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30 January 2020

Company Announcements Office ASX Limited Level 4, 20 Bridge Street SYDNEY NSW 2000

# Red Hill Iron Ore Joint Venture Mineral Resource Update Maiden Mineral Resource Estimate for the Whitegate CID Deposit

API Management Pty Ltd (API), the Manager of the Red Hill Iron Ore Joint Venture (RHIOJV), has advised Red Hill Iron Limited (RHI) and the other members of the RHIOJV of an increase in the Mineral Resources of the RHIOJV arising from the definition of a maiden Mineral Resource Estimate for the Whitegate CID Deposit. A copy of the API covering letter and the report produced by Golder Associates Pty Ltd are attached.

The maiden Mineral Resource Estimate for the Whitegate CID deposit totals 4.1 Mt at 53.9% consisting of 3.6 Mt Indicated and 0.5 Mt Inferred.

This 4.1 Mt increase in the Mineral Resources of the RHIOJV takes the total Mineral Resources defined within the RHIOJV to 820 Mt, details of which are set out in Table 4 and Attachment A of the API report.

RHI owns a 40% interest in the RHIOJV, which is maintained on a carry basis by API at no direct cost to RHI until the commencement of commercial production.

Upon commencement of commercial production, RHI may either elect to participate in the continuing RHIOJV mining operation at the 19% level or elect to convert its joint venture interest to a 2% FOB Royalty on all RHIOJV iron ore production. In the event of RHI electing to convert to the 2% Royalty, all funds advanced on RHI's behalf during the carry phase will be written off and the company's interest in the RHIOJV (which will be restricted to the FOB Royalty) will be debt free.

Joshua Pitt Chairman 17January 2020

Red Hill Ltd Level 2 9 Havelock Street WEST PERTH WA 6005

Aquila Steel Pty Ltd Level 14 225 St Georges Terrace PERTH WA 6000

AMCI Australia Pty Ltd Level 37 Riverside Centre 123 Eagle Street BRISBANE QLD 4000

Attention: Josh Pitt / Steve Xu / Fiona Murdoch

Dear Mr Pitt, Mr Xu and Ms Murdoch,

# MANAGEMENT PTY LIMITED API Management Pty Limited ABN 66 112 677 595

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# Re: Maiden Mineral Resource Estimate for the RHIOJV Whitegate CID Deposit

API Management Pty Ltd (APIM) and Golder Associates Pty Ltd (Golder) have completed a maiden Mineral Resource Estimate for the RHIOJV Whitegate Channel Iron Deposit (CID).

The maiden Mineral Resource Estimate for Whitegate (CID) totals 4.1 Mt at 53.9% Fe.

The maiden Whitegate Mineral Resource is based on a single continuous geological and mineralisation model. Mineralisation shells and block cut-off grades for the deposit is based on 52% Fe for this estimate which is consistent with other RHIOJV CID deposits.

The Mineral Resource Estimate is presented in the attached report received from Golder dated 19 December 2019. A Competent Person Statement is contained within the report covering work completed by Golder.

In the instance the Mineral Resource Statement is to be issued for public release the following Competent Person Statement should be attached when referring to the resources detailed in this report. Prior to public release of the Mineral Resource Statement consent must be obtained from the Competent Persons. Consent will be provided following review by the Competent Persons of the proposed release document.



## Competent Person Statement

The Competent Person responsible for the geological interpretation and the drill hole data used for the resource estimation is Mr Michael Wall who is a full-time employee of API Management Pty Ltd, and Member of the Australasian Institute of Mining and Metallurgy. Michael Wall has sufficient relevant experience to the style of mineralisation and type of deposit under consideration and to the activity for which he is undertaking to qualify as a Competent Person as defined in the JORC Code (2012 Edition).

The information in this statement which relates to Mineral Resources is based on information compiled by Mr Richard Gaze who is a full-time employee of Golder Associates Pty Ltd, and Member and Chartered Professional of the Australasian Institute of Mining and Metallurgy. Richard Gaze has sufficient relevant experience to the style of mineralisation and type of deposit under consideration and to the activity for which he is undertaking to qualify as a Competent Person as defined in the JORC Code (2012 Edition).

# **Mineral Resource Estimates**

APIM has reviewed the Mineral Resource Estimate for the Whitegate deposit and is satisfied the estimates have been completed to industry standard. The Mineral Resource Estimates are reported at a 52% Fe block cut-off.

The maiden Mineral Resource Estimate for Whitegate is 4.1 Mt at 53.9% Fe.

The maiden Whitegate Mineral Resource Statement is presented in Table 1. Refer to Figure 1 for deposit locations and Figure 2 for RC drill hole locations.

Table 1 – Mineral Resource Estimate for the Whitegate CID Deposit (52% Fe block cut-off)

Class	Mt	Fe%	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	P%	S%	LOI1000%
Measured	-	-	-	-	-	-	-
Indicated	3.6	53.9	7.3	4.4	0.04	0.02	10.2
Inferred	0.5	53.9	7.1	4.4	0.03	0.02	10.3
Total	4.1	53.9	7.3	4.4	0.04	0.02	10.2

Note: Calculated using In situ bulk densities for mineralised zones of 2.65-2.85 depending on the geological unit



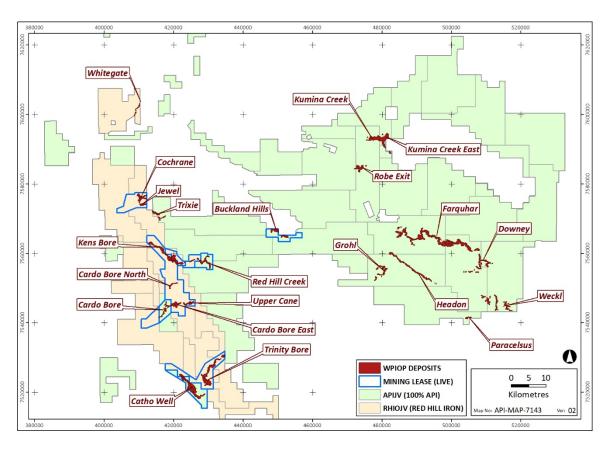


Figure 1 - Location Plan

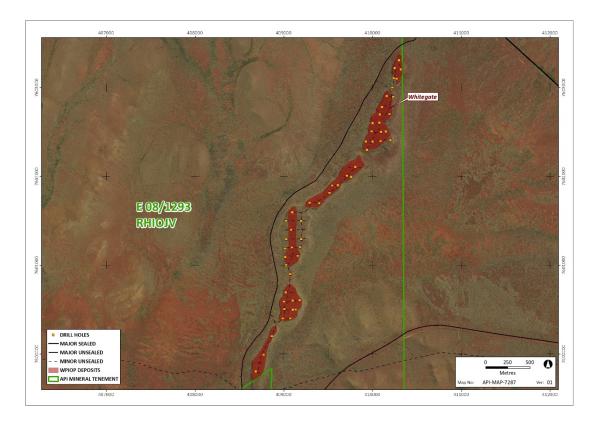


Figure 2 - Whitegate Mineral Resource and RC Drill Hole Locations



# **Estimation Process**

The following flow sheet (Figure 3) summarises key activities by APIM and Golder, all forming part of the resource estimation process.

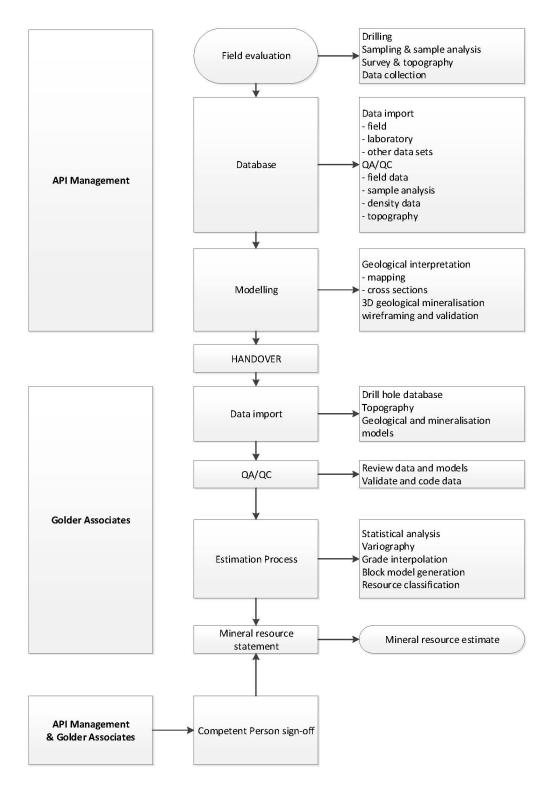


Figure 3 - The Mineral Resource Estimation Process



# **Geological Interpretation**

Three dimensional geological interpretations have been completed for the Whitegate deposit. Geological interpretations are based on first pass drilling data, geological mapping and updated modelling practices.

The stratigraphic units identified and modelled include:

- Hardcap CID (Zpw)
- Clay Zone (Zpc)
- Mixed Zone CID (Zpm)
- Basal Clay Zone (Zpb)
- Basement (Bsm)

Solid 3D geological models for each of the stratigraphic units listed above were created based on drill hole and mapping data. The geological model was used to constrain the mineralisation and assign material density. Figure 4 and Figure 5 show an example of the construction of the Upper Cane geological model. Not all stratigraphic units are present at each deposit.



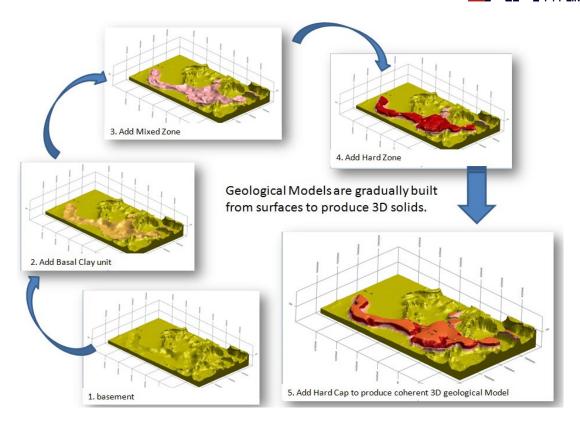


Figure 4 – The Geological Modelling Process

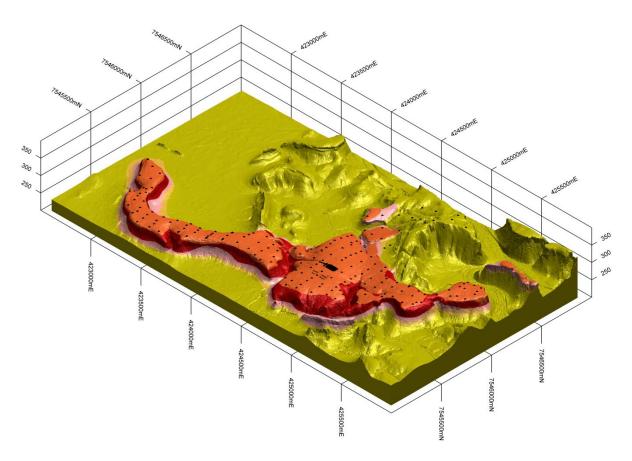


Figure 5 – Geological / Stratigraphic Model (Using Upper Cane as an Example)



# **Mineralisation Interpretation**

Mineralised outlines were created using a combination of lithological and grade data. Boundaries were defined based on the following guidelines:

- 52% Fe applied as a lower cut-off;
- A minimum intercept width of 2m across two sections;
- A maximum consecutive waste intercept of 2m across two sections.

It should be noted that the criteria set out above acted as a guideline only, cut-offs were relaxed in situations where geological continuity would be maintained. Mineralisation was domained by stratigraphic unit.

Internal dilution has been kept to a minimum provided continuity of the mineralised envelopes could be maintained.

Mineralised envelopes were constrained by topography and the CID stratigraphy – geological model (Figure 6).

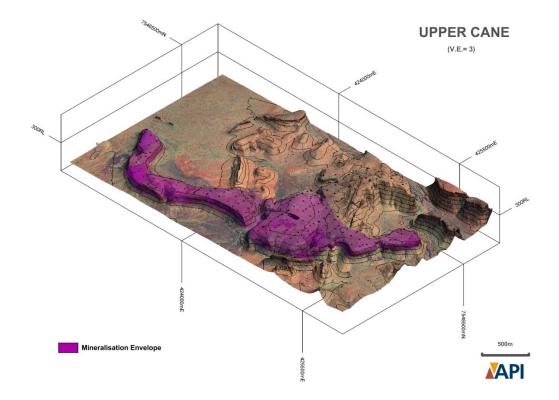


Figure 6 – Modelled Mineralisation Envelope (Using Upper Cane as an Example)

Golder undertook statistical and geostatistical analysis on drilling data that was constrained to the modelled mineralisation envelope and mineralised stratigraphic units.

For statistical data analysis, the 2m downhole drilling intervals were maintained. Analysis was based on six assay variables: Fe, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, P, S and LOI (LOI 1000°C).

Directional grade variography was completed for all domains in each deposit to provide parameters for the Ordinary Kriging method used for resource estimation.



## **Block Model**

Block models were constructed using a parent block size of 25m x 25m x 4m and a sub-block cell size of 6.25m x 6.25m x 2m. The mineralised envelope was used to constrain the block model.

## **Density**

In situ dry bulk density values were assigned to the model. No density test work has been completed for Whitegate, thus values from the Cardo deposits were used. The nearby Cardo deposits are of a similar CID style to the Whitegate deposit. Density values are provided below in Table 2.

Table 2 – In situ Dry Bulk Density values from the Cardo Deposits and assigned to the Whitegate Stratigraphy.

DOMAIN	MINSTR	Density Assignment
1 (≥52% Fe)	10 (Zpw)	2.85
	30 (Zpm)	2.65
0 (Waste)	10 (Zpw)	2.80
	30 (Zpm)	2.60
	40 (Zpb)	2.60
	50 (Zpc)	2.60
	70 (Bsm)	2.60

# **Classification**

The Mineral Resource estimates were classified by Golder in accordance with the JORC Code (2012 Edition).

The classification approach was both quantitative and qualitative. Quantitatively, the classification is based on estimation performance. Qualitatively, the approach used adjustments based on geological confidence taking into consideration the drill hole spacing, confidence in the geological interpretation / continuity and representativeness of the available assay data.

Indicated and Inferred categories have been defined for the deposit. Drill spacing is currently not close enough to enable Measured material to be classified.

# **Cut-Off Grades**

The Mineral Resource Estimates are reported using a 52% Fe block cut-off grade.

# Reporting

The Mineral Resource Estimates have been compiled in accordance with the guidelines defined in the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC, 2012 Edition).



# **Resource Estimate**

A summary of the global Mineral Resource Estimate for Whitegate Deposit totalling 4.1 Mt at 53.9% Fe is presented in Table 3 and Figure 7 shows the relationship between grade, tonnage, and stratigraphy at the Whitegate Deposit.

Table 3 - Mineral Resource Estimate for the Whitegate CID Deposit (52% Fe cut-off)

Classification (JORC, 2012)	Tonnage Mt	Fe %	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	P %	S %	LOI1000 %
Measured	-	-	-	-	-	-	-
Indicated	3.6	53.9	7.3	4.4	0.04	0.02	10.2
Inferred	0.5	53.9	7.1	4.4	0.03	0.02	10.3
Total	4.1	53.9	7.3	4.4	0.04	0.02	10.2

Note: Calculated using In situ bulk densities from the nearby Cardo deposits

Whitegate Grade-Tonnage Plot
Mineral Resource by Classification Category

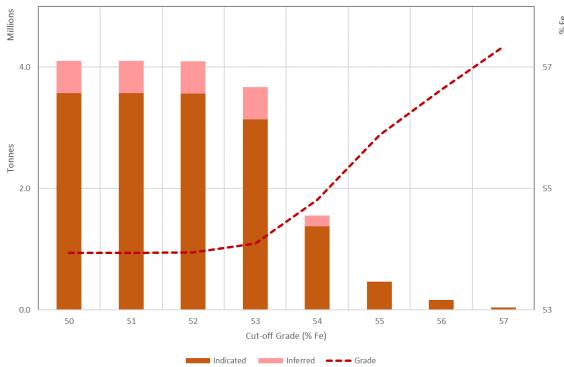


Figure 7 – Grade Tonnage Curve Showing the Relationship Between Grade, Tonnage, and Stratigraphy at the Whitegate Deposit



# **Resource Classification**

Initial drilling across the deposit at 100m x 100m has resulted in the Whitegate Deposit being classified within the Indicated and Inferred categories (JORC, 2012).

# **Future Work**

Additional work, including drilling and density measurements, would be required to bring the Inferred area of the deposit into the Indicated category and subsequently into the Measured category.

The global resource total defined within the RHIOJV now stands at 820 Mt (Table 4 and Attachment A), representing an increase of 4.1 Mt to previous position.

Table 4 – Global Resource Total within the RHIOJV by Classification

Joint Venture	Cut- off Fe	Classification (JORC, 2012)	Tonnage Mt	Fe %	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub> %	P %	S %	LOI1000 %	
		Measured	263.5	57.17	5.72	3.67	0.08	0.02	8.24	
RHIOJV	F20/	500/	Indicated	452.3	56.30	6.32	3.85	0.07	0.02	8.65
DEPOSITS (TOTAL)	52%	Inferred	104.2	55.19	6.82	4.21	0.06	0.02	9.38	
( = 11)		TOTAL	820	56.44	6.19	3.84	0.07	0.02	8.62	

Yours sincerely,

Michael Wall

**Manager Exploration** 

**API Management Pty Limited** 

Attachment A – RHIOJV Mineral Resource Estimates (52% Fe Block Cut-Off Grade)

Attachment B - Drill Hole Location Plans and Geological Sections for Whitegate

<u>Attachment C – Golder Associates Mineral Resource Statement for the Whitegate Channel Iron Deposit</u>



# Attachment A - RHIOJV Mineral Resource Estimates (52% Fe Block Cut-Off Grade)

Deposit	Classification (JORC, 2012)	Tonnage Mt	Fe %	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	P %	S %	LOI1000 %
0 1	Measured	-	-	-	-	-	-	-
Cardo	Indicated	-	-	-	-	-	-	-
Bore West	Inferred	0.1	52.34	7.91	7.15	0.054	0.009	9.21
RHIOJV	Total	0.1	52.34	7.91	7.15	0.054	0.009	9.21
Cardo	Measured	-	-	-	-	-	-	-
Bore East	Indicated	45.1	57.92	5.34	3.99	0.072	0.016	7.04
RHIOJV	Inferred	14.2	56.28	6.27	4.13	0.065	0.024	8.31
KHIOJV	Total	59.3	57.53	5.56	4.03	0.070	0.018	7.35
Cardo	Measured	-	-	-	-	-	-	-
Bore	Indicated	6.0	56.16	6.42	4.27	0.070	0.022	8.34
North	Inferred	4.8	54.69	6.72	4.82	0.068	0.026	9.55
RHIOJV	Total	10.8	55.51	6.55	4.52	0.069	0.024	8.87
	Measured		_	_	_	_	<u> </u>	
Cochrane	Indicated	52.4	56.30	6.22	4.30	0.077	0.020	8.23
RHIOJV	Inferred	3.7	55.96	6.44	4.09	0.051	0.020	8.65
1411001	Total	56.1	56.28	6.23	4.29	0.075	0.020	8.26
	Total	00.1	00.20	0.20	7.20	0.070	0.020	0.20
	Measured		_	_	_	_	_	
Jewel	Indicated	26.3	55.89	6.41	4.04	0.061	0.020	9.11
RHIOJV	Inferred	10.6	56.32	6.20	3.92	0.066	0.020	8.86
	Total	36.9	56.01	6.35	4.00	0.062	0.020	9.04
				0.00	1100			
T	Measured	_	_	_	_	_	_	_
Trinity	Indicated	109.1	54.67	7.44	4.01	0.057	0.022	9.74
Bore	Inferred	28.5	54.38	7.16	4.44	0.060	0.024	9.98
RHIOJV	Total	137.6	54.61	7.38	4.10	0.058	0.022	9.79
			I.	II.				
Unnor	Measured	57.7	58.58	5.15	3.04	0.077	0.021	7.47
Upper	Indicated	26.0	56.81	6.79	3.55	0.094	0.018	7.76
Cane	Inferred	3.7	54.44	8.84	4.06	0.115	0.013	8.32
RHIOJV	Total	87.4	57.88	5.80	3.23	0.084	0.020	7.59
			•					
	Measured	_	-	-	-	_	-	_
Catho - Well North - RHIOJV -	Indicated	11.5	54.66	7.48	2.98	0.039	0.016	10.38
	Inferred	2.8	53.91	7.86	3.26	0.037	0.012	10.64
								10.04
	Total	14.3	54.51	7.56	3.03	0.038	0.015	10.43
Г		470 (	F0 ==	<b>5</b> 00	0.00	0.0=0	0.044	0.00
Kens	Measured	178.1	56.75	5.90	3.93	0.078	0.014	8.39
Bore	Indicated	169.6	57.08	5.70	3.63	0.074	0.013	8.44
RHIOJV	Inferred	35.2	55.25	6.69	4.15	0.064	0.012	9.52
	Total	382.9	56.76	5.88	3.82	0.075	0.014	8.52



Deposit	Classification (JORC, 2012)	Tonnage Mt	Fe %	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	P %	S %	LOI1000 %
Red Hill	Measured	25.5	57.06	5.54	3.29	0.116	0.009	8.87
Creek	Indicated	2.2	56.24	6.42	3.39	0.115	0.011	9.05
West	Inferred	0.1	53.74	9.03	3.60	0.156	0.005	9.51
RHIOJV	Total	27.8	56.98	5.62	3.30	0.116	0.010	8.89
Trixie	Measured	2.2	55.23	7.63	3.66	0.068	0.027	9.25
West	Indicated	0.5	55.63	7.24	4.16	0.073	0.019	8.62
RHIOJV	Inferred	-	-	-	-	-	-	-
TUILOUV	Total	2.7	55.30	7.56	3.75	0.069	0.026	9.13
	Measured	-	-	-	-	-	-	-
Whitegate	Indicated	3.6	53.95	7.31	4.39	0.036	0.020	10.16
RHIOJV	Inferred	0.5	53.93	7.07	4.39	0.031	0.017	10.32
	Total	4.1	53.94	7.28	4.39	0.035	0.019	10.18
	Measured	263.5	57.17	5.72	3.67	0.081	0.015	8.24
RHIOJV	Indicated	452.3	56.30	6.32	3.85	0.069	0.017	8.65
TOTAL	Inferred	104.2	55.19	6.82	4.21	0.064	0.019	9.38
	Total	820	56.44	6.19	3.84	0.073	0.017	8.62

Note: For previous Mineral Resource Estimation reporting please refer to the letter dated 22/11/2016 "Re: Updated Mineral Resource Estimates for RHIOJV to include maiden estimates for Trixie West, Cardo Bore West and an updated estimate for Red Hill Creek West that incorporates infill RC drilling completed in 2015".



# Attachment B - Drill Hole Location Plans and Geological Type Sections for Whitegate

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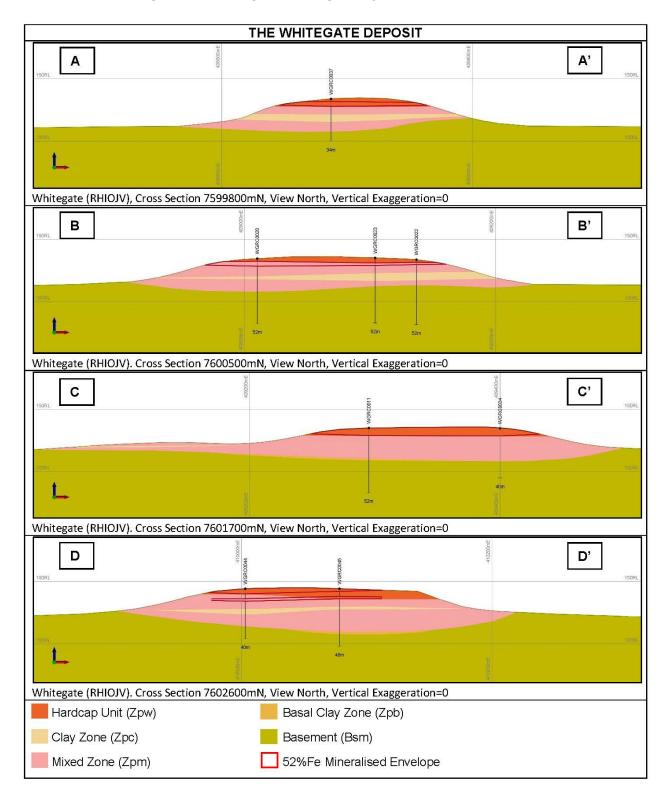
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Figure 1 - Mineralisation envelopes and drill hole locations for Whitegate



Figure 2 - Whitegate Geological Type Cross Sections





19 December 2019

Reference No. 19118612-007-L-Rev0

### **Michael Wall**

API Management Pty Ltd Level 14, 225 St Georges Terrace PERTH WA 6000

### WHITEGATE MINERAL RESOURCE STATEMENT

Dear Michael,

Golder Associates Pty Ltd (Golder) completed a maiden Mineral Resource estimate for the Whitegate deposit on behalf of API Management Pty Ltd (APIM). The deposit location is shown in Figure 1.

The Mineral Resource estimates are based on a 52% Fe cut-off grade mineralisation envelope and stratigraphic domains interpreted, modelled and provided by APIM. The Mineral Resources are classified in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition).

API Management Pty Ltd

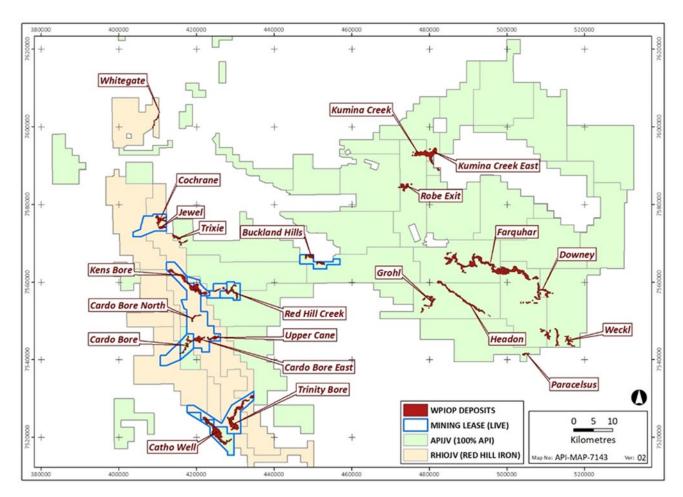


Figure 1: Whitegate and Surrounding Deposits within WPIOP (image after APIM)

The Mineral Resources were prepared under the supervision of Mr Richard Gaze, of Golder Associates Pty Ltd. Mr Richard Gaze is a member of the Australasian Institute of Mining and Metallurgy and has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code, 2012 Edition.

### Geology

The stratigraphy and geometry of Whitegate represents deposition within a paleo-channel. The Whitegate deposit forms a thin ridgeline of inverted relief trending north-northeast, with variations in channel strike over the 4.2 km length. The CID has been eroded in places leaving it discontinuous.

The mineralisation at Whitegate reflects the nature of the paleo-system with one distinct envelope present across the deposit and a second minor lens present toward the northern end. The mineralised envelope is largely contained within the hardcap and is only occasionally present in the mixed zone. Flat lying and quite thin, the mineralisation ranges from 2 m to 8 m in thickness.

The interpreted mineralisation envelopes, drill collar locations and tenement boundary are shown in Figure 2 and descriptions of the CID stratigraphy and domain codes is provided in Table 1.



Reference No. 19118612-007-L-Rev0

19 December 2019

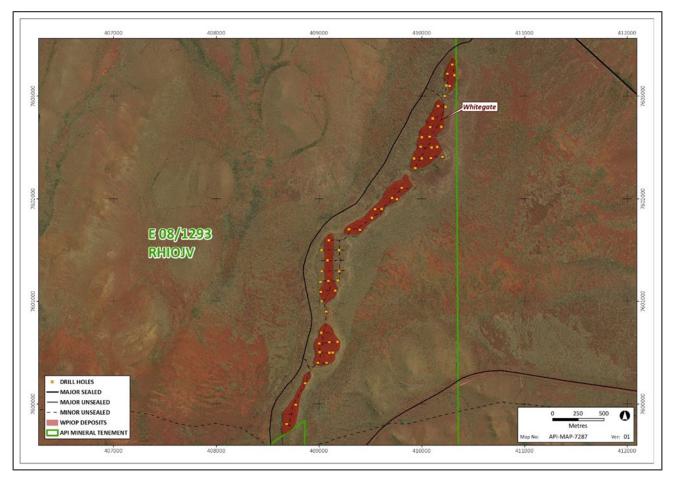


Figure 2: Whitegate Deposit showing Mineralisation Envelope (red) and Drill Hole Locations (yellow points) (image by APIM)

Table 1: Mineralisation Stratigraphy for CIDs and DIDs

Geological Domain	Code	Description			
Hardcap	Zpw	Upper weathered horizon. Generally, mustard in colour.			
Hematite Rich Hard Zone	Zph	Zone of hard competent mineralisation. Hematite rich, generally purple or red/brown in colour.			
Goethite Rich Hard Zone	Zpg	A zone of enriched higher-grade ore (due to elevated goethite content). Represents initial oxidation of hematite. Generally brown or red/brown in colour; dominant mineralogy goethite. Clay content should be less than 10%.			
Lithic Zone	Zpl	Hard zone with minor lithic interbeds up to conglomeratic grain size.			
Mixed Zone	Zpm	Zone of mixed ore including degraded or denatured ores, hard competent ores and clay bands.			
Basal Clay Zone	Zpb	Clay zone after degraded pisolite; at base of CID. Generally pale mustard colour.			
Clay	Zpc	Clay interbeds ≥2 m thick.			
Basal, Conglomerate or Gravel	JK/Zpk	Basal conglomerate or gravel.			
Basement	Bsm	Any basement lithologies.			
Transported Materials	Otr	Transported and/or detrital materials (alluvium – colluvium).			
Siliceous Detrital	Dsi	Consolidated to unconsolidated angular lithics in a soil and clay matrix.			



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Geological Domain	Code	Description			
Siliceous Haematitic Detrital	Dsh	Consolidated to unconsolidated poor sorted angular lithics in a sandy to clay matrix with notable hematite staining.			
Canga/Detrital	Dhc	Consolidated clasts with a goethite overprint in a goethite matrix.			
Hematite Rich Detrital	Dhe	Angular to rounded mineralised clasts in a clay matrix that may have undergone hematite staining, with variable gangue. May be upgradeable.			
Basement Hardcap	HC	Weathered horizon on basement material. Vitreous or powdered goethite.			

# **Assumptions and Methodology**

The Mineral Resources are based on the following factors and assumptions:

- Stratigraphy and mineralisation domains were interpreted and modelled by APIM and reviewed by Golder. APIM geologists completed the sectional string interpretation and generated the stratigraphy and mineralisation wireframes based on the sectional strings. The stratigraphy combines sectional interpretation with grid meshes based on the interpreted sections to ensure lateral continuity. Golder reviewed the wireframes prior to use and considers them fit for purpose.
- A nominal 52% Fe mineralisation cut-off grade was used to define mineralised domains. "Subgrade" material (below 52% Fe) was also incorporated in certain areas to maintain continuity and hence the mineralisation contains dilution grades incorporated into the grade estimation. Both stratigraphy and mineralisation domains were used to flag the sample data for statistical analysis and to constrain the grade estimation.
- The topographical surface provided by APIM (2 m contours, Fugro, 2016) was used to define the surface topography. Mineralisation domains were extended to the surface as defined by the topography where considered appropriate.
- The Mineral Resource estimates are based on all available information provided to Golder as of 16 September 2019.
- The survey control for collar positions was considered by Golder to be adequate for the purposes of resource estimation, with the collar corrected vertically where required to ensure coincidence with the ground surface.
- The Whitegate grade estimate used the raw sample intervals of 2 m and flagged with mineralisation and stratigraphy domains. Estimation utilised length weighted sample grades.
- The *in situ* bulk density varies by stratigraphy and is based on nearby deposits of a similar CID style in lieu of site-specific bulk density test work. Golder considered these values to be suitable.
- Using parameters derived from modelled variograms, the interpolation method of Ordinary Kriging (OK) was used to estimate Fe, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, P, S, LOI (1000°C), CaO, MgO, Mn, K<sub>2</sub>O, and TiO<sub>2</sub>.
- The Mineral Resource is reported using *in situ* tonnes and estimated grades at an implied 52% Fe cut-off grade, with no dilution/ore loss factors applied or any specific selectivity assumptions other than that implied by the block model parent cell size.

As the CID in this Mineral Resource statement form a low ridge of inverted topography, likely resulting in a very low stripping ratio, all the mineralisation domains that provide a saleable product specification as estimate for CIDs were considered to represent "reasonable prospects for eventual economic extraction" under the JORC Code, 2012 Edition.



API Management Pty Ltd 19 December 2019

## **Mineral Resource Statement**

Mineral Resource estimates were classified in accordance with guidelines provided in the JORC Code, 2012 Edition. The classification was based principally on geological confidence, drill hole spacing and grade continuity from available drilling data. Table 2 provides a summary of the Mineral Resource at a nominal 52% Fe cut-off grade for the Whitegate deposit, as implied by the 52% Fe mineralisation boundary.

Table 2: Mineral Resource for Whitegate Deposit, October 2019

Class	Mt	Fe	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Р	s	LOI1000
Measured	-	-	-	-	-	-	-
Indicated	3.6	53.9	7.3	4.4	0.04	0.02	10.2
Inferred	0.5	53.9	7.1	4.4	0.03	0.02	10.3
Total	4.1	53.9	7.3	4.4	0.04	0.02	10.2

Note: All grades in percent

# Compliance with JORC Code (2012 Edition) Assessment Criteria

The JORC Code, 2012 Edition describes criteria which must be addressed in the Public Reporting of Mineral Resource estimates. These criteria provide a means of assessing whether parts of or the entire data inventory used in the estimate are adequate for that purpose. The Mineral Resource estimates stated in this document were based on the criteria set out in Table 1 of the JORC Code. These criteria are discussed in Table 3, as follows.



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Table 3: JORC Code Table 1

JORC Code Assessment Criteria	Comment					
Section 1 – Sampling Techniques and Data						
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 downhole 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.	<ul> <li>Downhole samples are collected every 2 m directly from the cyclone after passing through a riffle or cone splitter mounted on the RC drilling rig. Cone splitters were used in areas where samples were wet, or drilling occurred below the water table and have replaced the use of riffle splitters. Samples had an average weight of 4 kg.</li> <li>Sample analysis was completed by SGS Laboratories in Perth, Western Australia. Ultra Trace Laboratories (now part of Bureau Veritas) was used for round robin (inter-lab/umpire checks) QAQC. Samples were sent direct to the laboratory, sorted, dried and then pulverised using a ring mill. Samples were analysed for a suite of elements by X-Ray Fluorescence Spectrometry and gravimetrically for Loss on Ignition (LOI 1000° and LOI 371°C).</li> <li>All drilling was sampled in accordance with APIM sampling procedures.</li> </ul>					
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.						



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JORC Code Assessment Criteria	Comment
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.).	<ul> <li>Downhole samples were collected from RC drilling utilising 5½ inch face sampling and conventional hammers.</li> <li>The drilling consists of 54 Reverse Circulation drill holes totalling 2 616 m.</li> <li>No diamond holes have been drilled at Whitegate.</li> </ul>
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.	<ul> <li>The cyclone on the RC rig was cleaned in between drill holes to minimise sample contamination. Previous twinned hole studies (diamond vs RC) at APIM project areas indicate minimal sample bias using RC drilling techniques.</li> <li>Sample recoveries and quality were recorded for each sampling interval by the geologist as part of the digital logging system. Samples were classified as dry, damp, wet or water injected. Most of the drilling was completed above the water table with only 8% of samples being recorded as damp or wet.</li> <li>Wet and dry samples were collected via the same technique though wet samples are placed in polyweave bags to dry.</li> <li>Sample recoveries were based on visual estimates of the size of drill spoil piles and were recorded as a percentage of the expected total sample volume. There was minimal sample loss recorded from RC drilling with only 9% of the samples estimated as less than 90% recovery.</li> <li>Sample recovery and moisture do not appear to have a material impact on the overall grade of the sample dataset.</li> </ul>
Understand the content of the sample of the relevant intersections logged.  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.	<ul> <li>RC chips are logged for several geological criteria including stratigraphy, lithology, texture, mineralogy and hardness.</li> <li>Logging is qualitative and supported by geochemistry.</li> <li>All recovered intervals are logged.</li> <li>The nature and detail of the logging befits the deposit style and project stage.</li> <li>All drill holes, whether producing core or chips, are geologically logged in its entirety using APIM procedures and standardised coding. Data is entered directly into ruggedised laptops at the drill site using software that validates data as the geologist logs.</li> <li>Logging data is then emailed to Perth where it undergoes further validation as it is uploaded and stored into the APIM SQL-based geological database.</li> <li>All core trays (for density test work from other RHIOJV projects) and chip trays are photographed.</li> </ul>



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JORC Code Assessment Criteria	Comment
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	<ul> <li>Downhole samples are collected directly from the cyclone after passing through a riffle or cone splitter mounted on the RC drilling rig. Samples had an average weight of 4 kg.</li> <li>Wet and dry samples were collected via the same technique.</li> <li>Samples were stored on site prior to being transported to the laboratory. Wet samples were allowed to dry before being processed.</li> <li>At the lab, samples are sorted, dried and then pulverised using a ring mill prior to sub-sampling. The pulverised sample was reduced further and combined with various reagents prior to oven fusion to create a fused disc for analysis.</li> <li>Laboratory duplicates and pulp splits are reported and have been validated, showing a high degree of similarity.</li> <li>Field duplicates show acceptable reproduction of grades between primary and duplicate samples.</li> <li>RC drilling reduces the relatively brittle weathered CID to small fragments which are readily recovered via the cyclone and cone splitter.</li> </ul>
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.	the cyclone and cone spinter.



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JORC Code Assessment Criteria	Comment
Quality of Assay Data and Laboratory Tests	■ APIM employs industry standard total assay approach including a total value. Total assay is typically
The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.	<ul> <li>between 99.6% and 100.1% within the mineralised domain and 98.3% and 100.1% in waste domains.</li> <li>There were no sample analysis tools used outside the assay laboratory (SGS Laboratories in Welshpool, WA).</li> <li>Standards and duplicates were inserted into the sample sequence at the rate of 1 in 50 samples, i.e. every</li> </ul>
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.	<ul> <li>25th sample was a standard or a duplicate. These samples were used to test the precision and accuracy of the sampling method and laboratory analysis. APIM conducts monthly checks of all QAQC data.</li> <li>APIM has previously conducted external reviews (undertaken by Optiro and Geostats) of the geological and assay database. Audit results show an acceptable level of accuracy and precision.</li> <li>Review of the QAQC data by Golder shows acceptable performance and is fit for the purposes of this Mineral Resource.</li> </ul>
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.	
Verification of Sampling and Assaying	■ APIM periodically conducts round robin studies on assay results to verify sample analysis. No concerns
The verification of significant intersections by either	were highlighted and no adjustments to data have been made.
independent or alternative company personnel.	There are no twin holes drilled at Whitegate.
The use of twinned holes.	<ul> <li>There are no adjustments made to the assay data.</li> <li>APIM has retained laboratory sample pulps for all samples since 2005.</li> </ul>
The use of twillhed holes.	All sample data is prepared by field technicians using a field sample book and then verified by the site
Documentation of primary data, data entry procedures, data verification, data storage	geologist who enters the data into ruggedised laptops at the drill site using software that validates data as it is entered.
(physical and electronic) protocols.	Sample data is emailed to Perth where it undergoes further validation as it is uploaded and stored into the APIM SQL-based geological database.
Discuss any adjustment to assay data.	



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JORC Code Assessment Criteria	Comment
Location of Data Points  Accuracy and quality of surveys used to locate drill holes (collar and downhole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.  Specification of the grid system used.  Quality and adequacy of topographic control.	<ul> <li>Drill hole collar coordinates are collected by APIM field staff at the time of drilling using a handheld GPS unit with an error margin of ±5 m. Drill collars are registered (vertical relocation) to the topographic surface to ensure all volumes are relative to topography and all drill holes are entirely below surface.</li> <li>Drill hole collar coordinates were verified in ArcGIS software utilising aerial photography as part of APIM's QAQC procedures.</li> <li>Easting, Northing and RL references and orientations relate to the Map Grid of Australia MGA94 Zone 50.</li> <li>Topography data was generated from a LIDAR aerial survey flown by Fugro in 2016. Data was provided to APIM as 1 m contours and filtered to 2 m before creating the surface using Micromine software. The topographic surface has been used to locate drill collars vertically and constrain resource estimation. Golder used the relocated collar data supplied by APIM without adjustment as maintaining the relative position of the geological wireframes to topography and drilling is necessary.</li> <li>Downhole surveys were not completed on the vertical RC holes at Whitegate. Due to the shallow depth of drill holes and the horizontal stratigraphy of the CID it was not considered a requirement to complete downhole orientation surveys. To support this assumption, downhole surveys were conducted on 75 drill holes across other APIM deposits. The average absolute deflection recorded in all drill holes was negligible.</li> </ul>
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.	<ul> <li>Drill hole spacing is typically 100 m across channel with drill lines spaced between 100 m and 200 m along the channel length. Local topographic features limit drill locations and introduce some irregularity in drill hole spacing.</li> <li>There is enough drill data for the Competent Person to declare a dominantly Indicated Resource, inclusive of all material within the 52% Fe mineralised domain, with the southern-most channel section classified as Inferred as it has materially less drilling with three holes spaced on 200 m centres.</li> <li>All drill holes are sampled as 2 m downhole increments, with geological logging conducted on the same basis, and a straight downhole composite was used to provide a dataset for analysis, modelling and grade interpolation.</li> </ul>
Whether sample compositing has been applied.	



JORC Code Assessment Criteria	Comment
Orientation of Data in Relation to Geological Structure	<ul> <li>All drill holes at Whitegate were drilled vertically due to the horizontal nature of CIDs.</li> <li>A downhole sample spacing of 2 m vertically is perpendicular to the mineralisation and delineates the orientation of least continuity, represented by the minor axis of the semi-variogram and estimation Z search. The sample spacing across and along the channel befits the known increased continuity laterally throughout CIDs.</li> <li>Consideration was given to the orientation of drill lines when variogram models were created to ensure drill hole orientation trends were not mistaken for grade continuity.</li> <li>The orientation of sampling achieves unbiased sampling of stratigraphic domains.</li> </ul>
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.	
Sample Security	■ Samples are stored on site at a sample laydown area prior to dispatch. Samples are picked up from site
The measures taken to ensure sample security.	by a transport company and delivered directly to the lab. This is done as required based on the size of the drilling program. APIM communicates on a regular basis with the analytical labs and standard chain of custody paperwork is used. SGS laboratory is the standard assay lab used for exploration samples while other labs are only used periodically.
Audits and Reviews	■ No audits or reviews of the Whitegate deposit have been conducted beyond that which have been
The results of any audits or reviews of sampling techniques and data.	completed as part of APIMs normal operating procedures and the analysis provided by Golder in the Mineral Resource Report.
	APIM has previously conducted external reviews (undertaken by Optiro and Geostats) of the geological and assay database. Audit results show an acceptable level of accuracy and precision. Sampling procedures and the drill hole database are consistent with industry standards.



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JORC Code Assessment Criteria	Comment
	Section 2 – Reporting of Exploration Results
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	<ul> <li>The Red Hill Iron Ore Joint Venture (RHIOJV – between API and Red Hill Iron Limited) is part of a wider venture that comprise the broader West Pilbara Iron Ore Project (WPIOP), with each joint venture managed by API Management Pty Ltd (APIM).</li> <li>There are no known environmental or cultural heritage matters that would impact on the development of the resource areas (subject to relevant approvals).</li> </ul>
obtaining a licence to operate in the area.  Exploration Done by Other Parties	■ Exploration work completed by APIM or other parties prior to this report has been summarised in previous
Acknowledgment and appraisal of exploration by other parties.	Red Hill Iron ASX releases or are publicly available via the Department of Mines, Industry Regulation and Safety online systems.
Geology  Deposit type, geological setting and style of mineralisation.	<ul> <li>The stratigraphy and geometry of Whitegate represents deposition within a paleo-channel. The Whitegate deposit forms a thin ridgeline of inverted relief trending north-northeast, with variations in channel strike over the 4.2 km length. The CID has been eroded in places leaving it discontinuous.</li> <li>The Whitegate deposit generally follows a typical CID profile consisting of a persistent Hardcap (Zpw) above the predominant unit, the Mixed zone (Zpm). Within this unit is an internal clay horizon, about 2m thick, but which is persistent throughout the deposit. Below the Mixed zone, is a discontinuous CID Basal clay (Zpb). Basement typically comprises shales of the Mount McGrath Formation (Wyloo Group).</li> <li>The mineralisation at Whitegate reflects the nature of the paleo-system with one distinct envelope present across the deposit and a second minor lens present toward the northern end. The mineralised envelope is largely contained within the hardcap and is only occasionally present in the mixed zone. Flat lying and quite thin, the mineralisation ranges from 2 m to 8 m in thickness.</li> </ul>



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### JORC Code Assessment Criteria Comment This report does not include details of exploration results. **Drill hole information** All holes are drilled until basement lithology is penetrated. A summary of all information material to the The Mineral Resource estimate is based on all available drilling as of 23 May 2019. A summary of the understanding of the exploration results including a number of drill holes and drilling meterage is provided below: tabulation of the following information for all RC DD Material drill holes: **Prospect** Holes Metres Holes Metres Easting and northing of the drill hole collar Whitegate 54 2 6 1 6 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 Examination of the drill data showed all samples are 2 m in length, so the drill data was exported from **Data aggregation methods** Vulcan as straight composites (i.e. not composited) flagged with DOMAIN and MINSTR codes. The data In reporting Exploration Results, weighting was formatted to be consistent with the conventions used for previous APIM Mineral Resource estimates. averaging techniques, maximum and/or minimum The retained assay fields are as follows: Fe, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, P, S, LOI (1000°C), CaO, MgO, Mn, K<sub>2</sub>O, and grade truncations (e.g. cutting of high grades) and TiO<sub>2</sub>. cut-off grades are usually material and should be No maximum or minimum grade truncations were performed as there was no indication of outliers that stated. would bias the grade interpolation. 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.

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JORC Code Assessment Criteria	Comment
Relationship between mineralisation widths and intercept lengths	CID Mineralisation in each of the areas reported are flat lying and only true mineralisation widths are reported.
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. 'downhole length, true width not known').	
Diagrams	■ All diagrams contained in this document are generated from spatial data displayed in industry standard
Where possible, maps and sections (with scales) and tabulations of intercepts should be included for any material discovery being reported if such diagrams significantly clarify the report.	mining and GIS packages.
Balance reporting	■ Not Applicable.
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.	



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JORC Code Assessment Criteria	Comment
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.	In addition to RC drilling, surface mapping of the CIDs, cover and basement was undertaken by API staff using hand-held GPS and compiled in MapInfo Professional (MapInfo) and later QGIS and ArcGIS. The mapping focused on identifying the limits of the CID channels and the types of CID present. The outcrop mapping assisted with drill hole planning and geological 3D modelling.
Further work	■ Exploration work will continue as required, and as a minimum, to maintain the Exploration Licences in
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.	good standing.
S	Section 3 Estimation and Reporting of Mineral Resources
Database Integrity  Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.  Data validation procedures used.	<ul> <li>All geological data and drilling information is stored in a SQL database in the APIM Perth office and is managed by APIM with support from external consultants.</li> <li>APIM uses Ocris software to import data into its SQL database. Custom-built configured imports are used to further validate the data on import. Despatching of samples, receipting of assays, and QAQC is also undertaken in Ocris.</li> <li>APIM has previously engaged external consultants to review the drill hole database. The database was found to be above industry standard.</li> </ul>
Site Visits	■ APIM Competent Persons have visited the Mineral Resource deposits.
Comment on any site visits undertaken by the Competent Person and the outcome of those visits.	■ Golder has not undertaken a site visit to the deposits included in this report for the purposes of Mineral Resource Estimation.
If no site visits have been undertaken indicate why this is the case.	



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JORC Code Assessment Criteria	Comment
Geological Interpretation  Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.  Nature of the data used and of any assumptions made.  The effect, if any, of alternative interpretations on Mineral Resource estimation. The use of geology in guiding and controlling Mineral Resource estimation.	<ul> <li>3D geological and mineralisation modelling is undertaken by APIM using Micromine software. The method involves interpretation of deposit stratigraphy using surface geological mapping, drill hole lithological logging and downhole assay data. Working field sections are updated at the drill rig by the geologist and these comments are considered when creating or editing geological and mineralisation models.</li> <li>Golder reviewed the geological and mineralisation wireframes reflecting the 52% Fe cut-off grade prior to use with Mineral Resource estimation and found them satisfactory.</li> </ul>
The factors affecting continuity both of grade and geology.	
Dimensions  The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.	■ The mineralisation is a single channel extending approximately 4.2 km in a NNE-SSW direction and is approximately 200 m wide. This surficial CID forms a low series of hills with the base of the mineralised lenses up to ~12 m below surface.
Estimation and Modelling Techniques  The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters, and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.  The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	<ul> <li>The estimation technique used for the Mineral Resource estimation is the geostatistical method of Ordinary Kriging. Parameters were derived from variograms to estimate the average grade for Fe, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, Mn, LOI (1000°C), MgO, P, S, CaO, K<sub>2</sub>O and TiO<sub>2</sub> for each block.</li> <li>Block sizes were selected with respect to the nominal drilling densities to ensure acceptable local estimation quality.</li> <li>The block size selected for each deposit is 25 m (X) × 25 m (Y) × 4 m (Z). The sub-block size is 6.25 m (X) × 6.25 m (Y) × 2 m (Z).</li> <li>Drill samples were composited to 2 m matching the raw sample length.</li> <li>The estimation was conducted in three passes with the search size increasing for each pass. In some domains, where the blocks were not fully estimated after three passes, blocks were assigned default grades. The default grades were based on the mean of the estimated blocks or samples grades in the same domain.</li> <li>Individual variables between each stratigraphy domain were compared for similarity to decide if grouping of stratigraphies during Mineral Resource estimation was appropriate. Despite evidence of soft</li> </ul>



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JORC Code Assessment Criteria	Comment
The assumptions made regarding recovery of by-products.	boundaries existing between mineralised stratigraphies, their overall geochemistry does differ, thus each horizon was estimated discretely.  The model was validated visually and statistically using comparisons to composite data statistics, swath plots and smoothing effect assessments. Validation showed acceptable conformance between the grade
Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulfur for acid mine drainage characterisation).	model and sample data.
In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	
Any assumptions behind modelling of selective mining units.	
Any assumptions about correlation between variables.	
Description of how the geological interpretation was used to control the resource estimates.	
Discussion of basis for using or not using grade cutting or capping.	
The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	
Moisture	■ Tonnages are estimated and quoted on a dry basis.
Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.	



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JORC Code Assessment Criteria	Comment
Cut-off Parameters	■ The resource estimate is constrained by assumptions about economic cut-off grades. The Mineral
The basis of the adopted cut-off grade(s) or quality parameters applied.	Resource is confined by a 52% Fe cut-off grade and the tabulated resources were reported within this boundary and includes minor sub-grade dilution.
Mining Factors or Assumptions	■ It has been assumed that the traditional open cut mining method of drill, blast, load and haul will be used.
Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution.	This is consistent with current practices at similar deposits in the Pilbara.
It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	
Metallurgical Factors or Assumptions	■ This is the maiden Mineral Resource for this deposit and further work regarding metallurgical test work is
The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	required. Geologically the deposit is like other CID deposits held by APIM indicating standard Pilbara crush and screen processes would likely be suitable. Higher clay zones could undergo beneficiation by wet processing however further test work is required.



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### JORC Code Assessment Criteria Comment More detailed studies regarding approvals and possible waste and process residue disposals options **Environmental Factors or Assumptions** are required. The Mineral Resource estimate assumes that environmental factors will not materially affect Assumptions made regarding possible waste and future development of the Resource. process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made. In situ bulk density values were assigned to the model. No density test work has been completed for drill **Bulk Density** core from Whitegate, thus values from the RHIOJV deposits were used. The nearby RHIOJV deposits are Whether assumed or determined. If assumed, the of a similar CID style to the Whitegate Deposit. Golder considers this reasonable given the current status basis for the assumptions. If determined, the of the Project and Maiden Resource estimate. method used, whether wet or dry, the frequency of the measurements, the nature, size and Density **DOMAIN** MINSTR representativeness of the samples. **Assignment** 10 (Zpw) 2.85 1 (≥52% Fe) The bulk density for bulk material must have been 30 (Zpm) 2.65 measured by methods that adequately account for 10 (Zpw) 2.80 void spaces (vugs. porosity, etc.), moisture and 30 (Zpm) 2.60 differences between rock and alteration zones 2.60 40 (Zpb) 0 (Waste) within the deposit.

50 (Zpc)

70 (Bsm)

2.60

2.60



materials.

Discuss assumptions for bulk density estimates

used in the evaluation process of the different

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JORC Code Assessment Criteria	Comment
Classification  The basis for the classification of the Mineral Resources into varying confidence categories.  Whether appropriate account has been taken of all relevant factors, i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data.  Whether the result appropriately reflects the Competent Person(s)' view of the deposit.	Comment  ■ The Mineral Resource estimates were classified by Golder in accordance with the JORC Code, 2012 Edition. The classification approach was based on several criteria as follows:  ■ Drill hole spacing, based on prior drill hole spacing recommendations from Golder and discussions with APIM regarding drill spacing requirements for specific deposits  ■ Confidence in the geological interpretation, specifically the higher degree of confidence in certain areas of some deposits where the mineralisation is wide and thick  ■ Representativeness of the available assay data, and  ■ Estimation/quality performance parameters.  Zones meeting the following criteria were used to define the resource class:  ■ Indicated Resource  — Evidence of geological continuity  — Evidence of grade continuity  — Moderate levels of kriging performance quality  — Drill spacing of 100 m by 100 m
	<ul> <li>Inferred Resource         <ul> <li>Drill spacing wider than 100 m × 100 m.</li> <li>Greater geological uncertainty.</li> <li>Limited grade continuity, or if mineralisation is discontinuous and occurs as thin lenses.</li> <li>Relatively low kriging performance quality.</li> </ul> </li> <li>Areas with little to no drill data or that are extrapolated more than ~2× the drill spacing are not classified.</li> <li>The Whitegate Mineral Resource is classified as a dominantly Indicated Resource inclusive of all material within the 52% Fe mineralised domain, with the southern-most channel section classified as Inferred as it has materially less drilling with three holes spaced on 200 m centres.</li> <li>The classification reflects the Competent Person's view of the deposit with respect to the considerations summarised above.</li> </ul>



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JORC Code Assessment Criteria	Comment
Audits or Reviews  The results of any audits or reviews of Mineral Resource estimates.	<ul> <li>No independent reviews have been completed on the Whitegate Deposit.</li> <li>Golder conducted several basic and geological interpretation reviews during the compilation of the current Mineral Resource estimates. All practices and methods observed are thought to be consistent with the resource classification applied to the deposit.</li> </ul>
Discussion of Relative Accuracy/Confidence  Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.  The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation.  Documentation should include assumptions made and the procedures used.  These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	<ul> <li>The geology model and mineralised domains provided by APIM conform well to drill data and agree with the general morphology of the CIDs of the region and APIMs tenement package.</li> <li>Overall the grade estimation validation results indicate good estimation performance. Visual, statistical and swath plots were used to examine the grade estimate and showed acceptable conformance between the model and sample data.</li> <li>Golder recommends density sampling tests for all units that contain material resource tonnage using samples from each deposit, with an extensive sampling program included where Inferred material is to be upgraded to Indicated or Measured.</li> </ul>



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# **Competent Persons' Statement**

The information in this statement that relates to the Mineral Resources is based on information compiled by Mr Richard Gaze who is a full-time employee of Golder Associates Pty Ltd, and Member and Chartered Professional of the Australasian Institute of Mining and Metallurgy. Richard Gaze has sufficient relevant experience to the style of mineralisation and type of deposit under consideration and to the activity for which he is undertaking to qualify as a Competent Person as defined in the JORC Code (2012 Edition).

The Competent Person responsible for the geological interpretation and the drill hole data used for the resource estimation is Mr Michael Wall who is a full-time employee of APIM Management Pty Ltd, and Member of the Australasian Institute of Mining and Metallurgy. Michael Wall has sufficient relevant experience to the style of mineralisation and type of deposit under consideration and to the activity for which he is undertaking to qualify as a Competent Person as defined in the JORC Code (2012 Edition). Mr Wall consents to the inclusion in this report of the matters based on his information in the form and content in which it appears.

## IMPORTANT INFORMATION

Your attention is drawn to the document titled – "Important Information Relating to this Report", which is included in Attachment A of this report. The statements presented in that document are intended to inform a reader of the report about its proper use. There are important limitations as to who can use the report and how it can be used. It is important that a reader of the report understands and has realistic expectations about those matters. The Important Information document does not alter the obligations Golder Associates has under the contract between it and its client.

**GOLDER ASSOCIATES PTY LTD** 

Geordie Matthews

Senior Mining Geologist

GM/RG/ds

Richard Gaze

Principal - Mining, Geology and Stability

Richard L. Gare

Attachments: A – Important Information

https://golderassociates.sharepoint.com/sites/109569/project files/6 deliverables/19118612-007-I-rev0 - whitegate mineral resource statement.docx



Reference No. 19118612-007-L-Rev0

19 December 2019

# ATTACHMENT A

# **Important Information**



The document ("Report") to which this page is attached and which this page forms a part of, has been issued by Golder Associates Pty Ltd ("Golder") subject to the important limitations and other qualifications set out below.

This Report constitutes or is part of services ("Services") provided by Golder to its client ("Client") under and subject to a contract between Golder and its Client ("Contract"). The contents of this page are not intended to and do not alter Golder's obligations (including any limits on those obligations) to its Client under the Contract.

This Report is provided for use solely by Golder's Client and persons acting on the Client's behalf, such as its professional advisers. Golder is responsible only to its Client for this Report. Golder has no responsibility to any other person who relies or makes decisions based upon this Report or who makes any other use of this Report. Golder accepts no responsibility for any loss or damage suffered by any person other than its Client as a result of any reliance upon any part of this Report, decisions made based upon this Report or any other use of it.

This Report has been prepared in the context of the circumstances and purposes referred to in, or derived from, the Contract and Golder accepts no responsibility for use of the Report, in whole or in part, in any other context or circumstance or for any other purpose.

The scope of Golder's Services and the period of time they relate to are determined by the Contract and are subject to restrictions and limitations set out in the Contract. If a service or other work is not expressly referred to in this Report, do not assume that it has been provided or performed. If a matter is not addressed in this Report, do not assume that any determination has been made by Golder in regards to it.

At any location relevant to the Services conditions may exist which were not detected by Golder, in particular due to the specific scope of the investigation Golder has been engaged to undertake. Conditions can only be verified at the exact location of any tests undertaken. Variations in conditions may occur between tested locations and there may be conditions which have not been revealed by the investigation and which have not therefore been taken into account in this Report.

Golder accepts no responsibility for and makes no representation as to the accuracy or completeness of the information provided to it by or on behalf of the Client or sourced from any third party. Golder has assumed that such information is correct unless otherwise stated and no responsibility is accepted by Golder for incomplete or inaccurate data supplied by its Client or any other person for whom Golder is not responsible. Golder has not taken account of matters that may have existed when the Report was prepared but which were only later disclosed to Golder.

Having regard to the matters referred to in the previous paragraphs on this page in particular, carrying out the Services has allowed Golder to form no more than an opinion as to the actual conditions at any relevant location. That opinion is necessarily constrained by the extent of the information collected by Golder or otherwise made available to Golder. Further, the passage of time may affect the accuracy, applicability or usefulness of the opinions, assessments or other information in this Report. This Report is based upon the information and other circumstances that existed and were known to Golder when the Services were performed and this Report was prepared. Golder has not considered the effect of any possible future developments including physical changes to any relevant location or changes to any laws or regulations relevant to such location.

Where permitted by the Contract, Golder may have retained subconsultants affiliated with Golder to provide some or all of the Services. However, it is Golder which remains solely responsible for the Services and there is no legal recourse against any of Golder's affiliated companies or the employees, officers or directors of any of them.

By date, or revision, the Report supersedes any prior report or other document issued by Golder dealing with any matter that is addressed in the Report.

Any uncertainty as to the extent to which this Report can be used or relied upon in any respect should be referred to Golder for clarification

