12.1% as shown in Table 1.

These recoveries may not be representative of all mineralised zones at Hemi and gravity testwork will continue on composite samples from Brolga, Aquila, Crow and Falcon. However, the potential to achieve a meaningful level (e.g. 10%) of gravity gold recovery without the need for either CIL or flotation/oxidation processes is positive.

Composite	Head Grade (g/t Au)	Gravity Gold Recovery (%)
MC2	3.18	12.4
MC3	2.61	27.3
MC4	2.68	12.1

Table 1: Brolga composite sample gravity gold recovery

Oxidation Amenability Testwork and Initial Trade-off Study

Oxidation amenability testwork has been conducted on five composites from Brolga and one composite from Withnell and Mallina. The oxidation processes tested were pressure oxidation (POX), Albion® and biological oxidation (BIOX®). Testwork to date on samples from Brolga and the Regional deposits has shown relatively minor differences in the metallurgical recoveries achieved by each oxidation process. Testing of all three processes will be extended to samples from Aquila, Crow and Falcon zones at Hemi. Simplified process flowsheets incorporating each of the potential oxidation routes are shown in Figures 1 to 3 below.

Brolga

POX testwork was previously reported (refer to ASX announcement 9 July 2020) for Brolga composite MC4 which achieved an overall recovery of 96.1% at a grind size of p80 of 75 micron. Recovery through the POX step for MC4 was 99%.

Testwork was subsequently conducted on four other Brolga composites achieving overall recoveries of between 91.5% and 92.9% gold recovery at a grind size of p80 of 106 micron. Results are shown in Table 2. Further work will be undertaken to optimise grind size and recovery.

One Brolga composite was separately tested for amenability using the Albion® and BIOX® oxidation processes. Overall recovery using Albion® was 95.3% and using BIOX® 91.7%. Results are shown respectively for Albion® and BIOX® in Tables 3 and 4.

Composite MC1 is a sample of transition mineralisation and composites MC2, MC3 and MC4 are samples of primary mineralisation. Recoveries through flotation/oxidation and CIL circuits ranged from low to mid-90's and excluded the impact of gravity recovery. As previously reported, the



flotation/oxidation recovery of the transition sample MC1 was lower than MC2, MC3 and MC4 as anticipated. This was offset by higher flotation tailings recovery through CIL for MC1. These results are positive for transitional and primary mineralisation at Hemi.

Flotation recoveries into gold rich concentrates were achieved at mass pulls of approximately 7.5%. This will lead to an oxidation circuit being approximately 15 times smaller than the front-end comminution and flotation circuits.

Table 2: Brolga POX Testwork

	Gold Recovery (%)						
Composite	Flotation	ΡΟΧ	Flotation Concentrate x POX	Flotation Tail x CIL	Overall*		
MC1	83.0	96.6	80.2	12.3	92.5		
MC2	93.0	95.7	86.2	6.7	92.9		
MC3	92.2	96.2	86.7	4.8	91.5		
MC4#	92.5	99.0	91.6	4.5	96.1		
Combined MC2, MC3, MC4	88.9	96.9	86.2	7.1	93.5		

#previously announced 9 July 2020

Table 3: Brolga Albion® Testwork

	Gold Recovery (%)				
Composite	Flotation	Albion®	Flotation Concentrate x Albion®	Flotation Tail x CIL	Overall*
Combined MC2, MC3, MC4	90.9	98.0	89.1	6.2	95.3

Table 4: Brolga BIOX® Testwork

				Gold Recovery (%)		
)	Composite	Flotation	BIOX®	Flotation Concentrate x BIOX®	Flotation Tail x CIL	Overall*
)	Combined MC2, MC3, MC4	90.9	94	85.5	6.2	91.7

*excludes impact of gravity gold recovery

It is encouraging that all three processes demonstrate high gold recoveries on a wide set of samples from Brolga. The remaining zones at Hemi will also be tested using all three oxidation processes.



A high level, initial trade-off study considering the three potential oxidation processes has been conducted by GR Engineering Services. The study considered the capital and operating costs, commissioning, operational simplicity and metallurgical recoveries of the three oxidation process options.

POX and BIOX are well known technologies used at gold projects throughout the world. The Albion® process has also been identified as having potential application at Hemi with benefits including:

- Capital and operating costs
- Flexibility to cope with changes in ore type and sulphide content
- Circuit and operational simplicity
- Straightforward start-up and shutdown
- Atmospheric leaching
- Low pressure oxygen plant

The Albion® process is currently in use at large base metals refineries in Spain and Germany and at a sulphide gold mine and plant in Armenia.

However, metallurgical testwork and studies remain at an early stage and POX, Albion® and BIOX® oxidation processes all remain under active consideration for use at Hemi.

As noted, further oxidation testwork will be conducted on each of the zones at Hemi before one or more preferred oxidation process routes are selected to be carried forward into optimisation metallurgical testwork and engineering studies.



Figure 1: Simplified process flowsheet incorporating pressure oxidation (POX)

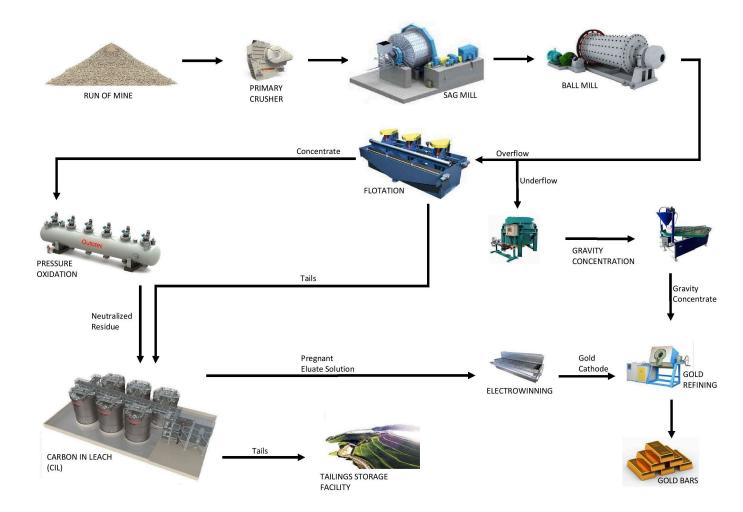




Figure 2: Simplified process flowsheet incorporating Albion®

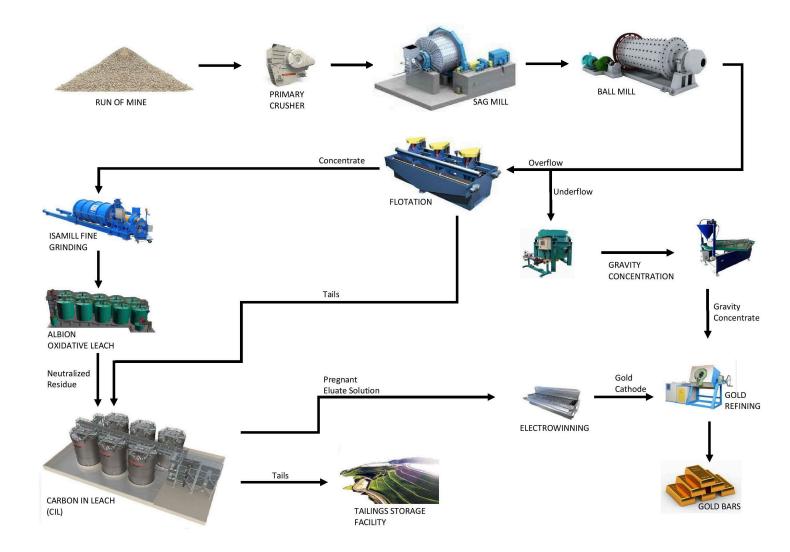
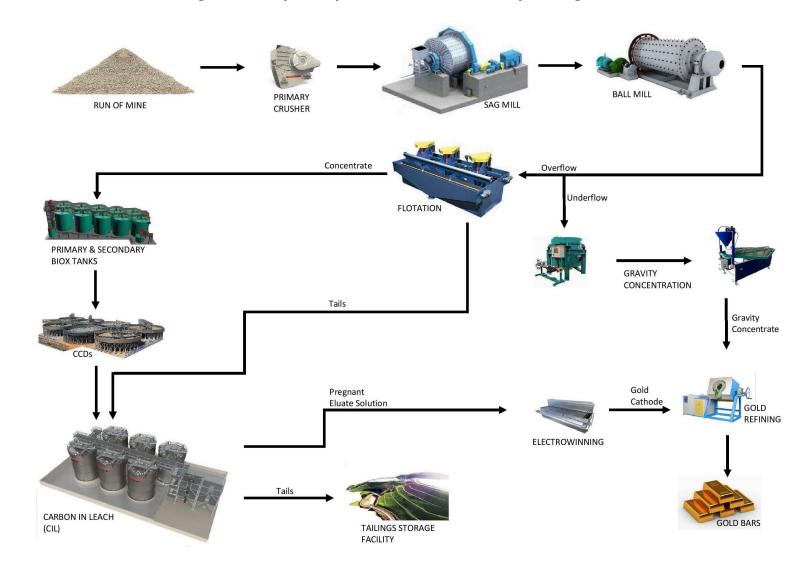




Figure 3: Simplified process flowsheet incorporating BIOX®





Regional Deposits

Oxidation amenability testwork was conducted on concentrates generated from flotation testwork conducted on separate bulk samples from regional deposits of Mallina and Withnell. Each of the POX, Albion® and BIOX® processes were tested. Results are shown in Tables 5, 6 and 7.

The regional deposits responded well to these early sighter tests using each of the oxidation processes. Optimisation testwork is yet to be undertaken.

Table 5: Regional Deposit POX Testwork

		Gold Recovery (%)			
Deposit	Flotation	РОХ	Flotation Concentrate x POX	Flotation Tail x CIL	Overall*
Withnell	93.5	91.5	85.6	2.6	88.2
Mallina	94.0	97.0	91.2	1.8	92.9

Table 6: Regional Deposit Albion® Testwork

Gold Recovery (%)					
Deposit	Flotation	Albion®	Flotation Concentrate x Albion®	Flotation Tail x CIL	Overall*
Withnell	93.5	94.6	88.5	2.6	91.1
Mallina	94.0	94.4	88.7	1.8	90.5

Table 7: Regional Deposit BIOX® Testwork

Gold Recovery (%)					
Deposit	Flotation	BIOX®	Flotation Concentrate x BIOX®	Flotation Tail x CIL	Overall*
Withnell	93.5	94.1	88.0	2.6	90.6
Mallina	94.0	96.8	91.0	1.7	92.7

*excludes impact of gravity gold recovery

Comminution Trade-off Study

A high-level initial trade-off study has been conducted by GR Engineering Services considering options for the comminution circuit. The study has been based on comminution testwork conducted on samples from Brolga and Aquila at Hemi and Regional deposits. The four comminution circuit options considered were:

- Open circuit primary crushing followed by single stage SAG mill
- Open circuit primary crushing followed by a SAG mill with pebble crusher and ball mill (SABC)
- Closed circuit secondary crushing followed by high pressure grinding roll and ball mill and
- Closed circuit tertiary crushing followed by a ball mill

The study identified the SABC circuit as having potential benefits including:

- Flexibility to cope with changes in ore type
- Circuit simplicity
- Ramp up period
- Capital cost

Comminution circuit selection will be subject to ongoing review with further comminution testwork on other zones at Hemi and as plant throughput rates become clearer.



This announcement has been authorised for release by the De Grey Board. For further information, please contact:

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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 in the financial year 2020/21 that relates to Hemi Prospect include:

- High gold recoveries achieved at Hemi, 9 July 2020
- Further extensions confirmed at Brolga, 10 July 2020
- Hemi scale grows with Aquila new extensions, 22 July 2020
- Strong results boost Aquila westerly extension, 5 August 2020
- Aquila mineralisation extends to 400 vertical metres, New lode identified at Crow
- Brolga mineralisation extends north towards Aquila, northeast towards Scooby, 21 August
- Exceptional high grade gold intercept at Crow, 27 August 2020
- Falcon -Major new gold discovery at Hemi, 2 September 2020
- Falcon Drilling Update, 15 September 2020
- Strong Brolga infill and extensions, 25 September 2020.
- Encouraging Extensional and Infill Drilling Results at Aquila and Crow, 7 October 2020
- Thick High Grade near surface hits continue at Falcon, 12 October 2020
- Further positive results extend Aquila and Crow, 29 October 2020
- High-grade extensions at Crow and Aquila, 30 November 2020
- Exploration Update, 4 December 2020
- Strong infill and extensional results at Brolga, 21 December 2020
- Consistent extensive gold endowment at Falcon, 13 January 2021
- Diucon and Eagle: Two new intrusion hosted gold discoveries at Hemi, 29 January 2021

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. 	in an industry standard manner
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.).	(51mm), HQ3 (61mm), PQ (85mm).

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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	 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 subsampling 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.

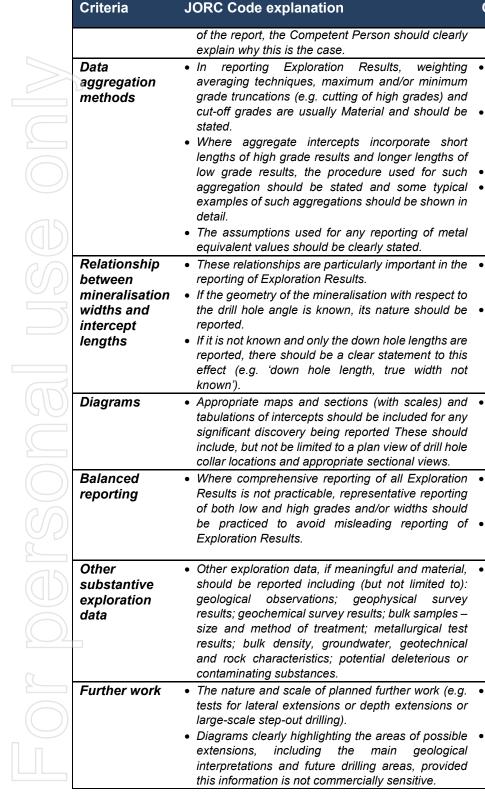


Criteria	JORC Code explanation	Commentary
Quality of assay data and laboratory tests	 The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total. For geophysical tools, spectrometers, handheld XRF instruments, etc., 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 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. 	
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 an to the dip of mineralised structures an such true widths are less than down widths. This is allowed for when geolog interpretations are completed.
Sample security	• The measures taken to ensure sample security.	 Samples were collected by comp personnel and delivered direct to 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. Revie QAQC data has been carried out database consultants and comp mechanists
		geologists.
Criteria listed ir	orting of Exploration Results In the preceding section also apply to this section JORC Code explanation)
	• • •) Commentary
Criteria listed in Criteria	n the preceding section also apply to this section JORC Code explanation • Type, reference name/number, location and) Commentary Drilling occurs on various tenements by De Grey Mining Ltd or its 100% ov subsidiaries. The Hemi Prospect is approximation

	 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.
Explora done b parties	
Geolog	 Deposit type, geological setting and style of mineralisation. The mineralisation style is not well understood to date but is thought to be hydrothermally emplaced gold mineralisation within structures and intrusions. Host rocks comprise igneous rocks intruding Mallina Basin metasediments. Style is similar to some other Western Australian gold deposits.
Drill ho Inform	• A summary of all information material to the • Drill hole location and directional



Commentary

maximum.

of mineralisation.

report.

Follow

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Results are reported to a minimum cutoff

grade of 0.5g/t gold with an internal

Higher grade intervals included in the

above intercepts are reported at a 3g/t Au lower cut with an internal dilution of 2m

Intercepts are length weighted averaged.

The drill holes are interpreted to be

approximately perpendicular to the strike

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

Plans and sections are provided in the

All drill collar locations are shown in figures and all significant results are

The report is considered balanced and

Drilling is currently widely spaced and

further details will be reported in future

drilling

will

he

releases when data is available.

aircore

depth and laterally are underway.

undertaken to test for strike extensions to

Programs of follow up RC and diamond

drilling aimed at extending resources at

provided in this report.

provided in context.

up

mineralisation.

interpretations have been completed.

No maximum cuts have been made.

dilution of 4m maximum.