



ASX and Media Release

27 October 2011

TESTS CONFIRM HIGH TiO₂ ILMENITE AT SHEFFIELD'S MID-WEST HMS PROJECTS

KEY POINTS

- Preliminary metallurgical testwork confirms high TiO₂ ilmenite at Yandanooka, West Mine North and McCalls Projects
- Potential for production of premium grade chloride or synthetic rutile (SR) feed-ilmenite through the use of conventional separation technologies

Bulk minerals explorer Sheffield Resources ("Sheffield") (ASX:SFX) today announced positive results from heavy mineral characterisation testwork on bulk samples from the Yandanooka, McCalls, and West Mine North heavy mineral sand (HMS) deposits in the North Perth Basin.

Managing Director, Bruce McQuitty said the test results confirm the high titanium content of the ilmenite at three of Sheffield's HMS projects - indicating their potential suitability for chloride route or synthetic rutile processing.

"The testwork is an important step in the development of our heavy mineral sand deposits."

"Sources of high quality, high TiO₂ ilmenite are relatively scarce globally; this is the market niche we are pursuing," Mr McQuitty said.

The testwork, undertaken by CPG Mineral Technologies in Carrara, Queensland, used laboratory-scale equipment to simulate conventional mineral processing methods, and comprised gravity, magnetic and electrostatic separators.

One bulk sample was submitted from each deposit, comprising composited drill samples taken from 1 to 3 adjacent holes and ranging in weight from 14kg to 65kg. Testwork focused on assessing the quality of ilmenite present in each of the deposits. Non-magnetic concentrates containing significant rutile and zircon were also produced.

The testwork indicates each deposit has mineralisation which responds to conventional processing techniques, with ilmenite concentrates produced containing between 60% and 66% TiO₂. Some contaminants were not completely removed from the concentrates, due to the small sample weights and the limited scope during this testwork for cleaner and scavenger stages. CPG have stated that with additional processing stages it is likely that contaminant levels could be reduced to levels suitable for a chloride-grade ilmenite.

Particle size analysis carried out during testwork was also positive, especially the higher than expected D₅₀ for HM (+2.85sg) in the McCalls sample at 125µm. D₅₀ for HM (+2.85sg) in the Yandanooka and West Mine North samples are 113 µm and 184 µm respectively.

Sheffield will complete scoping studies on these deposits before committing to an expanded phase of metallurgical testwork to provide concentrate samples for marketing, and development of processing flowsheets.

Sheffield has previously announced a Mineral Resource for Yandanooka^{1,2} of **71.75Mt @ 2.6% HM**, comprising 61Mt @ 2.8% HM (Indicated) and 10.75Mt @ 1.1% HM (Inferred), **containing 1.84 million tonnes of HM**, with a mineral assemblage of 11.5% Zircon, 6.9% Rutile, 10.2% Leucoxene and 61.9% Ilmenite (see ASX release dated 16 August, 2011).

Sheffield has also stated an Exploration Target^{*3} for the McCalls deposit of between **1.5 and 2.5 billion tonnes grading between 1.1% and 1.3% HM**. The average heavy mineral assemblage at McCalls as determined by the previous holders, BHP Billiton (ASX: BHP) is 4.37% zircon, 0.52% rutile, 4.08% leucoxene and 74.2% ilmenite (see ASX release dated 20 September, 2011).

Mineral Resource estimation for West Mine North is currently underway, following a successful drilling campaign earlier in the year by Sheffield (see ASX release dated 9 August, 2011).



Figure 1: Wet table testwork on bulk samples from left: Yandanooka, West Mine North and McCalls deposits.

ENDS

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*Sheffield Resources has not yet reported Mineral Resources at McCalls and any discussion in relation to targets and Mineral Resources is conceptual in nature. There has been insufficient exploration to define a Mineral Resource and it is uncertain if further exploration will result in the determination of a Mineral Resource.

COMPETENT PERSONS' STATEMENT

¹ The information in this announcement that relates to reporting of resource and exploration results is based on information compiled under the guidance of Mark Teakle. Mr Teakle is a consultant to the Company. Mr Teakle is a Member of the Australasian Institute of Geoscientists and the Australasian Institute of Mining and Metallurgy and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and the activity to which they are undertaking to qualify as Competent Person as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ("JORC Code")'. Mr Teakle consents to the inclusion in the report of the matters based on their information in the form and context in which it appears.

² The information in this announcement that relates to resource estimation for Yandanooka is based on information compiled under the guidance of John Vann. Mr Vann is a Principal of Quantitative Group and acts as a consultant to the Company. Mr Vann is a Fellow of the Australasian Institute of Mining and Metallurgy and a Fellow of the Australasian Institute of Geoscientists and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and the activity to which they are undertaking to qualify as Competent Person as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ("JORC Code")'. Mr Vann consents to the inclusion in the report of the matters based on their information in the form and context in which it appears.

³ The information in this announcement that relates to the Exploration Target for McCalls is based on information compiled by Bruce McQuitty. Mr McQuitty is a full time employee of the Company. Mr McQuitty is a Member of the Australasian Institute of Geoscientists and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and the activity to which they are undertaking to qualify as Competent Person as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ("JORC Code")'. Mr McQuitty consents to the inclusion in the report of the matters based on their information in the form and context in which it appears.

FORWARD LOOKING STATEMENTS

Some statements in this announcement regarding estimates or future events are forward-looking statements. They involve risk and uncertainties that could cause actual results to differ from estimated results. Forward-looking statements include, but are not limited to, statements concerning the Company's exploration programme, outlook, target sizes and mineralised material estimates. They include statements preceded by words such as "expected", "planned", "target", "scheduled", "prospective", and similar expressions.

ABOUT SHEFFIELD RESOURCES

Sheffield Resources Limited (**Sheffield**) is a new exploration company with a bulk minerals focus. The Company's Projects are geared towards the steel industry feed cycle (iron ore and tungsten) and the emerging fillers-ceramics-pigments cycle (talc, zircon, titanium dioxide).

ASX Code – SFX

Market Cap @ 27.5cps - \$16.1m

Issued shares – 58.7m

Cash - \$3.3m (at 30/9/2011)

The Company has over 6,000km² of highly prospective tenure, all situated within the state of Western Australia.

TALC

Sheffield has 1,152km² of tenure over the 175km-long Moora Talc Belt which represents a dominant ground position over a region that has, for the last 50 years, been exclusively controlled by major mining companies.

The Moora Talc Belt includes the large Three Springs mine which is owned by Imerys subsidiary Luzenac Australia Pty Ltd. Three Springs is renowned for producing high purity talc and is a relatively simple “dig-and-deliver” operation.

The existing infrastructure is excellent. A railway and a sealed highway transect the project and connect to Geraldton port approximately 170km to the northwest.

Sheffield's large tenement holding contains numerous talc occurrences and has the potential to become a strategic talc asset. Sheffield therefore represents a unique opportunity for investors to gain exposure to one of the few high-grade talc explorers in the world.

HEAVY MINERAL SANDS

Sheffield controls over 5,000km² of mineral sands tenure in the established North Perth Basin mineral sands province and the emerging Carnarvon, Eucla and Canning Basin provinces.

The Dampier project, located near Derby in WA's Kimberley region is the most recent addition to Sheffield's heavy mineral sands project portfolio. Dampier is a large scale zircon play formerly explored by Rio Tinto.

Sheffield's North Perth Basin tenement package of over 2,500km² contains seven advanced exploration projects: West Mine North, Ellengail, Yandanooka, Durack, Beekeepers, and Irwin which are located near Eneabba; and the large McCalls deposit - a former BHP project located near Gingin. These projects are well located close to existing mineral sands operations and to a network of highways and railway lines connecting to Geraldton and Fremantle/Kwinana ports. Sheffield's strategy is, subject to exploration success, to build multiple HMS projects capable of supporting a flexible mobile mining plant.

IRON

Sheffield's Pilbara iron ore projects consist of 5 granted tenements and 8 tenement applications, 6 of which are subject to ballot with multiple competing parties. Sheffield's strategy is to target hematite mineralisation adjacent to infrastructure in the world class Pilbara iron province and to build up consolidated tenement holdings over time. High grade iron mineralisation has been identified on three of the Company's tenements.