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STRONG DEMAND FOR EXPANDABLE GRAPHITE HIGHLIGHTED BY CHINESE BUILDING MATERIAL EXPERT

Graphex Mining Limited ('Graphex') (ASX: GPX) is pleased to provide some market commentary on expandable graphite and its use in flame retardants, particularly flame retardant building materials following a graphite industry and graphite building materials conference held in Xingshan, Hubei Province, China on 3 December 2017.

The conference was attended by representatives of Graphex's prospective JV partner CN Docking and the keynote speaker was Mr Jiang Yang who is the Group Vice President of China National Building Materials (CN Docking's major shareholder) and is also the President of the China Building Materials Application Technology Research Institute. In his address, Mr Jiang (pictured below presenting at the conference) stated that "China needs 40 million tonnes of fire retardant building materials per annum, which will contain 5% expandable graphite." In other words, 2 million tonnes of expandable graphite is required per annum.



To put this in context, we estimated total global production of flake graphite in 2016 at around 860,000 tonnes and not all of this material is able to generate expandable graphite. It is commonly understood that China's coarse flake graphite reserves have largely diminished and supply is also under threat by environmental restrictions forcing mine closures.

Graphex Managing Director, Phil Hoskins commented, *“This scale of expandable graphite demand vastly exceeds all estimates we have previously received. To put this level of graphite demand in perspective, it is more than 10 times greater than existing natural graphite demand from the lithium ion battery industry and most commodity analysts aren’t predicting battery graphite demand to reach this level until 2025-2030. The exciting part about the flame retardant market is it is not dependent on the rate of electric vehicle take-up, it is here now. Another key differentiator is the potential value to graphite producers – batteries require lower value fine flake graphite while flame retardants require higher value coarser flake graphite. As we have flagged in previous releases, we see significant upside to the basket price estimate used in the PFS (which was US\$1,217/t).”*

Expandable graphite – flame retardant building materials

The expandable graphite demand estimates above relate to the Chinese flame retardant building material industry alone. China’s focus on flame retardants is driven in part by significant property damage and loss of life caused by large scale fires, most notably at the Tianjin Port in December 2015. China’s building regulations have since been amended to mandate the use of flame retardant building materials in future construction for inner insulation and finishing exterior walls. Expandable graphite is the preferred flame retardant and viewed by the industry as an environmentally friendly solution to the problem. Owing to an extreme shortage of coarse flake graphite feedstock for the manufacture of expandable graphite, such regulations have been to a large extent, difficult to enforce.

The requirement for flame retardant building materials is not confined to China. Examples of large scale fires that have occurred elsewhere, include London (Grenfell Tower), Dubai (Torch Tower) and Melbourne (Lacrosse Building).

On 28 July 2017, the UK government launched an independent review of building and fire safety regulations in response to the fatal Grenfell Tower blaze. The review was announced following the failure of the first large-scale fire tests carried out by the Building Research Establishment on cladding systems used on high-rise residential buildings in the UK.

In Dubai, where planning and fire experts estimate that there are 30,000 buildings in the UAE that have highly flammable cladding, fire safety rules have been amended to require fire resistant cladding. In Melbourne, experts estimate that more than 5,000 buildings in Victoria contain non-compliant cladding, similar to that used on the Grenfell Tower in London and Australia wide, insurers are warning building owners with similar cladding that their properties may be uninsurable.

Expandable graphite – other uses

Expandable graphite has a number of other end uses including graphite foil for electronic devices, graphite paper, gasket and seals. Furthermore, expandable graphite is also being developed as a flame retardant in other industries.

Graphex has had Chilalo graphite successfully tested for the manufacture of other flame retardant products, including flame retardant polyurethane ensuring that car seat cushions are made flame retardant to prevent fire spreading and flame retardant epoxy resin and Ethylene Vinyl Acetate, both of which have the potential to be used in a variety of applications.

The Company expects to release further details on offtake arrangements for Chilalo product in the new year.



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About Graphex

Graphex Mining Limited is an Australian exploration and development company, dedicated to advancing the world class Chilalo Graphite Project, located in south-east Tanzania. Chilalo is host to a high-grade mineral resource and has demonstrated an ability to produce a premium graphite concentrate with a substantial portion of coarse flake material. Chilalo graphite possesses outstanding expandability characteristics, making it ideally suited to the rapidly growing expandable graphite market.

Graphex has an experienced board and management team with specific skills and extensive experience in African based project development, exploration, mining and processing. The Company has a long and well-established presence in Tanzania.

For more information, visit www.graphexmining.com.au.