

5 April 2019

## Grants Basin Iron Ore Exploration Target\* -Amended

### HIGHLIGHTS

- **Initial Exploration Target\* for iron ore has been estimated for the Grants Basin.**
- **The Exploration Target\* is supported by recent RC and diamond drilling data, including assays, geological interpretation and 3D modelling and interpretation of aeromagnetic images.**
- **A follow up resource drilling program is planned for 2019.**

**Havilah Resources Limited (Havilah)** is pleased to report an initial Exploration Target\* for iron ore in the Grants Basin in northeastern South Australia. This is based on [drilling funded by SIMEC Mining](#) as part of their due diligence investigation of the commercialisation potential of Havilah's Maldorky and Grants iron ore projects. SIMEC Mining and Havilah have recently agreed to [extend their investigations](#) until the end of April 2019 to enable SIMEC Mining to complete its due diligence and for the parties to continue negotiations on the terms of a deal structure and commercial arrangement.

The Exploration Target\* reported here supports the goal of SIMEC Mining and Havilah to further explore the potential of this major new iron ore discovery. The deposit is well located, being within 12 km of the Transcontinental Railway (to Port Pirie and Whyalla) and the sealed Barrier Highway.

### Exploration Target\*

Two separate models have been generated for the Exploration Target\* (as shown in **Figures 1 and 2**), as summarized below:

- **West End** – covers the western end of the Grants Basin where most of the drilling has been completed to date and therefore has a higher level of confidence. The 3D model was developed by generating a shape or volume lying between two interpreted surfaces, namely “top of iron sequence” and “base of iron sequence” which were constrained by drilling data in conjunction with surface mapping of outcropping iron sequence and interpretation of the aeromagnetic data. An infill reverse circulation (**RC**) / diamond drilling (**DD**) drilling program is planned for the West End area during 2019 in order to define a JORC resource.
- **South Flank** – covers the southern flank of the Grants Basin. The western limit is defined by RC drilling with drillholes GBRC003 & GBRC013 showing the continuation of the gently to moderately north dipping, thick, iron bearing sequence. The South Flank model is interpreted to extend 500 m to the east beyond existing drilling but the magnetite bearing iron sequence is likely to continue considerably beyond this, based on aeromagnetic interpretation. For this Exploration Target\* it has been modelled to a vertical depth of ~500 m below surface, but may be considerably deeper. Future wide-spaced RC drilling is planned on 1 km spaced lines to better define the South Flank model.

**Table 1 - Grants Basin Iron Ore Initial Exploration Target\* as of 3 April 2019**

<b>Area</b>	<b>Volume (Millions m<sup>3</sup>)</b>	<b>Tonnage Range (Billion Tonnes)</b>	<b>Iron (Fe) grade range %</b>
West End	777.54	2.49 to 2.72	23.9% to 27.6%
South Flank	306.46	0.98 to 1.07	23.9% to 27.6%
<b>Total</b>	<b>1,084.00</b>	<b>3.47 to 3.79</b>	<b>23.9% to 27.6%</b>

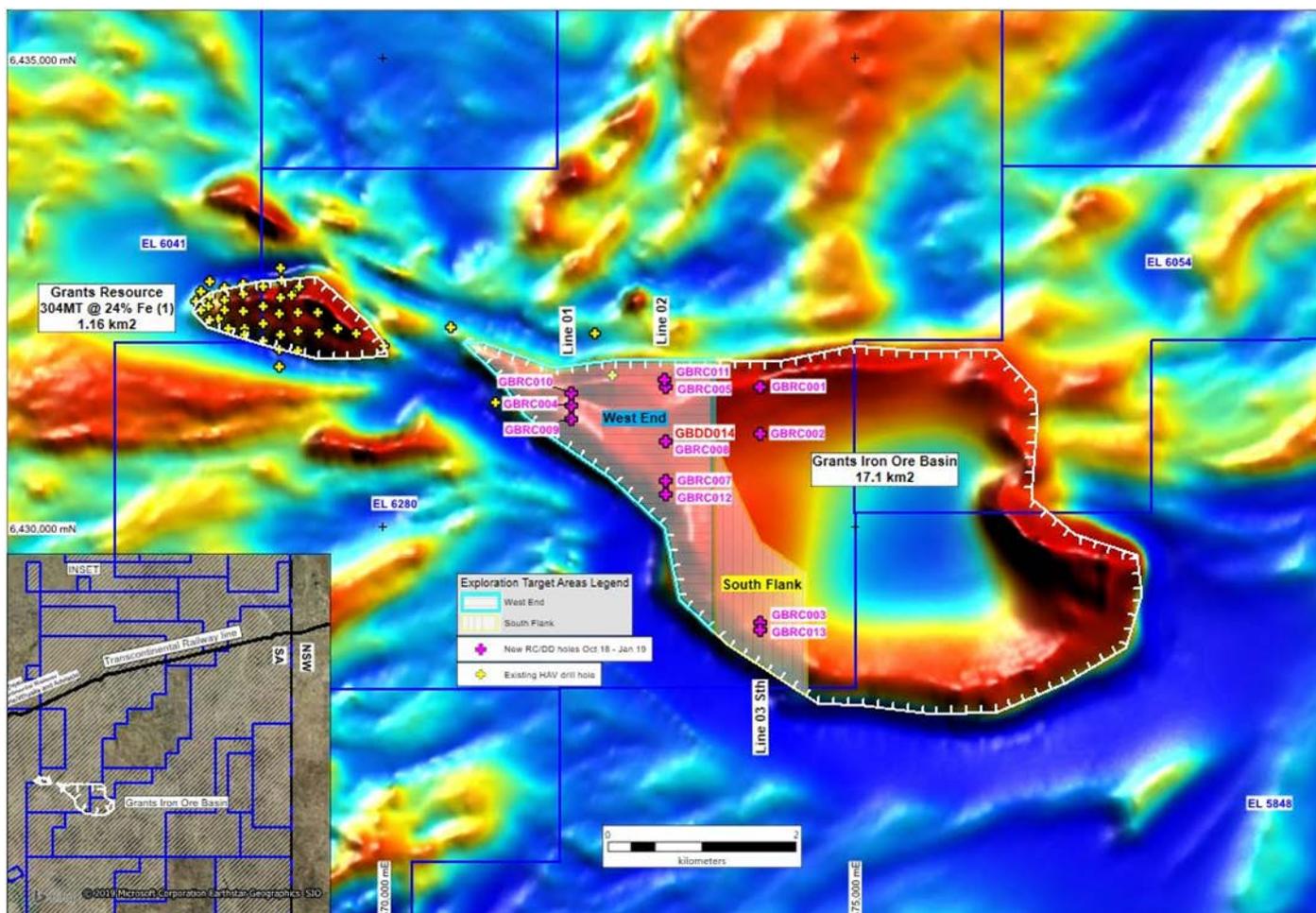
\* The potential quantity and grade of the Exploration Target is conceptual in nature, there has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of a Mineral Resource.

### **Grade Range**

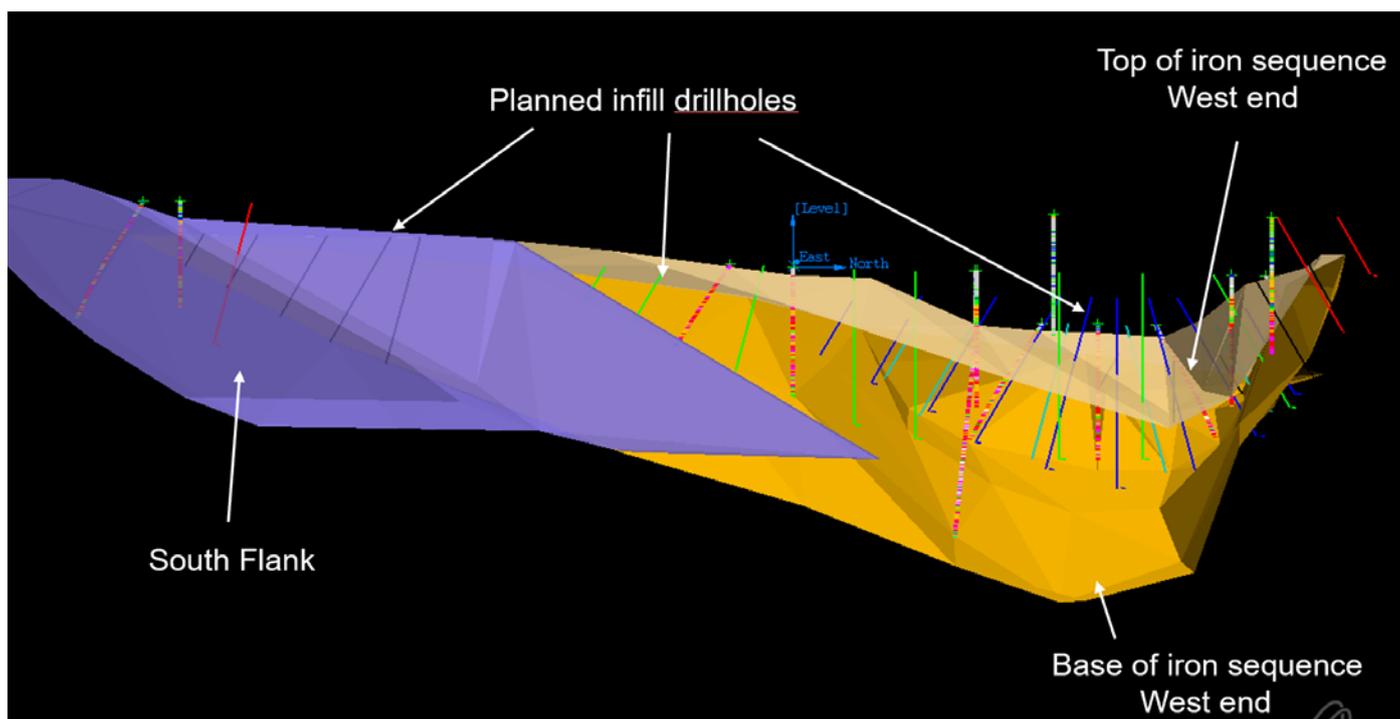
The Iron grade ranges are based on the minimum (23.9% Fe) and maximum (27.6% Fe) drilling intersection grades as shown in Table 1, calculated using an 18% Fe assay cut off with intervals of up to 8 continuous metres (4 samples) of internal dilution. The length weighted average of all RC drill intersections (total 2,244 m and 1,122 two metre lab assayed samples) is 25.4% Fe.

### **Tonnage Range**

A lower specific gravity (**SG**) of 3.2 and upper SG of 3.5 were used to calculate the tonnage ranges and are based on existing SG data on the Braemar Iron Formation sequence from Havilah's nearby Grants Iron Ore Resource (SG = 3.49 @ 24% Fe) and Maldorky Iron Ore Resource (SG = 3.69 @ 30.1% Fe) and other Braemar Iron Formation hosted resources in the region such as Magnetite Mines (SG = 3.2 @ 23.2% Fe) and Minotaur Exploration (SG = 2.96 @ 18% Fe).



**Figure 1:** Aeromagnetic image showing the two defined Exploration Targets\*, West End and South Flank, plus interpreted surface expression of Grants Basin and location of recent drillholes. This initial Exploration Target\* covers approximately 25% of the interpreted total area of the Grants Basin.



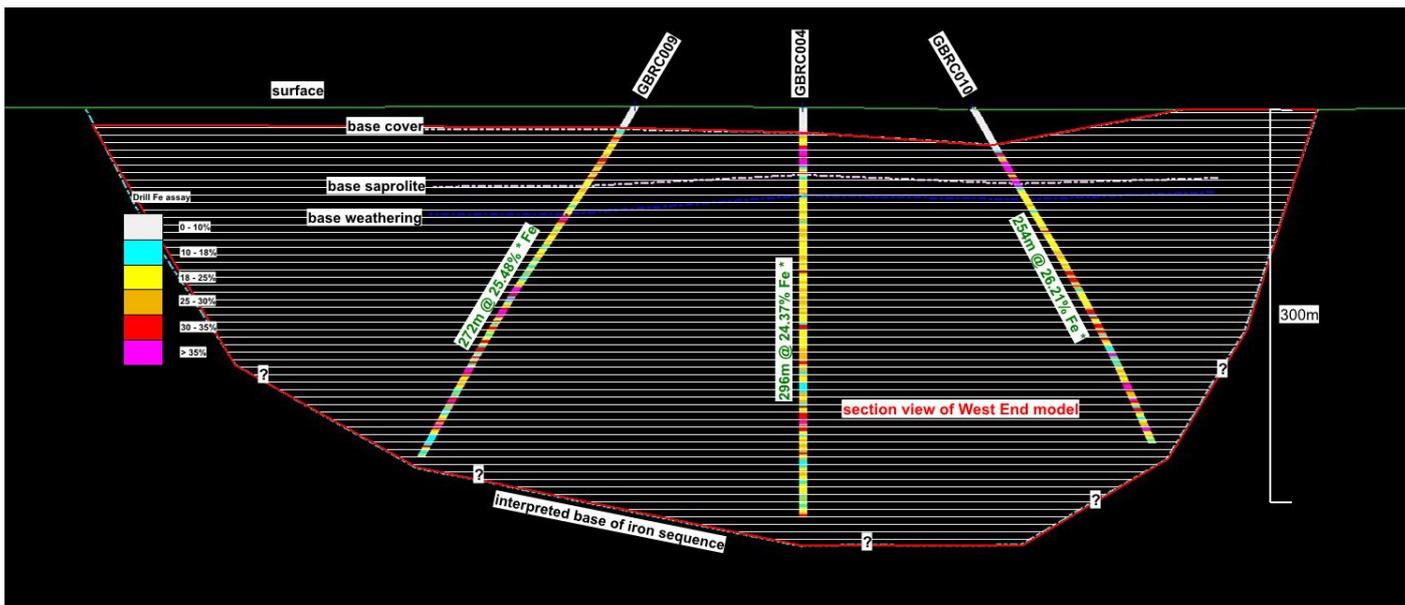
**Figure 2:** Oblique 3D view of the two Exploration Target\* models looking to the southwest. Existing drill traces (coloured by Fe) and planned drill traces (coloured green and blue). The distance from east end (left) to west end (right) of modelled shapes is approximately 5 km.

### Supporting Drilling Data

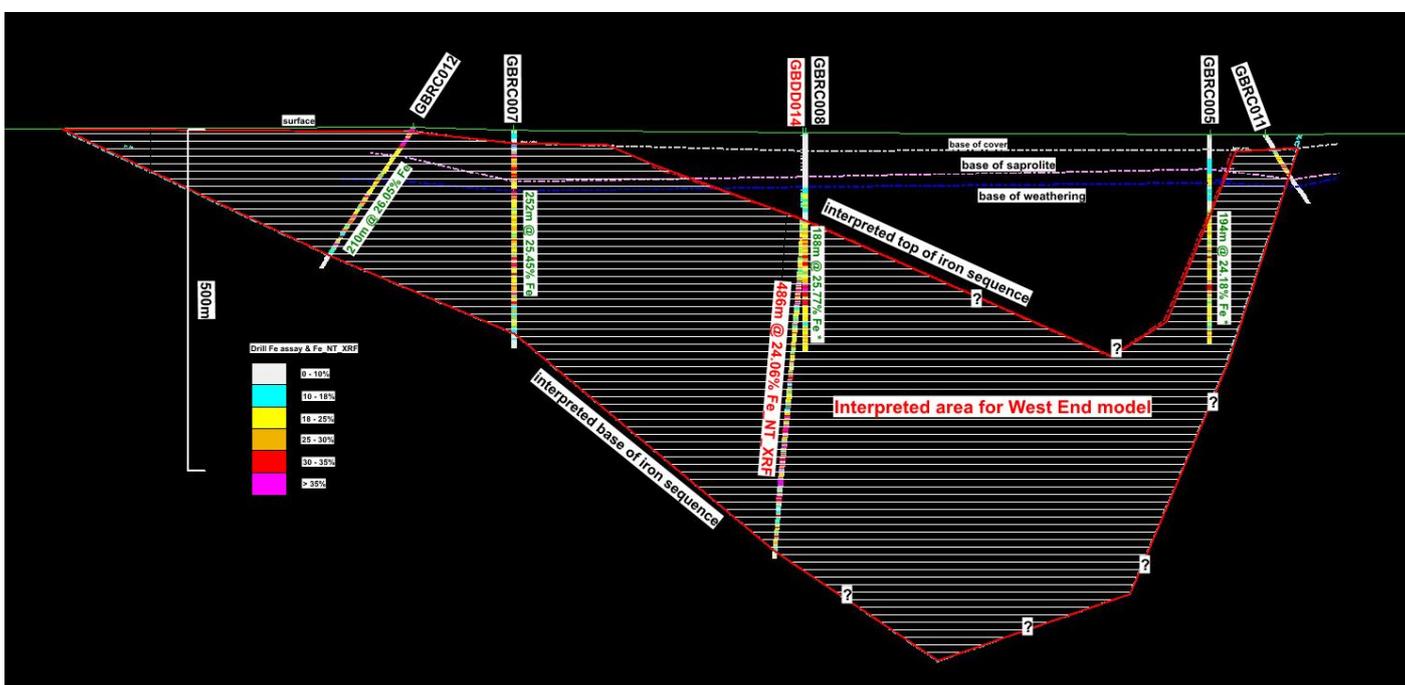
RC holes and DD holes completed at the Grants Basin since October 2018 have supported the original concept of a basinal structure containing a thick iron bearing sequence ([refer ASX announcement 4 December 2018](#)).

Drilling completed by Havilah since October 2018 has included a total of 12 RC holes and one RC/DD hole for a total of 3,510 m of RC drilling and 494 m of HQ3 sized drill core. Drilling was completed on 1 km spaced sections with holes spaced up to 500 m apart. Holes were drilled vertically and at  $-60^\circ$  to the north and south. Drilling to date has mainly focused on the western end of the Grants Basin where the iron bearing sequence was interpreted to be close to surface and relatively shallowly dipping, based on interpretation of aeromagnetic images (see **Figure 1**). All relevant drilling data, including calculated drill intersections, are listed in Table 2.

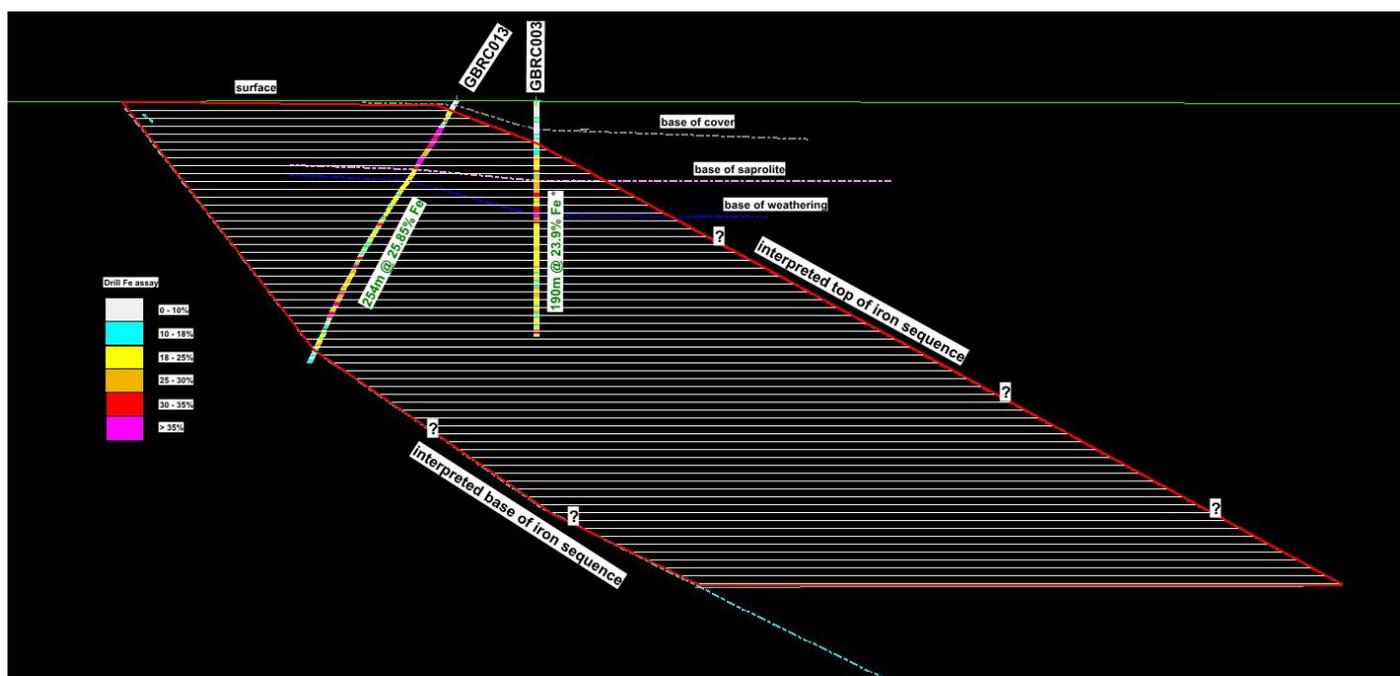
Drilling to date has intersected significant widths of iron formation with calculated RC drill intersections (based on lab assays) ranging up to 296 m with iron grades ranging from 23.9% to 27.6% Fe as listed in Table 2. Most RC holes either started in the iron sequence or finished in iron sequence with thinner intervals encountered on the basin margins due to erosion. The more recent 624.4 m diamond drillhole, GBDD014, returned an exceptional interpreted full thickness intersection of the iron sequence, calculated at  $\sim 450$  m true width at a grade of 24.1% Fe (based on hand held Niton XRF analyses) in the central western area of the basin (see **Figures 2, 3 and 4**) ([refer to ASX Announcement 29 January 2019](#)).



**Figure 3:** Drill cross section of Line 01 looking west showing the shape interpretation used for the West End model, the three RC holes ending in iron formation and iron intersections calculated using final laboratory results. Full width of iron ore basin at surface is interpreted to be ~900 m. The “interpreted base of iron sequence” and “base of cover” (top of iron sequence) strings have been used to guide the 3D modelling of the Exploration Target\* shapes. The total depth to base of iron sequence is currently unknown on this section as all holes ended in iron formation and the current interpretation could be conservative.



**Figure 4:** Drill cross section of Line 02 looking west with the interpretation used for the West End model. Also shown is recently completed diamond cored hole GBDD014 and associated indicative drill intersection calculated using handheld Niton Fe results (red text) plus RC holes and iron intersections calculated using laboratory assay results (green text) and using the same colour legend to allow for comparison. The “interpreted top” and “interpreted base of iron sequence” strings have been used to guide the modelling of the Exploration Target\* shapes along with “base of cover” and calculated drill intersections. Surface width of iron basin here is ~1700 m.



**Figure 5:** Drill cross section of Line 03 South looking west showing the interpretation used for the South Flank model, which has a depth cut-off at 500 m. Also shown are RC holes and iron intersections calculated using laboratory assay results (green).

### Planned Drilling

A follow up RC and DD drilling program is proposed (as shown on **Figure 2**) to further investigate the iron ore resource potential of the Grants Basin. The drilling is planned on existing, infill and extensional lines within the Exploration Target\* area during 2019, with holes spaced on lines 500 m to 1,000 m apart. The proposed drillhole locations are preliminary at this stage and are subject to change.

### Commenting on the initial Exploration Target\* for the Grants Iron Ore Basin, Havilah’s Technical Director,

**Dr Chris Giles said:** “The Exploration Target\* numbers give some idea of the iron ore potential of the Grants Basin. “There is still a lot of drilling to be done to fully understand the basin geometry and to define a JORC resource. “SIMEC Mining is in the process of completing its preliminary metallurgical tests on the drillcore from hole GBDD014 in order to determine the amenability to upgrading to a high quality saleable product. “With the due diligence period extended and ongoing discussions between the parties, we look forward to positive further developments in the coming months,” he said.

For further information visit [www.havilah-resources.com.au](http://www.havilah-resources.com.au)

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**Table 2 - Drilling Data**

Hole_ID	GDA_E	GDA_N	RL	Azimuth	Dip	End of Hole Depth	Iron (Fe) intersections (based on assay data except for GBDD014**)
GBRC001	474000.60	6431500.00	221.99	360	-90	316	96 m @ 27.55%# from 220 m
GBRC002	474004.84	6431001.05	220.75	360	-90	280	NSI - did not reach iron formation
GBRC003	474007.61	6429001.20	226.68	360	-90	246.2	190 m @ 23.9%# from 56 m
GBRC004	471995.18	6431297.57	221.09	360	-90	316	296 m @ 24.37%# from 20 m
GBRC005	473005.06	6431504.51	212.83	360	-90	304	194 m @ 24.18%# from 110 m
GBRC006	473002.99	6430918.40	215.36	360	-90	130	NSI - hole abandoned at 130 m, hole extended as diamond cored hole GBDD014 (see notes below)
GBRC007	473001.17	6430501.57	218.61	360	-90	316	252 m @ 25.45% from 32 m
GBRC008	473005.58	6430921.85	215.12	360	-90	316	188 m @ 25.77%# from 128 m
GBRC009	471997.05	6431169.10	221.59	180	-60	316	272 m @ 25.48%# * from 24 m
GBRC010	472002.34	6431428.87	219.31	360	-60	292	254 m @ 26.21%# from 38 m
GBRC011	472993.54	6431584.11	212.51	352	-60	118	38 m @ 25.32% from 30 m, north edge of basin
GBRC012	473003.55	6430357.76	222.79	180	-60	244	210 m @ 26.05% from 2 m
GBRC013	474003.98	6428917.66	227.32	180	-60	316	254 m @ 25.85% from 12 m
GBDD014	473002.99	6430918.40	215.36	360	-90	624.4	486 m @ 24.06% (NT_XRF)** from 127 m

**Notes:** NSI = no significant intersection, # = ended in the iron bearing sequence, \*\* = intersection based on handheld Niton XRF Fe analyses.

The Niton XRF Fe analyses of the drill core, while generally consistent with laboratory Fe assays in the adjacent GBRC008 RC hole, should not be relied upon as there are inherent uncertainties in XRF analyses of non-pulverised diamond drill core sample. At this stage the Niton-based intersection for drillhole GBDD014 should be regarded as an indicative estimate of the intersection. Laboratory assay results will be reported when made available by SIMEC Mining and will provide a more accurate and reliable grade estimate of the intersection interval.

#### Cautionary Statement

This announcement contains certain statements which may constitute “forward-looking statements”. Such statements are only predictions and are subject to inherent risks and uncertainties which could cause actual values, performance or achievements to differ materially from those expressed, implied or projected in any forward looking statements. Investors are cautioned that forward-looking statements are not guarantees of future performance and investors are cautioned not to put undue reliance on forward-looking statements due to the inherent uncertainty therein.

#### Competent Persons Statement

The information in this announcement that relates to the Grants Basin Exploration Target\* is based on data and information compiled by geologist, Dr Chris Giles, a Competent Person who is a member of The Australian Institute of Geoscientists. Dr. Giles is Technical Director of the Company and is employed by the Company on a consulting contract. Dr. Giles has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration and to the activities being undertaken to qualify as a Competent Person as defined in the 2012 Edition of ‘Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves’. Dr. Giles consents to the inclusion in the announcement of the matters based on his information in the form and context in which it appears.

## APPENDIX 1: TABLE 1 OF THE 2012 EDITION OF THE JORC CODE

The table below is a description of the assessment and reporting criteria for the Grants Basin drilling program results, in accordance with Table 1 of The Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves.

### Section 1 Sampling Techniques and Data

Criteria	Commentary
Sampling techniques	<ul style="list-style-type: none"> <li>RC drill chips and powder were collected directly via a cyclone and cone splitter to obtain a 3-4 kg, two metre composite sample for drill assay and a 15-30 kg bulk sample (1 metre interval).</li> <li>Handheld Niton XRF readings were taken at a rate of three separate readings per metre of drill core and averaged into a single reading per metre. Approximately 1,490 separate readings of the drill core were collected.</li> </ul>
Drilling techniques	<ul style="list-style-type: none"> <li>Ausdrill (ANW) were contracted to drill the RC holes and supplied a large capacity RC rig (model DRA-RC600 with 316m of 4.5" drill rods).</li> <li>MJ Drilling completed the diamond drillhole using a multipurpose UDR650 drill rig and HQ3 (triple tube) drill rods and equipment to maximise core recovery.</li> </ul>
Drill sample recovery	<ul style="list-style-type: none"> <li>RC Sample recoveries were in general, excellent, with only a few small samples recorded near surface and only few wet samples.</li> <li>Drill core recovery was excellent at 100%.</li> </ul>
Logging	<ul style="list-style-type: none"> <li>RC samples and drill core were logged in detail by an experienced geologist directly into a tablet with logging software. Data was then uploaded into an Excel spreadsheet database.</li> <li>Logging is semi-quantitative and 100% of reported intersections have been logged.</li> <li>Logging is of a sufficiently high standard to support any subsequent interpretations, resource estimations and mining and metallurgical studies.</li> </ul>
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> <li>As detailed above, a 3-4 kg, two metre composite RC drill assay sample was collected via the cyclone and cone splitter.</li> <li>Industry standard sample preparation was conducted by the Bureau Veritas (BV) laboratory in Whyalla, SA. This consisted of jaw crushing then pulverising to 80% passing 75 µm.</li> <li>No sample preparation of the diamond drill core has been completed to date. Handheld Niton XRF readings were undertaken on whole drill core.</li> </ul>
Quality of assay data and laboratory tests	<p><b>RC Samples</b></p> <ul style="list-style-type: none"> <li>All RC samples are prepared and analysed at the Bureau Veritas (BV) laboratory in Whyalla.</li> <li>Samples were analysed using BV method XRF4_WH01, an extended Iron Ore suite using XRF fusion (fused with 12:22 lithium borate flux). Elements/compounds analysed include the following (detection limits in brackets): Fe (0.01%), SiO<sub>2</sub> (0.01%), Al<sub>2</sub>O<sub>3</sub> (0.01%), CaO (0.01%), S (0.002%), P (0.002%), TiO<sub>2</sub> (0.005%), Na<sub>2</sub>O (0.02%), K<sub>2</sub>O (0.002%), MgO (0.01%), Mn (0.01%), Ba (0.002%), Zn (0.002%), Pb (0.002%), Cu (0.001%), V (0.002%), As (0.001%), Co (0.001%), Cr (0.001%), Ni (0.001%) and LOI (loss on ignition) (0.01%).</li> <li>This XRF method used is industry standard and is considered appropriate at the exploration reporting stage.</li> <li>Quality control procedures include the insertion of standards, blanks and duplicates into the regular sample number sequence (1 in 25 samples). If any blank, standard or duplicate is out of spec, re-assay of retained samples is requested of the laboratory as a first step. BV also insert their own QC/QA samples into the sample sequence.</li> </ul> <p><b>Drill core</b></p> <ul style="list-style-type: none"> <li>Handheld XRF readings were collected using a Niton XL3t 500 unit.</li> <li>XRF readings were collected by analysing drill core directly. XRF data was collected at a rate of three separate 15 second readings per metre of drill core and averaged into a single reading per metre.</li> <li>Certified iron standards were analysed at the start of each session to check the accuracy of the XRF unit.</li> </ul>

Criteria	Commentary
	<ul style="list-style-type: none"> <li>The reported Niton XRF Fe results are regarded as being indicative, and, based on previous experience, are expected to be within 10% of the final laboratory assay Fe results.</li> </ul>
Verification of drilling sampling and assaying	<p><b>RC Samples</b></p> <ul style="list-style-type: none"> <li>Rigorous internal QC procedures are followed to check all assay results against expected QC/QA samples. Assay results are also checked against logged lithology to identify potential inconsistencies.</li> <li>All data entry is under control of an experienced geologist, who is responsible for data management, storage and security.</li> </ul> <p><b>Drill core</b></p> <ul style="list-style-type: none"> <li>Certified iron standards were analysed at the start of each session to check the accuracy of the XRF unit.</li> <li>All data entry is under control of an experienced geologist, who is responsible for data management, storage and security.</li> </ul>
Location of drillholes	<p><b>RC Holes</b></p> <ul style="list-style-type: none"> <li>Down hole surveys were conducted routinely every 30 m, using a Reflex electronic survey camera. Due to the magnetic nature of the iron bearing sequence, only the dip was useable.</li> <li>All drillhole collars were located using a DGPS (Omnistar HP signal with <math>\pm 0.1</math> m accuracy x:y:z) and are quoted in GDA94 datum coordinates.</li> </ul> <p><b>Diamond Hole</b></p> <ul style="list-style-type: none"> <li>Downhole surveys in the diamond hole were completed using a gyroscopic survey tool due to the magnetic nature of the iron sequence. The survey was completed by Borehole Wireline with readings collected at 30 m intervals.</li> <li>The drillhole collar was located using a DGPS (Omnistar HP signal with <math>\pm 0.1</math> m accuracy x:y:z) and are quoted in GDA94 datum coordinates.</li> </ul>
Data spacing and distribution	<ul style="list-style-type: none"> <li>Due to the reconnaissance nature of the drilling to date, drillholes are widely spaced, ranging up to 1k m x 0.5 km apart.</li> </ul>
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> <li>The drillhole azimuth and dip was chosen to intersect the interpreted shallow dipping iron formation as close as possible to right angles to maximize the value of the drilling data.</li> <li>Holes were drilled vertically and at -60 degrees to the north and south depending on their location, as shown on the attached plan and listed in the attached table of drill hole data.</li> <li>At this stage, no material sampling bias is known to have been introduced by the drilling direction.</li> </ul>
Sample security	<ul style="list-style-type: none"> <li>The two metre RC drill assay samples in calico bags were placed into polyweave bags which were then sealed with cable ties. The samples were transported to the BV assay lab in Whyalla by SIMEC Mining personnel. There is minimal opportunity for systematic tampering with the samples as they were not out of the control of Havilah/SIMEC Mining until they are delivered to the assay lab. This is considered to be a secure and reasonable procedure and no known instances of tampering with samples have occurred since drilling commenced.</li> <li>Not applicable to the drill core as no physical samples have been collected to date.</li> </ul>
Audits, reviews	<ul style="list-style-type: none"> <li>Ongoing internal auditing of RC sampling techniques and assay data has not revealed any material issues.</li> <li>Drill core - None completed to date.</li> </ul>

## Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	Commentary
Mineral tenement and land tenure status	<ul style="list-style-type: none"> <li>All drilling was undertaken on Havilah Resources 100% owned Exploration Licence EL 6280 (formerly EL 5393), "Mingary". The Exploration Target* extends onto EL 5848, "Mingary2" which is also 100% owned by Havilah.</li> </ul>

Criteria	Commentary
Exploration done by other parties	<ul style="list-style-type: none"> <li>There has been limited previous shallow, AC, RC and open hole percussion drilling carried out on the prospect by BHP, MIM and Havilah.</li> </ul>
Geology	<ul style="list-style-type: none"> <li>Stratiform iron formation belonging to the Braemar Iron Formation of Adelaidean age. The sequence has been folded into a basin shape during deformation. The Adelaidean sequence is overlain by a cover sequence of 2 to 36 m of Tertiary/Quaternary clays, grits and sand. The iron sequence is completely weathered to ~50-70 m with the base of weathering at ~70-90 m. The iron bearing sequence includes magnetite-hematite siltstones and magnetite-hematite ironstones. The iron bearing sequence is overlain by a quartz-biotite siltstone and underlain by tillites and quartzite. There is locally developed surficial lateritic iron enrichment where the iron sequence outcrops, which was the focus of mining in the late 1800s and early 1900s.</li> </ul>
Drill hole Information	<ul style="list-style-type: none"> <li>See separate table in this report.</li> </ul>
Data aggregation methods	<ul style="list-style-type: none"> <li>RC drill intersections are calculated using the length-weighted averages of individual samples. Minimum grade truncations are applied (18% Fe assay cut off with intervals of up to 8 continuous metres (4 samples) of internal dilution).</li> <li>The drill core intersection was calculated using a simple average of handheld Niton XRF results as all results are from single metres. Minimum grade truncations are applied (15% Fe (Niton XRF) cut off with intervals of up to 8 continuous metres of sub 15% Fe (Niton XRF) internal dilution).</li> </ul>
Relationship between mineralisation widths and intercept lengths	<ul style="list-style-type: none"> <li>Down-hole lengths are reported. Drillholes are generally oriented with the objective of intersecting mineralisation as close as possible to right angles, and therefore most down-hole intersections are in general, close to true width.</li> </ul>
Diagrams	<ul style="list-style-type: none"> <li>Included figures show the location of the Exploration Target shapes, drillholes, drill cross sections, a 3D view and a table of drillhole data is attached.</li> </ul>
Balanced reporting	<ul style="list-style-type: none"> <li>All results to date are reported.</li> </ul>
Other substantive exploration data	<ul style="list-style-type: none"> <li>Minimal substantive exploration data exists for this prospect.</li> </ul>
Further work	<ul style="list-style-type: none"> <li>The drill core will be cut and assayed at a laboratory and results will be reported when available.</li> <li>Further drilling is planned to advance the Grants Iron Ore Basin towards resource definition.</li> </ul>