

21 October 2014

# Blackjack Deposit Mineral Resource increased by 93%

## highlights

- PIOP Blackjack Deposit Mineral Resource increased by 93% to 86.2 Mt @ 56.8% Fe
- Majority of the Blackjack Mineral Resource is Indicated
- Significant increase in higher quality BID material
- New Global resource estimate for PIOP to be released in coming months



## Pilbara Iron Ore Project (PIOP)

### Tenement M47/1451 (Blacksmith)

Flinders Mines Limited (FMS) 100%

Flinders Mines Limited (ASX: FMS) is pleased to announce an update to the Mineral Resource at the Blackjack deposit at the Company's wholly-owned Pilbara Iron Ore Project (PIOP) in the Pilbara region of Western Australia.

### Blackjack Deposit

The infill drilling program undertaken at the PIOP this year (*Figure 1*) has included a considerable amount of new drilling at the Blackjack deposit (*Figure 2*). Prior to this year, no drilling has been undertaken at the Blackjack deposit since 2008. This year, 194 new

reverse circulation (RC) holes at a nominal spacing of 100m by 125m have been completed for a total of 6,910m of drilling. The results of this drilling have been reported in recent releases.

Based on these results, the updated Mineral Resource for the Blackjack deposit is 86.2 Mt @ 56.8% Fe, using a +50% iron cut-off. This represents a significant increase of 93% over the previously reported Inferred Mineral Resource for Blackjack. The majority of this Mineral Resource is now Indicated – 84.2 Mt @ 56.7% Fe, (*Table 1 and Figure 2*). Further detailed information relating to the generation of the resource estimate is shown in the JORC 2012 Table 1 on page 5.

Blackjack Deposit Mineral Resource for + 50% Fe (October 2014)

JORC Classification	Tonnage Mt	Fe%	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	P%	LOI%
Total Inferred	2.0	59.7	3.5	2.4	0.10	8.2
Total Indicated	84.2	56.7	9.8	4.2	0.07	4.0
TOTAL	86.2	56.8	9.7	4.2	0.07	4.1

Table 1 Blackjack Deposit Indicated and Inferred Mineral Resource.

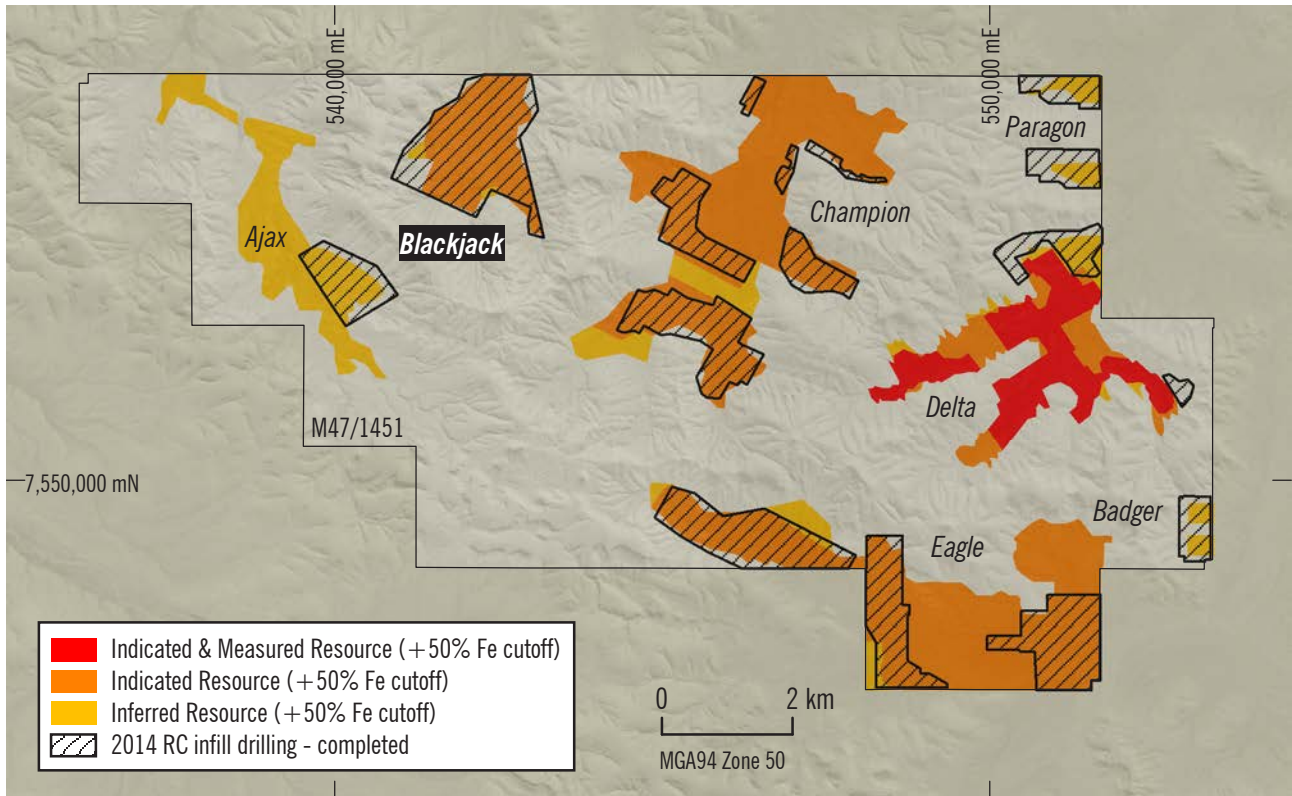


Figure 1 Location of the Blackjack deposit within the broader Pilbara Iron Ore Project (PIOP).

The distribution of the Inferred and Indicated Mineral Resources for the Blackjack deposit is shown in Figure 2. The Mineral Resource is comprised of 19.5 Mt of Bedded Iron Deposit (BID) at 56.4% Fe, 64.6 Mt of Detrital Iron Deposit (DID) at 57.0% Fe and 2.1 Mt of Channel Iron Deposit (CID) at 53.9% Fe (Table 2). Examples of the relationship between different geological units are shown in the cross sections in Figure 3 and 4.

The previous Mineral Resource for the Blackjack deposit was 44.8 Mt @ 55.3% Fe. The increase in the current resource is due to the discovery of predominantly high quality DID and BID mineralisation via infill drilling and drilling undertaken outside of the previous resource boundary. For example, the 19.5 Mt of BID also has low levels of SiO<sub>2</sub> (6.1%) and Al<sub>2</sub>O<sub>3</sub> (2.8%).

Drilling is planned to commence this week to test for further high grade mineralisation adjoining the Blackjack Mineral Resource and other BID targets within the PIOP. Significant results from drilling targeting new mineralisation will be reported as they are received.

This Mineral Resource update, when combined with those of the other deposits across the PIOP in coming months, will culminate in an update to the PIOP global resource and will be integrated into the Bankable Feasibility Study, currently due for completion by the end of June 2015.

**IAN GORDON**  
MANAGING DIRECTOR

21 October 2014

Deposit Type	Inferred Resource (Mt)	Indicated Resource (Mt)
Bedded Iron Deposit (BID)	1.9	17.6
Detrital Iron Deposit (DID)	0.1	64.5
Channel Iron Deposit (CID)	-	2.1
<b>TOTAL</b>	<b>2.0</b>	<b>84.2</b>

Table 2 Blackjack Deposit Mineral Resource summary of mineralisation types.

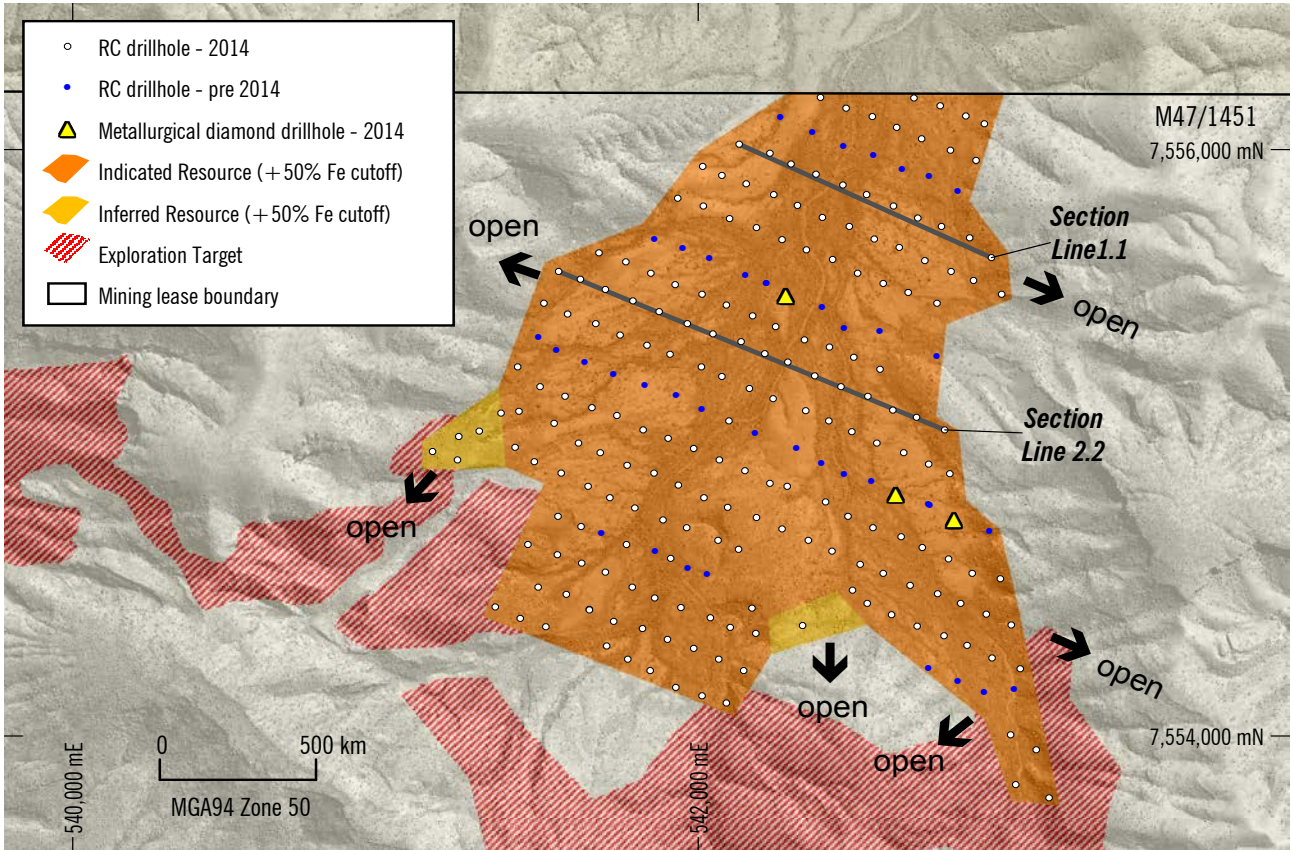


Figure 2 Blackjack deposit drill hole plan.

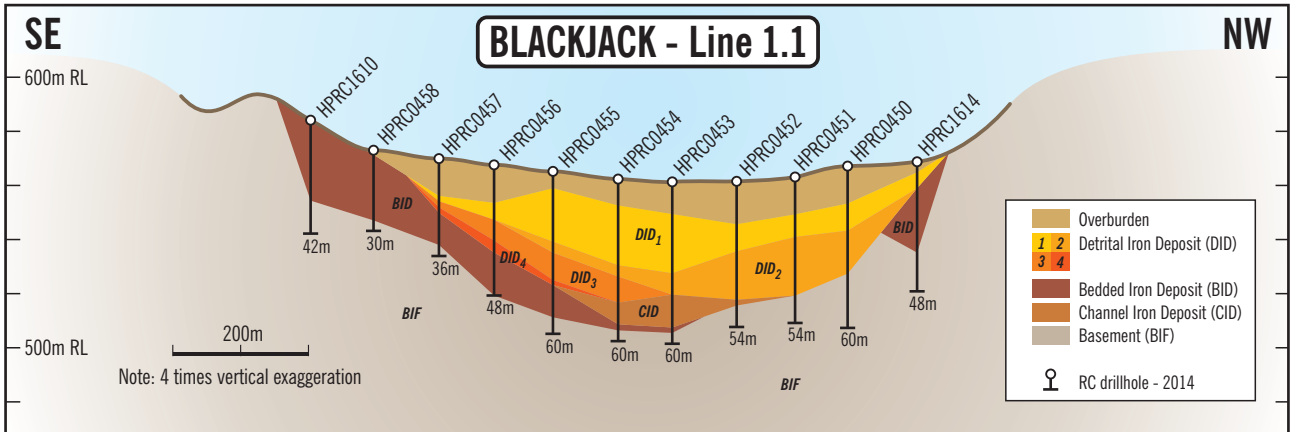


Figure 3 Line 1.1 cross-section through Blackjack deposit.

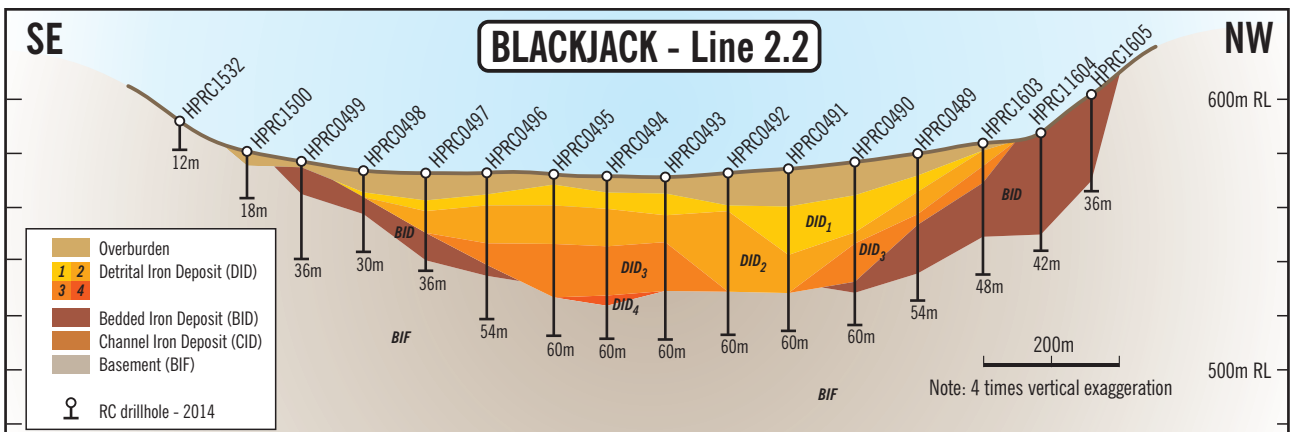


Figure 4 Line 2.2 cross-section through Blackjack deposit.

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## **QUALIFYING STATEMENTS**

### **Forward-looking statements**

*This release may include forward-looking statements. These forward-looking statements are based on management's expectations and beliefs concerning future events as of the time of the release of this document. Forward-looking statements are necessarily subject to risks, uncertainties and other factors, some of which are outside the control of Flinders Mines Limited, that could cause actual results to differ materially from such statements. Flinders Mines Limited makes no undertaking to subsequently update or revise the forward-looking statements made in this release to reflect events or circumstances after the date of this release.*

### **Competent Persons**

*The information in this report that relates to Exploration Targets and Exploration Results is based on information compiled by Dr Graeme McDonald who is a Member of The Australasian Institute of Mining and Metallurgy. The information that relates to the Mineral Resource Estimate has been compiled by Mr Paul Blackney of Optiro Pty Ltd. who is a Member of the Australasian Institute of Mining and Metallurgy. Both Dr McDonald and Mr Blackney have sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that they are undertaking to qualify as a Competent Persons as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Dr McDonald and Mr Blackney consent to the inclusion in the report of the matters based on their information in the form and context in which it appears.*

## JORC 2012 - Table 1

### Pilbara Iron Ore Project, October 2014

#### Section 1 - Sampling Techniques and Data

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

Criteria	Commentary
<b>Sampling techniques</b>	<ul style="list-style-type: none"> <li>Reverse Circulation (RC) drilling was used to collect 2m downhole samples for assaying.</li> <li>Typically, a 4 to 5kg sample was collected using a cone splitter. This sample was sent for major and trace element analysis via XRF of fused discs. All RC samples were submitted for analysis.</li> <li>Grade standards (Certified Reference Materials – CRM's) and field duplicate samples were used to monitor analytical accuracy and sampling precision.</li> <li>Diamond drilling methods were used to twin a number of the RC drillholes to test sample representivity and to collect samples for metallurgical test work.</li> <li>All diamond drillholes employed triple tubed coring methods with half core samples used for QAQC purposes and whole core used for metallurgical test work.</li> </ul>
<b>Drilling techniques</b>	<ul style="list-style-type: none"> <li>The vast majority of the downhole samples were collected from Reverse Circulation (RC) drill holes of approximately 140mm diameter utilising a face sampling hammer button bit.</li> <li>PQ sized Diamond (DD) holes were drilled for metallurgical work and HQ sized holes for geotechnical and QAQC purposes. All geotechnical holes were angled and the core was oriented.</li> </ul>
<b>Drill sample recovery</b>	<ul style="list-style-type: none"> <li>Sample quality and recovery of both RC and DD drilling were continuously monitored during drilling to ensure that samples were representative and recoveries maximised.</li> <li>RC sample recovery was recorded as good (G) or poor (P) based on visual appraisal of sample size. The majority of all samples were logged as good.</li> <li>Diamond core recoveries are routinely recorded in the database as a measure of length of core recovered versus the depth drilled.</li> <li>Results of previous RC-DD twin holes indicate that there is no significant bias in the RC assays related to the presence of water, the sample particle size or the material types comprising the sample.</li> </ul>
<b>Logging</b>	<ul style="list-style-type: none"> <li>Detailed geological logging of all RC and DD holes captured various qualitative and quantitative parameters such as mineralogy, colour, texture and sample quality.</li> <li>RC holes were logged at 2m intervals.</li> <li>The logging data is utilised for both Mineral Resource estimation and future mining and processing studies.</li> <li>All diamond core was digitally photographed.</li> <li>Logging data is collected via ruggedised laptops using Ocris logging software which applies inbuilt validation checks as data is entered. The data is subsequently downloaded into a dedicated Geobank database for storage.</li> </ul>
<b>Sub-sampling techniques and sample preparation</b>	<ul style="list-style-type: none"> <li>RC drilling samples were collected in pre-labelled bags via a cone splitter mounted directly below the cyclone.</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>Samples were sorted, dried and weighed at the laboratory where they were then crushed and riffle split to obtain a sub-fraction for pulverisation. The pulverised sample was reduced further and combined with various reagents prior to oven fusion to create a fused disc.</li> </ul>

Criteria	Commentary
<b>Quality of assay data and laboratory tests</b>	<ul style="list-style-type: none"> <li>All RC samples were submitted to Ultra Trace laboratory in Perth, an accredited laboratory with the National Association of Testing Authorities (NATA). Ultra Trace completed both the sample preparation and analytical assaying.</li> <li>All samples were analysed via X-Ray Fluorescence (XRF) of a fused disc for a standard suite of elements including: Fe, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, TiO<sub>2</sub>, MnO, CaO, P, S, MgO, K<sub>2</sub>O, Zn, Pb, Cu, BaO, V<sub>2</sub>O<sub>5</sub>, Cr, Ni, Co, Na<sub>2</sub>O.</li> <li>Multi-point Loss On Ignition (LOI) was determined at 425, 650 and 1000 degrees celsius via thermo-gravimetric analysis.</li> <li>Field duplicates were collected and inserted anonymously into the sample stream at a rate of 4 per 100 samples.</li> <li>Pulp standards (CRM's) were inserted into the sample stream as blind samples by field geologists at a rate of 5 per 100 samples.</li> <li>No significant issues or concerns were apparent with the analysis of the field duplicates or standards.</li> <li>Laboratory duplicates and standards were also used as quality control measures at different sub-sampling stages. No significant issues have been identified.</li> <li>No formal analysis of sample size versus grain size has been undertaken, however, the sampling techniques employed are industry best practice.</li> <li>Approximately 5% of all samples have been sent to an umpire laboratory as an independent check. No significant issues were identified and an excellent correlation exists between the laboratories.</li> </ul>
<b>Verification of sampling and assaying</b>	<ul style="list-style-type: none"> <li>Significant intersections have been independently verified by company geologists using geological logging and observation of the mineral assemblage.</li> <li>Twin hole (RC v DD) analysis demonstrates a high degree of intersection and grade compatibility between the dominant RC samples and the twinned core with no evidence of any significant grade bias due to drilling method.</li> <li>Twins formed by RC drillhole pairs also show good correlation between the original and twin hole.</li> <li>Assay data is loaded directly into the Geobank database which is managed by Flinders staff. Visual comparisons are undertaken between the recorded database assays and hard copy records at a rate of 5% of all loaded data. No errors have been identified.</li> <li>Several unannounced audits of the assay laboratory were conducted while Flinders' samples were being processed. No issues or concerns were apparent.</li> </ul>
<b>Location of data points</b>	<ul style="list-style-type: none"> <li>Drillhole collar locations have been surveyed using a Differential GPS with an accuracy of &lt;5cm for easting, northing and elevation coordinates.</li> <li>Collar surveys are validated against planned coordinates and the topographic surface.</li> <li>Downhole surveys have not been carried out as the vast majority of the drillholes are vertical and relatively shallow meaning that any minor departures from the planned drilling direction will have minimal to no impact.</li> <li>The primary grid used is Map Grid of Australia 94, Zone 50 (GDA94). Vertical datum is the Australian Height Datum (AHD).</li> <li>Topographic surface uses Lidar 50cm contours captured in 2009.</li> </ul>
<b>Data spacing and distribution</b>	<ul style="list-style-type: none"> <li>The drill grid spacing varies between deposits.</li> <li>For the majority of deposits, including Blackjack, a nominal spacing of approximately 100m by 125m is achieved. The Delta deposit is drilled at a spacing of approximately 50m by 50m over much of its area while Ajax is approximately 100m by 500m.</li> </ul>
<b>Orientation of data in relation to geological structure</b>	<ul style="list-style-type: none"> <li>As the mineralisation comprises predominantly flat lying valley infill deposits, the vertically orientated drilling represents an ideal sampling orientation. The underlying bedded deposits are hosted by sub-horizontal Banded Iron Formation meaning that the sampling is also near ideal.</li> </ul>

Criteria	Commentary
<b>Sample security</b>	<ul style="list-style-type: none"> <li>• Sample chain of custody is managed by Flinders.</li> <li>• Samples in calico bags are packed into polyweave bags and then placed into heavy duty bulk bags for transport to Tom Price. They are then transported via commercial freight directly to the laboratory.</li> <li>• Consignment notes for each submission are tracked and monitored.</li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li>• No formal audits or reviews have been undertaken. Optiro (independent Mineral Resource Consultant) has reviewed QAQC and twin hole analysis reports prepared by Flinders and undertaken independent validation of the database. No significant issues were identified.</li> </ul>

## Section 2 - Reporting of Exploration Results

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

Criteria	Commentary
<b>Mineral tenement and land tenure status</b>	<ul style="list-style-type: none"> <li>• The Pilbara Iron Ore Project (PIOP) comprises two 100% FMS owned tenements, M47/1451 and E47/1560, located approximately 70km NW of Tom Price.</li> <li>• The tenements lie within the Eastern Guruma Native Title Determination. Flinders has a current Native Title Agreement in place.</li> </ul>
<b>Exploration done by other parties</b>	<ul style="list-style-type: none"> <li>• Very little previous exploration has been undertaken by other parties. Robe River Mining undertook regional scale iron exploration while a number of other parties have undertaken diamond exploration.</li> </ul>
<b>Geology</b>	<ul style="list-style-type: none"> <li>• Local bedrock geology is dominated by the Dales Gorge, Whaleback Shale and Joffre Members of the Brockman Iron Formation. Incised into this bedrock are channel systems which contain buried Channel Iron Deposits (CID) and Detrital Iron Deposits (DID). Some areas of the bedrock are also mineralised forming Bedded Iron Mineralisation.</li> </ul>
<b>Drill hole Information</b>	<ul style="list-style-type: none"> <li>• Infill drilling on a 100 by 125m grid this year has added 194 RC holes for 6,910m to the Blackjack deposit dataset. A summary of this new drill hole information has been provided in recent releases. The current Blackjack dataset now comprises 237 RC drillholes for 8,674m. This report relates to Mineral Resources based on this drillhole dataset.</li> <li>• A diagram showing the location of drillhole collars is included in the accompanying release (Figure 2).</li> </ul>
<b>Data aggregation methods</b>	<ul style="list-style-type: none"> <li>• Data has been aggregated for Mineral Resource estimation based on physical features of the collected samples and their associated assay results to defined regions of similar geological and grade characteristics as discussed further in Section 3.</li> </ul>
<b>Relationship between mineralisation widths and intercept lengths</b>	<ul style="list-style-type: none"> <li>• The majority of drillholes are vertical and the ore body is predominantly horizontal, thus any intersection quoted represents an approximation of the true width of the mineralisation.</li> </ul>
<b>Diagrams</b>	<ul style="list-style-type: none"> <li>• Appropriate diagrams are included as part of the accompanying release, including a plan of drill hole collar locations and defined Mineral Resource areas as well as representative cross sections.</li> </ul>
<b>Balanced reporting</b>	<ul style="list-style-type: none"> <li>• No new exploration results are being reported. The drilling results related to this Mineral Resource have been reported in recent releases.</li> </ul>
<b>Other substantive exploration data</b>	<ul style="list-style-type: none"> <li>• See comments below in Section 3 regarding new bulk density estimates.</li> </ul>
<b>Further work</b>	<ul style="list-style-type: none"> <li>• Mineralisation remains open in a number of places. Drilling is planned for the December quarter 2014 to test for extension to the current Blackjack Mineral Resource and further targets in the adjacent hills.</li> </ul>

## Section 3 – Estimation and Reporting of Mineral Resources

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

Criteria	Commentary
<b>Database integrity</b>	<ul style="list-style-type: none"> <li>Logging data is collected via ruggedised laptops using Ocris logging software which applies inbuilt validation checks as data is entered. The data is subsequently digitally downloaded into a dedicated Geobank database for storage. Assay data is loaded directly into the same database. Visual validations of the assay and geological data are ongoing during the modelling and estimation process. The database is currently managed by qualified Flinders' staff with access restricted commensurate to the tasks they undertake. A physical check of assays within the database versus hard copies is done at a rate of 5%. No errors have been identified.</li> </ul>
<b>Site visits</b>	<ul style="list-style-type: none"> <li>The Competent Person for Flinders Mines is a full time employee of Flinders Mines Ltd who has made multiple site visits when drilling operations are in progress to observe drilling progress, sample collection geological logging, and general sample handling and logistics. Personnel from Flinders Mineral Resource consultant, Optiro, have also visited and reviewed the project site, deposit geology, drilling progress, sampling methods and sample handling.</li> </ul>
<b>Geological interpretation</b>	<ul style="list-style-type: none"> <li>Confidence in the geological interpretation of the deposit is high. The geological interpretation has been built up over time and is based on geological logging and geochemistry of RC and DD samples.</li> <li>Geological domains representing various types of Bedded Iron, Detrital Iron and Channel Iron Deposits (BID, DID and CID) are defined using chemical and physical characteristics. Surfaces representing the base of each of these domains are compiled from sectional interpretations. These surfaces are used to constrain the estimation process. Each drillhole sample is assigned to one of these domains.</li> <li>The stratigraphy of the deposits is well understood and any alternative geological interpretation is not likely to have a material effect on the overall resource estimate. The confidence in the stratigraphic interpretation and continuity of the BID mineralisation underlying the DIDs and CIDs would be improved with further closer spaced drilling.</li> </ul>
<b>Dimensions</b>	<ul style="list-style-type: none"> <li>Mineralisation at the Blackjack deposit extends in a northeast - southwest direction for up to 2.4km and has a maximum width in a northwest - southeast direction of 2.0km. Mineralisation occurs from surface in some parts of the deposit and down to a maximum depth of 62m below surface.</li> </ul>
<b>Estimation and modelling techniques</b>	<ul style="list-style-type: none"> <li>Grade values were estimated into the above domains using 100mE by 100mN by 6m RL panels and ordinary kriging. Domain boundaries are all treated as 'hard' boundaries for grade estimation and these boundaries are volumetrically represented by sub-blocks no smaller than 10mE by 10mN by 2mRL.</li> </ul>
<b>Moisture</b>	<ul style="list-style-type: none"> <li>All tonnages are estimated on a dry basis. Moisture content measurements are being done as part of the current phase of metallurgical testwork.</li> </ul>
<b>Cut-off parameters</b>	<ul style="list-style-type: none"> <li>The tabulated Mineral Resource is reported above a cut-off grade of 50% Fe.</li> </ul>
<b>Mining factors or assumptions</b>	<ul style="list-style-type: none"> <li>It has been assumed that the traditional open cut mining method of drill, blast, load and haul will be used. This is consistent with current practice at similar deposits within the Pilbara.</li> </ul>
<b>Metallurgical factors or assumptions</b>	<ul style="list-style-type: none"> <li>Multiple phases of metallurgical testwork have been undertaken. Results indicate that a saleable product can be achieved via a simple crush, screen and/or deslime process.</li> </ul>
<b>Environmental factors or assumptions</b>	<ul style="list-style-type: none"> <li>All key Commonwealth and WA government on-tenement environmental approvals for the development of the project have been obtained. More detailed studies regarding possible waste and process residue disposal options are ongoing.</li> </ul>



Criteria	Commentary
<b>Bulk Density</b>	<ul style="list-style-type: none"> <li>• Bulk density has been calculated from physical PQ diamond core measurements via the water immersion method. In total over 700 samples across the range of geological units and deposits have been measured. Average density factors of between 2.62 t/m<sup>3</sup> and 3.24 t/m<sup>3</sup> have been applied to individual geological units across the project. Sample numbers for RC and DID1 domains are low and an assumed density factor of 2.7 t/m<sup>3</sup> is used. This is not considered to be material as these domains are normally below the 50% Fe reporting cut-off.</li> <li>• The densities used are similar to known densities for like deposits across the Pilbara.</li> </ul>
<b>Classification</b>	<ul style="list-style-type: none"> <li>• The Blackjack Mineral Resource is classified as Indicated and Inferred. Factors taken into account include drill spacing, geological and mineralisation continuity and estimation quality.</li> <li>• The Mineral Resource classification reflects the views of the Competent Persons.</li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li>• Optiro (Flinders Mineral Resource consultant) has conducted a number of basic data and geological interpretation reviews during the compilation of the Mineral Resource estimate. Optiro personnel have been to the deposit site to observe the local geology, drilling methods, sampling methods and logging methods that result in the data that supports the geological interpretation and Mineral Resource estimation process. All practices and methods observed are considered by Optiro to be consistent with the classification applied to the Blackjack deposit.</li> <li>• No independent third party audits of the Mineral Resource estimate have been completed at this time.</li> </ul>
<b>Discussion of relative accuracy/confidence</b>	<ul style="list-style-type: none"> <li>• No direct testing of the relative accuracy and confidence of the Mineral Resource estimate has been undertaken. A significant amount of infill and extensional drilling data has been added to the drillhole database supporting this Mineral Resource estimate since it was previously reported in 2009. This additional data has resulted in significant global tonnage and grade reporting differences, with an overall tonnage increase of approximately 93%. This degree of global change is not unexpected in a deposit of this type and size given that the area covered by the current drilling has also increased significantly.</li> </ul>