

## Spec. buy

Current Price \$1.47  
Valuation \$1.60

Code: DEG  
Sector: Materials

\* All figures in AUD unless stated otherwise

Shares on Issue (M):	1,288
Market Cap (\$M):	1,893
Net cash (\$M March 2021)	87
Enterprise value (\$M):	1,778
52 wk High/Low (ps):	\$1.61 \$0.34
12m av. daily vol. (Mshs):	8.30

### Key Metrics

	FY24e	FY25e	FY26e
P/E (x)	11.7	6.1	6.2
EV/EBITDA (x)	7.9	3.9	3.9

### Financials:

	FY24e	FY25e	FY26e
Revenue (\$M)	447	895	895
EBIT (\$M)	205	390	386
NPAT (A\$M)	161	309	307
Net assets (\$M)	500	805	1,087
Op CF (\$M)	203	377	377

### Per share data:

	FY24e	FY25e	FY26e
EPS (c)	12.5	24.0	23.8
Dividend (cps)	0.0	0.0	0.0
Yield (%)	-	-	-
CF/Share (cps)	15.8	29.3	29.3
Prod (koz Au)	191.7	383.4	383.4

### Share Price Graph and trading volumes (msh)



Please refer to important disclosures at end of the report (from page 10)

Wednesday, 5 May 2021

## De Grey Mining Ltd (DEG)

### Sizing up Hemi

John Macdonald

### Quick Read

Discoveries at Diucon and Eagle, and a consequent lift in throughput presumptions, add 30% to our valuation. Exploration maintains momentum.

### Main points

**Hemi drilling:** Since our March 2021 report De Grey reported assays from about 120 RC and diamond holes at Falcon, Brolga, Crow, McLeod, Diucon and Eagle, bringing the tally at Hemi to about 500 reported RC and diamond holes (137,000 drill metres) in just over 12 months since discovery.

Drilling at Eagle and Diucon has uncovered new mineralised zones similar to the other intrusive Hemi deposits.

Intercepts include

- o 36m @ 6.9g/t from 40m HERC470 Eagle
- o 52m @ 1.1g/t from 40m HERC462 Eagle
- o 35m @ 2.0g/t from 83m HERC458 Diucon
- o 20m @ 4.9g/t from 201m HERC460 Diucon
- o 14m @ 21.2g/t from 50m, 46m @ 1.7g/t from 203m ending in mineralisation HERC477 Diucon.
- o 19.0m @ 4.4g/t from 194m and 17m @ 5.7g/t from 282m ending in mineralisation HERC476 Diucon.

A total of 24 holes have now been reported from Diucon and 19 holes from Eagle. Our initial 'order of magnitude' inventory estimate from this drill data is to add 1.2Mozs in potential to our previous 3.2-4.2Moz stab for the other Hemi deposits, taking our total to 4.4-5.4Mozs. Drilling is continuing and our figures will change as more results come in.

The discoveries of Diucon and Eagle prompt a change in our valuation, based on a higher throughput assumption (8.2Mtpa and 380kozspa) and a shift to \$750M in pre-production capex. All assumptions are still entirely ours and not backed by any studies. With resource estimates due within 3 months, we expect De Grey to start narrowing down the development parameters later this calendar year.

### Recommendation

We change our valuation from 122 to 160cps due to a lift in inventory and throughput projections. Eagle and Diucon are 2-4km north-west of Brolga, suggesting the intense mineralising event that created Hemi was not localised. Antwerp and other regional intrusive prospects light up as a result. We recommend De Grey as a speculative buy for access to the Mallina exploration program, which has plenty of momentum going in its second year.

## De Grey Mining

## Equities Research

Analyst: John Macdonald

Recommendation **Speculative buy**  
 Current Price **\$1.47**  
 Valuation **\$1.60**

Sector **Metals & Mining**  
 Issued Capital (Mshs) **1,288**  
 Market Cap (M) **\$1,893**  
 Wednesday, 5 May 2021

Profit & loss (\$M) 30 June	2021E	2022E	2023E	2024E
Sales Revenue	0	0	0	447
+ Other income/forwards	0	0	0	0
- Operating costs	0	0	0	-194
- Royalties	0	0	0	-18
- Corporate & administration	-10	-10	-10	-10
<b>Total Costs</b>	<b>-10</b>	<b>-10</b>	<b>-10</b>	<b>-222</b>
<b>EBITDA</b>	<b>-10</b>	<b>-10</b>	<b>-10</b>	<b>226</b>
- margin	0%	0%	0%	50%
- D&A	0	0	0	-21
<b>EBIT</b>	<b>-10</b>	<b>-10</b>	<b>-10</b>	<b>205</b>
+ Finance Income/Expense	0	0	0	-3
<b>PBT</b>	<b>-10</b>	<b>-10</b>	<b>-10</b>	<b>201</b>
- Tax expense	2	1	2	-40
- Impairments and other				
<b>NPAT</b>	<b>-8</b>	<b>-9</b>	<b>-8</b>	<b>161</b>

Cash flow (\$M)	2021E	2022E	2023E	2024E
+ Revenue	0	0	0	447
- Cash costs	-10	-10	-10	-222
- Forwards	0	0	0	0
- Tax payments		1	0	-19
+ Interest & other	0	0	0	-3
<b>Operating activities</b>	<b>-10</b>	<b>-10</b>	<b>-10</b>	<b>203</b>
- Property, plant, mine devel.	-15	-41	-301	-404
- Exploration	-32	-32	-32	-20
<b>Investment activities</b>	<b>-47</b>	<b>-73</b>	<b>-333</b>	<b>-424</b>
+ Borrowings	0	0	100	300
- Dividends	0	0	0	0
+ Equity	103	1	300	0
<b>Financing activities</b>	<b>103</b>	<b>1</b>	<b>400</b>	<b>300</b>
<b>Cash change</b>	<b>46</b>	<b>-81</b>	<b>57</b>	<b>79</b>

Balance sheet	2021E	2022E	2023E	2024E
<b>Cash &amp; bullion</b>	<b>74</b>	<b>-7</b>	<b>50</b>	<b>129</b>
Other Current Assets	0	0	0	0
<b>Total current assets</b>	<b>74</b>	<b>-7</b>	<b>50</b>	<b>129</b>
Property, plant & equip.	65	106	407	791
Investments/other	0	0	0	0
<b>Total non-curr. assets</b>	<b>65</b>	<b>106</b>	<b>407</b>	<b>791</b>
<b>Total assets</b>	<b>139</b>	<b>99</b>	<b>457</b>	<b>919</b>
Trade payables	5	10	5	57
Short term borrowings	0	0	0	120
Other	13	10	80	82
<b>Total curr. liabilities</b>	<b>18</b>	<b>21</b>	<b>86</b>	<b>140</b>
Long term borrowings	0	0	100	280
Other	0	0	0	0
<b>Total non-curr. liabil.</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>280</b>
<b>Total liabilities</b>	<b>18</b>	<b>21</b>	<b>186</b>	<b>420</b>
<b>Net assets</b>	<b>121</b>	<b>78</b>	<b>271</b>	<b>500</b>

Shares	2021E	2022E	2023E	2024E
New shs issued/exerciseable	118	4	201	0
Average issue price	0.88	0.35	1.50	0.00
Ordinary shares - end	1291	1294	1495	1495
Diluted shares - end	1295	1295	1495	1495

Financial ratios		2024E	2025E	2026E	2027E
GCFPS	Ac	15.8	29.3	29.3	29.2
CFR	X	9.3	5.0	5.0	5.0
EPS	Ac	12.5	24.0	23.8	23.7
PER	X	11.7	6.1	6.2	6.2
DPS	Ac	0.0	0.0	0.0	0.1
Yield	%	0.0%	0.0%	0.0%	4.1%
Interest cover	x	63.0	109.8	164.3	332.6
ROCE	%	26%	53%	58%	63%
ROE	%	40%	48%	35%	33%
Gearing	%	56%	20%	4%	3%

Operations summary	2024E	2025E	2026E	2027E
<b>Pilbara project</b>				
Ore processed (Mt)	4.1	8.2	8.2	8.2
Head grade (g/t)	1.51	1.51	1.51	1.51
Met. recovery	0.96	0.96	0.96	0.96
Gold prodn (koz)	192	383	383	383
Cost per milled tonne (A\$/t)	47	48	48	48
Cash costs pre royalty (A\$/oz)	1104	1110	1117	1124
Sustaining capital (\$M)	0	0	0	0
All in sustaining costs (A\$/oz)	1198	1203	1210	1217
Growth capital (\$M)	404	8	9	8
CAIC (A\$/oz)	3488	1435	1435	1436

Price assumptions	2024E	2025E	2026E	2027E
AUDUSD	0.75	0.75	0.75	0.75
Gold	1750	1750	1750	1750

Valuation summary	A\$M	A\$/sh
Mallina project 7% real after tax DR	1665	1.29
Exploration, all sites	416	0.32
Corporate overheads	-52	-0.04
Cash	87	0.07
Debt	0	0.00
Tax benefit	15	0.01
Hedging	0	0.00
Option/equity dilution	-64	-0.05
<b>NAV</b>	<b>2,067</b>	<b>1.60</b>

Directors, management	
Simon Lill	Non-Executive Chairman
Glenn Jardine	Managing Director
Andy Beckwith	Executive Director
Peter Hood	Non-Executive Director
Ed Eshuys	Non-Executive Director
Bruce Parncutt	Non-Executive Director

Top shareholders	M shs	%
DGO Gold Limited	193.0	15.0
Van Eck	65.0	5.0
Northwest Nonferrous	51.0	4.0

Resources June '20	Mt	g/t Au	Kozs	Mkt cap/oz
<b>Pilbara gold project</b>	<b>37.4</b>	<b>1.80</b>	<b>2,163</b>	<b>875</b>
Measured & indicated	18.9	1.70	1,033	
Inferred	18.5	1.90	1,130	

Argonaut model Dec '20	Mt	g/t Au	Kozs	
<b>TOTAL INVENTORY</b>	<b>98.0</b>	<b>1.52</b>	<b>4,785</b>	<b>396</b>
Hemi open pit	80.0	1.50	3,859	
Satellite open pit	18.0	1.60	926	

## Mallina gold project – recent developments

### 4th May.

De Grey reports assays from 5 holes at Diucon and 2 holes at Eagle, within the Mallina Project.

Intercepts include;

- o 14m @ 21.2g/t from 50m, 46m @ 1.7g/t from 203m ending in mineralisation HERC477 Diucon.
- o 19.0m @ 4.4g/t from 194m and 17m @ 5.7g/t from 282m ending in mineralisation HERC476 Diucon.
- o 18m @ 2.2g/t from 126m HERC475 Diucon.
- o 61m @ 2.6g/t from 116m HERC480 Eagle.

A total of 24 holes have now been reported from Diucon. Our initial 'order of magnitude' inventory estimate from this drill data is 700koz, reliant mainly on two 80m spaced sections, which are open at depth beneath 200m from surface. This is a low confidence estimate.

A total of 19 holes have been reported from Eagle. Our initial 'order of magnitude' inventory is 500koz, most of which relies on 2 intercepts on the same section, spaced about 80m apart. Section spacing is 160m. Also low confidence.

Argonaut's total order of magnitude estimate for Hemi increases to 4.4-5.4Mozs with the inclusion of Diucon and Eagle (3.2-4.2Mozs previously). Drilling is continuing.

### 23rd April

De Grey reports assays from 59 holes at Crow/Aquila

Focus on infill drilling in preparation for the maiden resource estimate, expected mid-year.

Best results include:

- o 25m @ 12.1g/t Au from 164m in the McLeod lode at Crow
- o 48.7m @ 2.8g/t Au from 195m in the McLeod lode at Crow
- o 18m @ 13.5g/t Au from 179m in the McLeod lode at Crow
- o 11m @ 10.5g/t Au from 51m at Aquila
- o 44m @ 2.0g/t Au from 48m at Aquila

The McLeod lode at Crow reports some of the highest-grade intercepts at Hemi, and Aquila continues to demonstrate consistency, with higher grades observed near-surface.

Comment: Predominantly infill drilling in-line with previous results, with several hints of incremental exploration upside potential. HERC544 intersected a new mineralised lode in the footwall to Crow, and HERC664 is unconstrained to the east.

Seven rigs are drilling at Hemi, targeting extensions at Diucon/Eagle, south of Falcon, south of Brolga, Scooby, and depth extensions across the project.

### 15th April

De Grey reports assay from 7 RC holes at Hemi (Mallina), targeting the Diucon and Eagle prospects.

Intercepts include;

- o 36m @ 6.9g/t from 40m HERC470 Eagle
- o 52m @ 1.1g/t from 40m HERC462 Eagle
- o 35m @ 2.0g/t from 83m HERC458 Diucon
- o 20m @ 4.9g/t from 201m HERC460 Diucon

Drill definition of each of Diucon and Eagle is at an early stage, with fences spaced 160m apart.

Mineralisation and alteration are similar to the other intrusive Hemi deposits.

Eagle is at the north-west edge of the Hemi complex and HERC470 is the only hole drilled so far on the north western most line.

Comment: Such a good intercept (36m at 6.9 g/t) so far from the other Hemi deposits – more evidence that the intense mineralising event that created Hemi was not localised. Lights up Antwerp and other regional intrusive prospects.

#### 13th April

De Grey reports assays from 18 holes at Brolga

Best results were returned for 40 by 40 m infill drilling completed on section 30680E, results include;

- o 144m @ 2.3g/t Au from 37m in HERC571
- o 127m @ 2.1g/t Au from 34m in HERC570
- o 108m @ 2.2g/t Au from 65m in HERC572

Other results were reported for the north-eastern and south-western extents of the main Brolga deposit, these include;

- o 34m @ 1.6g/t Au from 192m in HERC670
- o 16m @ 2.9g/t Au from 136m in HERC578

Comment; Section 3068E results are supportive of previously reported results either side, providing confidence to DEG in the Brolga mineralised system, the northern and southern drilling is lower tenor, and to the south mineralisation is also getting deeper.

#### 8th April

De Grey reports assays from 16 holes at Falcon, and a visual description from one step out hole, also at Falcon.

The visual description of HERC580D, collared at the northern end of Falcon, is 90m of 7% sulphides in intrusive rocks from 492m down hole.

Sulphides correlate with gold mineralisation at Hemi. Assays are pending.

A 40m northerly step out line following the Falcon near surface mineralisation extended the zone with intersections of

- o 32m @ 1.8g/t Au from 63m in HERC653
- o 72m @ 1.6g/t Au from 108m in HERC654

Infill intercepts include;

- o 45m @ 1.5g/t Au from 175m in HERC420D
- o 41m @ 2.2g/t Au from 61m in HERC558
- o 25m @ 1.2g/t Au from 148m in HERC560

Comment; Assays from the 90m intercept in HERC580D will help throw light on Hemi's depth potential. Previous drilling has not located zones like those encountered in the top 250m from surface.

#### 16th March

De Grey reports assays from 15 RC and diamond holes drilled at Brolga

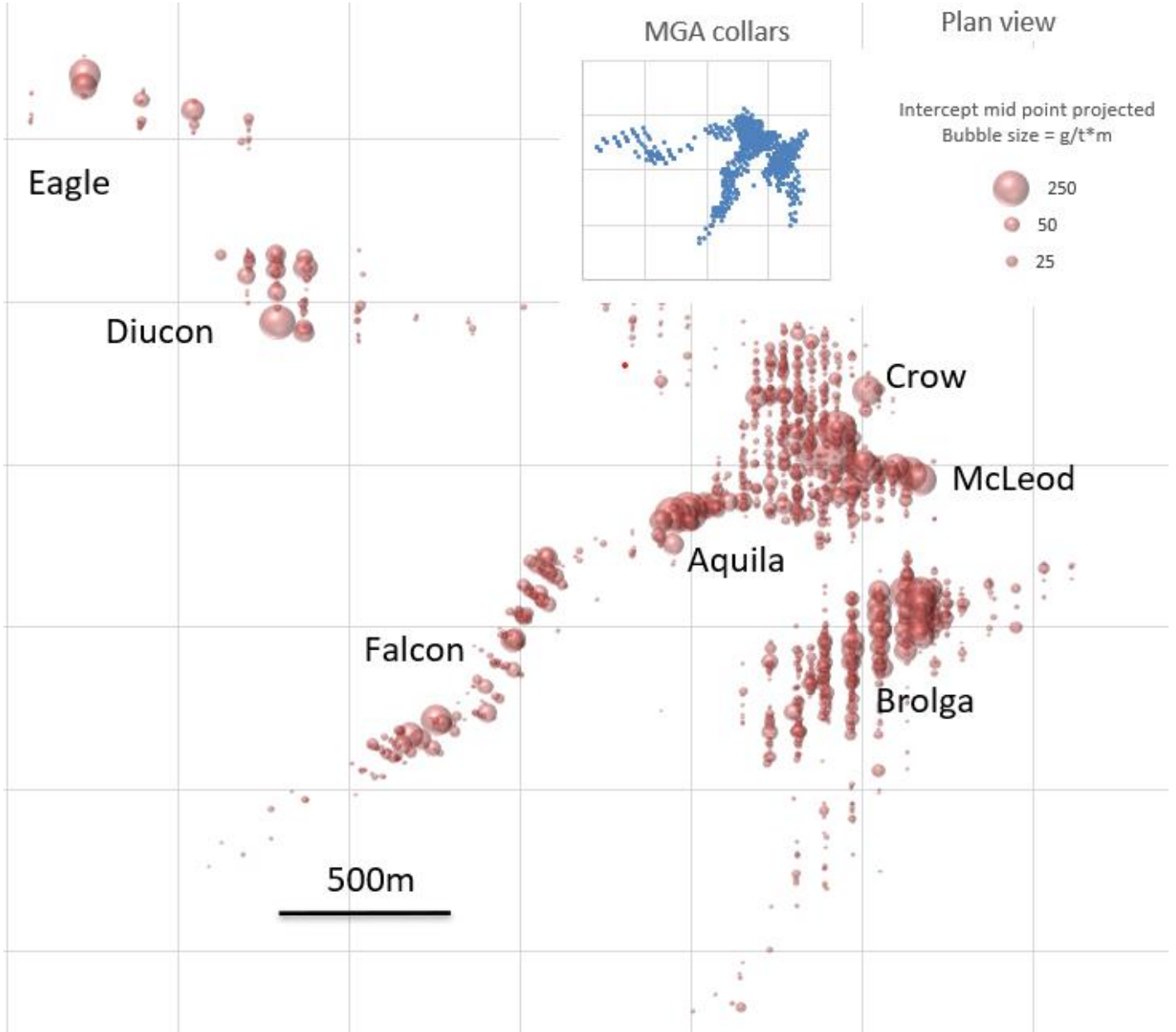
A mix of infill and extension holes concentrated around the west end of Brolga. Intercepts include;

- o 256m at 0.9 g/t from 287m down hole HERC392D
- o 57m at 1.5 g/t from 91m HERC399
- o 40m at 1.5 g/t from 168m
- o 116m at 0.8m g/t from 144m

Results show the Brolga intrusion is open and mineralised down plunge to the west, with some elevated internal intervals.

Drilling is continuing to probe the southern western and depth extents of Brolga.

Fig. 1: Hemi plan view with drill intercept representation, May 2021. Intercepts projected to surface with bubble size proportionate to intercept  $g/t \cdot m$ .



Source: De Grey ASX announcements, Argonaut research



## Argonaut inventory assumption

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De Grey is drilling at Mallina with its first estimate of ore resources due mid year. Based on published drill data, which are only a summary of the Company's database, Argonaut estimates 4.4-5.4Mozs as a ball park inventory for the Hemi deposits. For our valuation purposes, conversion to ore reserves is assumed to be 75% of the inventory.

As of May 4 2021, De Grey had reported assays from about 500 holes (137,000m) drilled at the Brolga, Aquila, Crow, Falcon, Diucon and Eagle zones (Hemi). Excepting Eagle, most of the drilling has been completed to 80m by 40m spacing or 40 by 40m spacing, with a several holes penetrating to 600m vertical depth. Infill and extensional drilling are ongoing with the aim of estimating a resource in mid-2021.

Sufficient data is available for Argonaut to estimate the scale of the inventory uncovered so far at Hemi. Based on assay and collar data we estimate a work in progress inventory of 4.4-5.4 million ounces in the top 300m from surface. Our estimate lacks downhole surveys, density details, geological control, and the complete data set, hence the broad range. Up to 30% of the inventory could be oxide and transitional material. Our presumptions will be revised as more data becomes available.

Prior to the discoveries at Hemi, De Grey estimated total measured, indicated and inferred Mallina gold project resources at 37Mt at 1.8 g/t (2.2Mozs), within 12 separate deposits ranging 10-60km from Hemi. The measured and indicated pit component of resources is 19Mt at 1.6 g/t (1.0Mozs), divided 46% oxide, 54% sulphide. Most of the measured and indicated pit resources are estimated for Withnell (240koz), Toweranna (293koz), and Wingina (216koz). Assuming not all of the measured and indicated resources will convert to reserves, and some of the inferred resources will contribute with further drilling, we add 1Mozs to our model for satellite sources, with the extra trucking costs included.

## Presuming development

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De Grey and its predecessors have been operating in the belt for many years. De Grey's March 2020 resource estimate includes 12 separate deposits found over 120km of east west geology. Resources are designated oxide and fresh. In February 2019, prior to Hemi's discovery, GR Engineering designed and costed a 2Mtpa plant for the Mallina gold project, incorporating flotation, pressure oxidation (POX), and CIL processing (the costings are not available). The discoveries at Hemi have since lifted the potential scale of the development proposal. The basic process flowsheet remains under consideration for the Mallina project including Hemi.

Subject to further tests of representative samples, De Grey has indicated 10% mass pull for 92% flotation recovery (96% total recovery). Average 10% mass pull suggests a pressure oxidation circuit treating 7-10% of the crushed and milled ore, allowing for a proportion of direct CIL feed. We presume 98Mt at 1.5 g/t (4.8Mozs) as a starting point mine inventory, an 8Mtpa ore treatment operation, and 550ktpa of concentrate destined for pressure oxidation.

Without many relevant yardsticks, we assume capital costs of A\$600-900M (A\$750M mid-point) for an 8Mtpa Mallina project operation. Operating costs will be higher than for equivalent straight CIL, but not necessarily by much. We assume \$25/t ore processing costs.

## Pressure oxidation (POX), Albion<sup>(R)</sup>

While more capital intensive than alternatives, POX technology is often the most efficient process solution for refractory gold ores, and the most environmentally acceptable.

In pressure oxidation circuits, the sulphides in which the gold is locked are oxidised in a reaction chamber (autoclave). The autoclave typically operates at +190°C and 2,000 kPa with a retention time of 30 – 60 minutes. POX circuits can operate on whole ore and/or flotation concentrates. Better than 90% gold recovery to a flotation concentrate usually justifies a float circuit rather than whole ore POX. The higher the recovery of gold to concentrate and the smaller the mass pull, the smaller the required pressure oxidation plant and throughput rate. For concentrate POX, autogenous autoclave reactions reduce energy needs. Acid produced by sulphide oxidation must be neutralised with lime or limestone, at a cost. Tailings disposal design must negate the potential for acid generation and arsenic mobility.

De Grey is investigating the application of Albion<sup>®</sup> technology to Mallina ores. Albion is a proprietary system in which Isa milling to a relatively fine grind allows preferential oxidation of sulphide species, potentially reducing the energy input and neutralisation requirements at Mallina.

## De Grey metallurgical test-work

De Grey's tests of fresh Broilga material reported in July 2020 and February 2021 found that flotation recovered over 90% of the gold into a concentrate containing 7.5-9.4% by weight of the feed, and that cyanidation of the float tail recovered 60-67% of the gold in the tails. While tests at this stage are preliminary, Argonaut presumes an outcome process design including flotation-pressure oxidation, and cyanidation of both the concentrate and the concentrate tails, and +90% total recovery. Prior to the discoveries at Hemi, De Grey was considering 50-100ktpa POX with Withnell sulphide ore as base load feed (90% total recovery, 9% mass pull). Withnell is 30km from Hemi and will now form a satellite proposal to Hemi.

Hemi has significant oxide and transition components amenable to direct cyanidation. Depth of oxidation is typically 80-100m, suggesting up to 30-40% of mineralised material discovered so far at Hemi could be direct CIL feed rather than POX. Mt Berghaus and Wingina (10-20km from Hemi) have estimated M&I oxide resources of 240koz (1.7g/t). Withnell has an oxide component of 45koz, M&I. Mallina (45km from Hemi) has 30koz oxide M&I resources (1.3 g/t). Toweranna's 290koz M&I (4.3Mt at 2.1 g/t Au open pit, 60km from Hemi) was assessed in mid-2019 as free milling. Based on the prevalence of oxide and free milling ores throughout the project we assume 25% of the mine inventory is direct CIL feed.

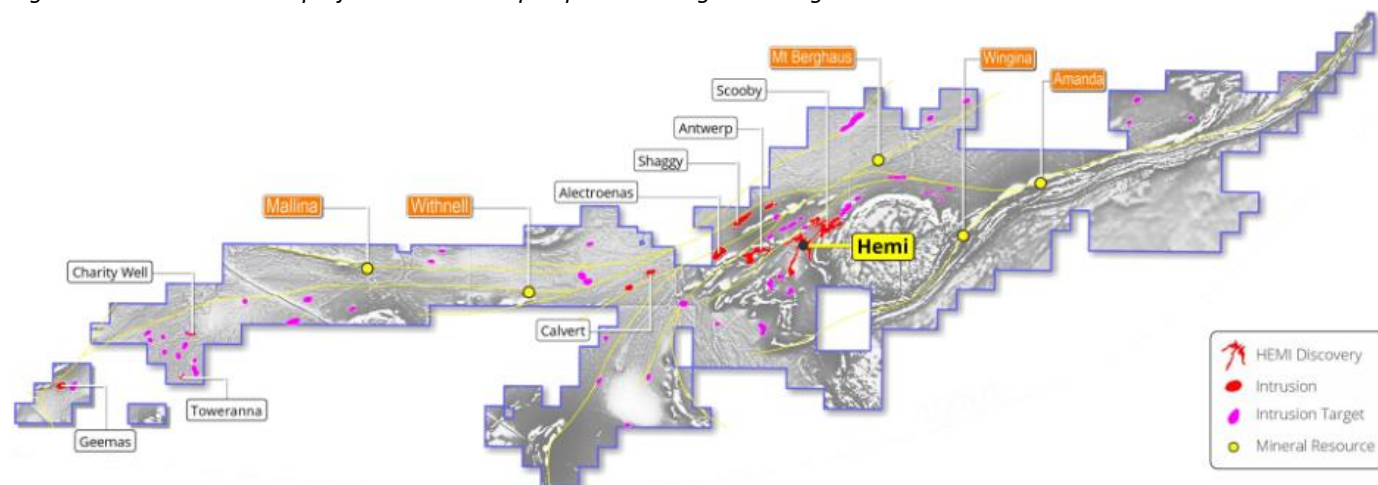
## Exploration

Hemi's discovery created a new locus of gold exploration in the Archaean Pilbara. Larger than previous finds in the belt, and interpreted as a sanukitoid (intrusion) related gold system, in contrast to the shear hosted deposits targeted in the past, Hemi opens up the belt's apparent exploration potential.

De Grey had eight drill rigs (3 RC, 3 diamond and 2 aircore) drilling at Hemi and surrounds through early 2021. Objectives include a resource estimate in mid-2021. Aircore drilling and follow up RC drilling continues in the greater Hemi area, testing intrusion prospects

at Scooby, Shaggy, Antwerp and Alectroenas. Aircore drilling of regional intrusions identified at Charity Well, Calvert and Geemas, began in the first half of 2021

Fig. 2: Mallina Gold project. Tenure and prospects on magnetic image.



Source: De Grey

## Valuation

The valuation is based on a discounted cash flow valuation of the Mallina project, and an informal estimate of exploration assets value and nominal assessment of De Grey's other assets and liabilities, as at March 2021. Argonaut's modelled pit inventory is 98Mt at 1.5 g/t, comprising 80Mt at 1.5 g/t at Hemi and 18Mt at 1.6 g/t in satellite pits, including but not restricted to Toweranna, Withnell, Wingina and Malina. Waste:ore of 5:1 is assumed for all pits. Earth moving rates of \$9-10/bcm material are used. Ore trucking costs of 12c/t/km are included. Resource/reserve drilling and evaluation costs of \$50M and other pre-production capital costs of A\$700M are assumed. Site administration costs and ore processing costs are estimated at \$10Mpa and \$25/t ore respectively. An estimate of the NPV of corporate overhead costs is included in the valuation. A real, after tax discount rate of 7% is used. Future tax benefits are added back as an estimate of present value. Argonaut's base case commodity and currency forecasts, set out in the summary table, are used to estimate the base case NAV.

Fig. 3: Valuation summary

Valuation summary	A\$M	A\$/sh
Mallina project 7% real after tax DR	1665	1.29
Exploration, all sites	416	0.32
Corporate overheads	-52	-0.04
Cash	87	0.07
Debt	0	0.00
Tax benefit	15	0.01
Hedging	0	0.00
Option/equity dilution	-64	-0.05
<b>NAV</b>	<b>2,067</b>	<b>1.60</b>

Source: Argonaut research



## Key risks to valuation

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### Mineable inventory

Argonaut's estimates of mineable inventories at Mallina are based on incomplete information, subjective calls on future drilling, and pre-emption of De Grey's development decisions. A 10% change in total ore tonnes (+/-8Mt at 1.5g/t) changes the De Grey valuation by 7-8%.

### Metallurgy

De Grey's early tests indicate high rates of recovery using conventional processes.

### Gold price

Our estimates of De Grey cash flows are sensitive to the gold price. Each 10% change in the Australian dollar gold price changes our valuation by 20%.

### Costs.

Cost assumptions are based on incomplete information or informal estimates. Operating and capital costs assumptions rely on our knowledge of industry rates. There are few relevant yardsticks for POX circuit operating and capital costs, so risks are higher than for most gold projects.

### Exploration success

De Grey may invest its cash and any future free cash flows in exploration and/or other mineral asset acquisitions. Valuation assumes that future exploration and investments achieve acceptable returns. Subjective value is attributed to exploration assets at Mallina.

### Interest rates/discount rates

Argonaut takes cash flow risk into account when choosing discount rates for different projects. Our valuation is sensitive to the discount rate used. A 2% change in the (after tax) discount rate makes a 16-20% difference to our De Grey valuation.

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