# ASX and Media Release Scoping study completed for the Kestrel magnetite project at Hawks Nest

Western Plains Resources Ltd (ASX:WPG) is pleased to advise that it has completed a scoping study for the development of the Kestrel magnetite deposit at Hawks Nest. The results are highly encouraging and the Company intends move quickly to advance its magnetite assets.

The locations of the Kestrel magnetite deposit in MC 3809 at Hawks Nest 115 kilometres south of Coober Pedy in South Australia, and the Company's Peculiar Knob and Buzzard DSO deposits in RL 103 and MC 3810, are shown in Figure 1.



Figure 1 Location of Kestrel Magnetite Deposit at Hawks Nest

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Figure 1 also shows the proposed layout of key items of infrastructure for the development of the DSO mining operation, much of which could be shared with a magnetite development project.

#### **Hawks Nest Magnetite Deposits**

The Hawks Nest banded iron formation is part of a Palaeoproterozoic sedimentary sequence that occurs near the centre of the Gawler Craton in South Australia. These sediments were deformed and metamorphosed to amphibolite facies during the Kimbian Orogeny. They are cut in places by north westerly trending basic dykes of the Gairdner Dyke Swarm. The basement sequence is overlain in places by flat-lying Cretaceous claystone and Quaternary clay.

There are six known magnetite deposits at Hawks Nest: Kestrel, Goshawk, Harrier, Eagle, Kite and Falcon. All of these have been drilled in the past, but more work has been completed at Kestrel than at the other deposits.



#### Figure 2 Geological Cross Section through Kestrel Magnetite Deposit at Hawks Nest

The Kestrel deposit consists of a steeply north-dipping magnetite banded iron formation with intercalated sediments and dykes. The banded iron formation strikes in a east-west direction and its texture varies from centimetre to millimetre scale banding, but it is massive in places. It outcrops in the centre of the deposit.



In drill core, higher grade magnetite zones have very narrow or no quartz banding, with some suggestion of replacement of quartz by magnetite.

Kestrel has been drilled on lines 100 metres apart over a strike length of some 1,200 metres. Drilling consists of 17 diamond and 90 RC percussion holes. Holes are generally 50 metres apart on section. Most holes were limited to a depth of 135 metres below surface. The deposit is open along strike in both directions, and at depth. It appears to be closed to the north, but it may extend further south than is defined by drilling to date.

A geological section through the Kestrel deposit on line 511,330mE is shown in Figure 2.

The other magnetite deposits at Hawks Nest have all been drilled in the past, but in lesser detail than for Kestrel. Consequently they are not as well understood as Kestrel.

#### **Resource Estimates**

The block model for the Kestrel deposit was prepared following interpretation of the geological boundaries on each section. Ordinary kriging was used to estimate iron, silica, alumina, phosphorus and loss on ignition. The block model covers 1,500 metres of strike length. Specific gravities for each block were assigned based on a regression algorithm that takes into account iron content. Resource estimates were classified according to the size of the search ellipsoid used in each search pass.

Resource estimates for the other magnetite deposits were based on a combination of results from limited drilling and detailed ground geophysical surveys. The resource estimates for all six deposits are set out in Table 1.

Deposit	Category	Million Tonnes	Fe	Р	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	LOI
			%	%	%	%	%
Kestrel Measured resource		100	37	0.06	37	0.83	0.58
	Indicated resource	60	36	0.06	38	1.00	0.79
	Inferred resource	60	36	0.06	39	1.05	0.78
	Total resource	220	36	0.06	38	0.94	0.69
Goshawk	Inferred resource	148	35	-	-	-	-
Harrier	Inferred resource	54	35	-	-	-	-
Eagle	Inferred resource	92	31	-	-	-	-
Kite	Inferred resource	30	51	-	-	-	-
Falcon	Inferred resource	25	32	-	-	-	-
Total measured, indicated and inferred resource		569	35	-	-	-	-

Table 1Resource Estimates, Hawks Nest Magnetite Deposits



# **Davis Tube Metallurgical Testwork**

Drill hole cuttings from two RC holes at Kestrel and one each from Goshawk, Harrier, Eagle, Kite and Falcon were retrieved and submitted for Davis Tube metallurgical testwork.

The Davis Tube is a laboratory sized magnetic separation device that simulates the performance of an industrial scale magnetic separation plant at a particular grind size. Composite samples from each four metre interval from the entire length of each magnetite intersection were tested.

The locations of the holes for which cuttings were tested using the Davis Tube are shown in Figure 3. The background image here is the total magnetic intensity as recorded during the Company's January 2008 aeromagnetic survey.



Figure 3 Location of Holes Sampled for Davis Tube Testwork at Hawks Nest

Davis Tube testwork was carried out following grinding of the samples to a size of 100% passing 75 microns, which is a relatively coarse grind size for magnetite projects. The results of this testwork are summarised in Table 2, and the results for one of the holes, HKN065 at Kestrel, are set out in more detail in Figure 4.

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Deposit	Hole	Intercept	Davis Tube Recovery	Davis Tube Concentrate				
	Number	(m)	%Mass	%Fe	%P	%SiO <sub>2</sub>	%Al <sub>2</sub> O <sub>3</sub>	
Kestrel	HKN065	54	45.4	65.2	0.00	8.71	0.11	
Kestrel	HKN077	60	44.9	65.3	0.01	8.52	0.07	
Goshawk	HKN081	62	48.6	65.3	0.01	7.97	0.15	
Harrier	HKN088	72	47.2	66.5	0.01	7.52	0.16	
Eagle	HKN100	92	41.2	67.5	0.01	6.41	0.10	
Kite	HKN092	68	55.2	69.6	0.01	3.24	0.39	
Falcon	HKN091	68	35.8	67.1	0.01	6.53	0.40	

Table 2Davis Tube Testwork, Hawks Nest Magnetite Deposits

As shown in Table 2, mass recoveries to concentrate varied from 35.8% from hole HKN091 at Falcon to 55.2% from hole HKN092 at Kite. The iron grade of the Davis Tube concentrates varied from 65.2% in hole HKN065 at Kestrel to 69.6% in hole HKN092 at Kite. Silica levels trend lower with increasing concentrate iron grade as anticipated, and are expected to fall further with smaller grind size. Overall, the mass recovery to concentrate is relatively high when compared with many other Australian magnetite deposits where the results of similar testwork have been reported.



#### Figure 4 Davis Tube Testwork from Hole HKN065, Kestrel Deposit, Hawks Nest

The mass recovery to concentrate for each four metre composite sample tested from hole HKN065, as shown in Figure 4, is relatively consistent down-hole, as is the iron grade of the concentrate.



### Process Plant

An engineering study has been completed at the level of detail appropriate for a scoping study. The study reviewed all available metallurgical testwork in order to develop a suitable treatment flowsheet. The proposed flowsheet incorporates crushing, screening, grinding, magnetic separation, concentrate dewatering and the production of magnetite concentrate. The process plant design was costed on the assumption that a total of 13.5 million tonnes of run of mine ore would be treated to produce 6 million tonnes per annum of magnetite concentrate. These assumptions are consistent with the results of the Kestrel Davis Tube testwork.

# **Open Pit Optimisation**

Cost estimates have been prepared for a 13.5 million tonne per annum contract mining operation and a series of open pit shells have been designed using Whittle pit optimisation software. The results of the modelling for a particular set of assumptions are summarised in Figure 5. This drawing shows that all of the 220 million tonne Kestrel resource can be recovered and in fact the limiting constraint on the ultimate pit size is set more by the depth extent of existing drilling than by mining economics.



Figure 5 Pit Optimisation Study

One of the optimised pit designs is shown schematically in Figure 6. This drawing shows that the pit would be about 1,500 metres long, 1,000 metres wide and 135 metres deep.



Overall pit wall slopes have been set at 45 degrees. This optimised pit would recover 231 million tonnes (diluted) of magnetite mineralisation at average grade of 35.4% iron and a life of mine average waste:ore strip ratio of 1.16. In practice, the strip ratio would be marginally higher than this, once berms and ramps have been incorporated in the pit design. The life of the Kestrel mine alone would be 16 years.



Figure 6 Schematic Optimised Open Pit, Kestrel Deposit

## **Capital Cost Estimates**

The total initial capital cost estimate for the Kestrel project is estimated to be approximately \$720 million, inclusive of EPCM and contingencies. Before contingencies, the largest components of this are \$388 million for the metallurgical plant and \$75 million for a rail spur from the Central Australian Railway to site.

A significant amount of the infrastructure planned for the Company's DSO project can be utilised in its proposed magnetite project, leading to a reduction in overall capital expenditure requirements.

## **Operating Cost Estimates**

The total cash operating cost estimate to FOB is expected to be approximately \$51 per tonne in early years, growing to about \$58 per tonne in later years because unit mining costs will increase as the pit deepens. These costs are expressed in real terms.



The cash operating costs include all royalties. The FOB costs have been made on the assumption that Port Bonython is the port of export.

At current benchmark prices, the cash operating margin would be more than \$40 per tonne of concentrate sold, assuming magnetite sells at the same price as iron ore fines.

# **Further Potential**

The scoping study has focussed on Kestrel as it is currently known but the limits of the Kestrel deposit have not yet been defined. Davis Tube testwork suggests that some of the other magnetite deposits at Hawks Nest may have even better metallurgical characteristics than Kestrel and there is clear potential in all deposits to increase the total tonnage of magnetite mineralisation with further drilling. The optimum scale for project development may exceed the 6 million tonnes per annum assumed, and the life of the project could be much more than the 16 years incorporated in the scoping study. There is also potential to value add, through the production of pellets, DRI or pig iron.

# **Future Plans**

The Company will seek a partner to fund further exploration and more detailed project development studies for its Hawks Nest magnetite assets.

#### Scoping Study Consultant Team

The key organisations contributing to the Kestrel magnetite deposit scoping study summarised in this release are:

- Resource modelling: Hellman & Schofield Pty Ltd
- Davis Tube metallurgical testwork: Amdel Limited
- Metallurgical consultant: Multimet
- Flowsheet, plant design and plant operating and capital cost estimates: Metplant Engineering Services Pty Ltd
- Mining cost estimates and open pit optimisation: Australian Mine Design and Development Pty Ltd

#### **Competent Person**

The mineral resource estimate for the Kestrel deposit contained in this report is based on information compiled by Mr Arnold van der Heyden, a Member of the Australasian Institute of Mining and Metallurgy. He is an employee of Hellman & Schofield Pty Ltd. He has sufficient experience which is relevant to the style of mineralisation and types of deposits under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the December 2004 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code). Arnold van der Heyden has consented in writing to the inclusion in this report of the matters based on his information in the form and context in which it appears.

#### Further Information

For further information please contact WPG's Executive Chairman Bob Duffin, on (02) 9247 3232 or 0412 234 684, or Heath Roberts, Executive Director and Company Secretary on (02) 9247 7359 or 0419 473 925.