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#### Key information

Sector: Mining

This report is an updated investigation into growing kaolin and gold potential at InterGroup's Brilliant Brumby Project.

#### Business

A kaolin and gold mining company in Queensland, Australia. The Company has a 100% stake in the Brilliant Brumby Project which is a fast-expanding major gold project in Northern Queensland which is now demonstrating rapidly growing kaolin potential. The Brumby Project covers more than 160km<sup>2</sup> of highly prospective ground in an underexplored gold district lying within the Charters Towers Gold Province.

**InterGroup Mining Limited** is an unlisted Australian Public Company registered in Queensland under ACN 163 989 553.

**Website**  
[www.igmining.com](http://www.igmining.com)

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## Brilliant Brumby Kaolin & Gold Project

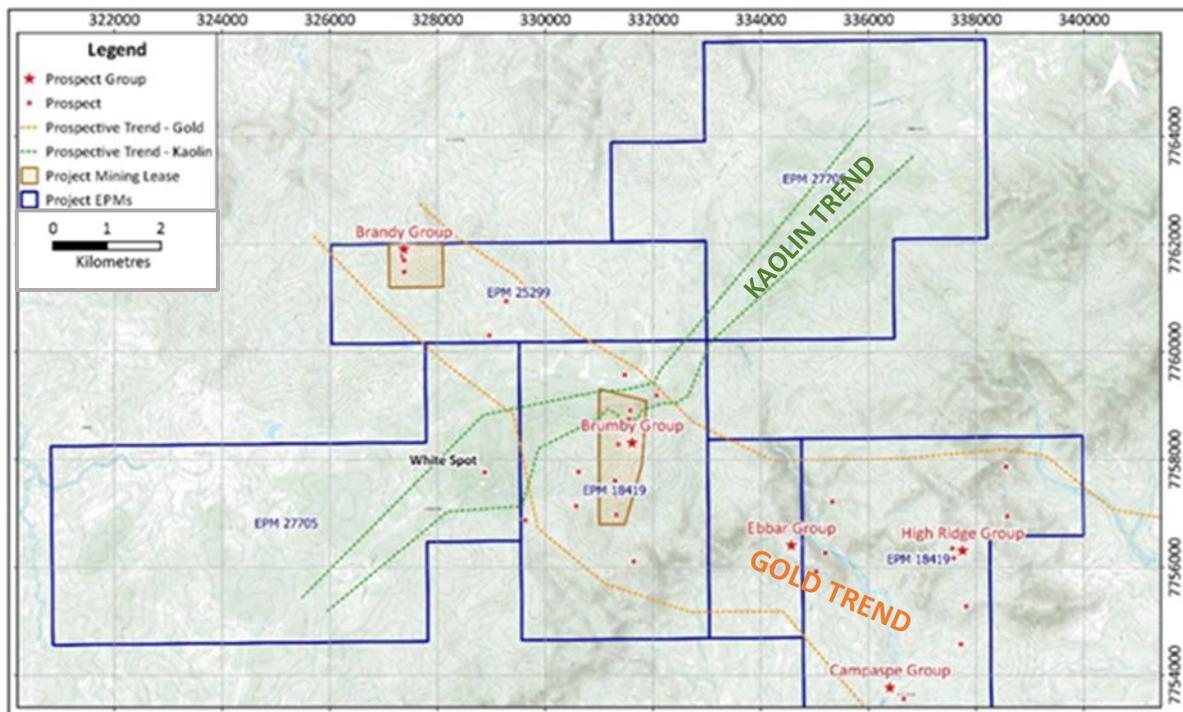
### Co-mining kaolin and gold offers the potential to generate highly compelling economics by supplying multiple valuable products

- ❖ **Rapidly expanding kaolin and gold project at a great address.** InterGroup Mining's (IGM) Brilliant Brumby Project lies in an under explored but highly prospective area in the rich Charters Towers Gold Province, NE Queensland, Australia. Brilliant Brumby is shaping up to be a potentially large scale near surface gold deposit. Analysis of drill logs from the Surprise Prospect has also revealed a substantial kaolin resource (600m in strike, 600-800m wide and 5m – 18m thick) produced by the hydrothermal alteration of the host rock granite that surrounds the gold bearing quartz lodes – offering the potential to co-mine kaolin and gold.
- ❖ **Laboratory tests have revealed that Brumby kaolin is a high value product.** Extensive test work on the highly kaolinized saprolite samples from Brumby has revealed that the resource contains some significant high-quality kaolin. Market opportunities include supplying the major users - the paper & ceramics industries. Test work results have already established the potential for the use as a pozzolan to improve the qualities of concrete as well as upgrading the material to 4N, and possibly, 5N high purity alumina (HPA). Progress is now being made towards developing production operations for saleable grade kaolin and metakaolin.
- ❖ **High quality Brumby metakaolin is being positioned to attract a premium price.** Metakaolin is a leading Supplementary Cementitious Materials (SCMs) that may be used as a part of cement. There seems to be a growing division between the use of high quality more reactive SCMs and filler SCMs in the cement industry. Metakaolin and silica fume are showing promising and durability performance whilst all the other SCMs are deemed second rate. IGM plans to employ state-of-the-art flash calcining technology to produce a consistent high-quality High Reactivity Metakaolin (HRM) which is an obvious premium product.
- ❖ **Big green drivers – use of metakaolin in cement can cut CO<sub>2</sub> emissions by 40%.** The cement industry is one of the worst polluters on the planet, but the major players are already committed to delivering carbon-neutral cement by 2050. A central theme of this seems to be the increasing use of metakaolin which offers the opportunity to earn carbon credits. The Paris Agreement looks likely to continue to increase demand for carbon credits driving up prices. All this means that the carbon credit market represents an additional end-market driver.
- ❖ **Gold production costs at Brumby could be very low by global standards.** High-grade near-surface gold mineralisation suggests low-cost mining via a series of shallow open pits with straight forward processing. The growing appreciation of the sheer scale of the high-quality, near-surface kaolin potential that encase the gold bearing veins in the key areas of this property provides the very realistic prospect of co-mining. Certainly, this unique mineralogical combination of kaolin and gold could allow for mining costs to be shared which could set the scene for the creation of a truly low-cost operation by global standards.

## INTRODUCTION

InterGroup Mining (IGM, the Company) is a kaolin and gold mining company in NE Queensland, Australia. The Company has a clear strategy to establish viable mining operations based on the gold veins that characterise the Mt Stewart region in this area. IGM has a 100% stake in the Brilliant Brumby Project which is a rapidly expanding gold project in this highly prospective region. Initial exploration success has been in the areas surrounding a number of historic high-grade gold mines. Alongside detailed exploration and drilling, the Company has already successfully begun trial mining and processing.

In addition to gold, a substantial kaolin trend has now been discovered across the project area. Kaolin has a wide range of industrial applications and a ready market in Asia for derivative products with high added value for use in green concrete and batteries for EVs. This unique combination of kaolin and gold provides the opportunity for co-mining where kaolin could subsidise the cost of gold production which has the potential to deliver compelling economics.



**Brilliant Brumby Project highlighting the 20km gold trend and the 18km kaolin trend**

## HIGH GRADE GOLD PROJECT

The Brilliant Brumby Project covers 163km<sup>2</sup> in an underexplored gold district of the Charters Towers Gold Province which has produced more than 20 million ounces of gold over the years. This legendary gold mineralisation is mesothermal in origin with such gold deposits being well-known for their large size and continuation to depth. High grade gold has been discovered up to 176g/t along with a number of samples in excess of 20g/t gold. More than 15,000 meters of drilling has served to confirm that the widespread surface mineralisation continues down hole with high grade drill samples running up to 74.1g/t gold coupled with some decent widths.

Gold bearing quartz lodes have been shown to occur within structurally controlled clusters which are typically 1-2km long and 0.5-1km wide. Importantly, there is also growing evidence that such lodes lie over a 20km long WNW trending corridor within the project's boundaries. Some of the best discoveries at the project to date have been along a prominent 2km trend called the Brilliant Brumby line. A mining licence (ML 100008) has been granted for this area which includes two historic high-grade gold mines. Initial gold mining activity at ML 100008 began in 2018 and good progress has been made since then with more high-grade areas continuing to be discovered. The strategy of pursuing early revenue generation has allowed the mining technique to be perfected as well as developing the design for mineral processing circuit. Together these provide invaluable input data for the planning of a far larger full-scale project moving ahead.

The size of the prize is just beginning to be unveiled as only 7% of the project area has been mapped in detail. Work by IGM across this small part of the overall licence area has begun to highlight the sizeable potential scale of this project which is now known to extend over this 20km long by 5km wide corridor. Analysis of the veins and lodes in this high-grade gold system has revealed a style of the vein deposits that varies with increasing depth below the surface as it was in prehistoric times. All of which suggests the potential for more consistent and continuous gold mineralisation at depth.

### EXPANDING KAOLIN POTENTIAL

IGM was the first company to recognise the kaolin potential of the area in 2017. Over millions of years, the feldspar in the granite which hosts the gold bearing quartz mineralisation has been weathered into kaolin. IGM has gone onto identify the potential for significant kaolin resources over 18km of strike length on the Lolworth plateau, with impressive quality. The assessment of this kaolin mineralisation is ongoing and in recent months a further 60km<sup>2</sup> exploration licence has been granted allowing IGM to investigate the potential over this entire 18km long kaolin trend. Drilling of the new acreage has just begun with the target of delineating a JORC-compliant resource over this far larger area.



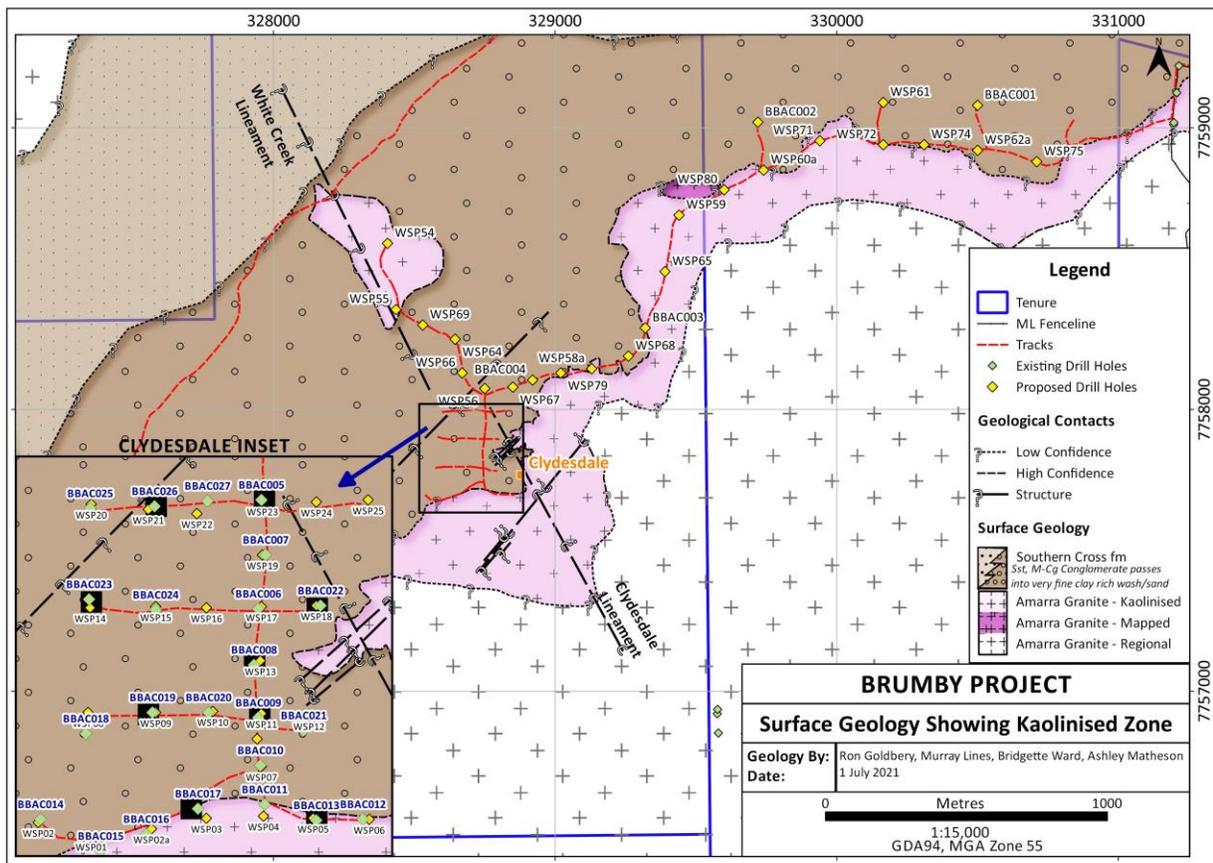
***Kaolin potential at the Brilliant Brumby project***

Kaolin has wide-ranging industrial applications with paper and ceramics being the major markets. Test work has confirmed that Brumby kaolin has applications in ceramics as well as for glass fibre, paper filler, paint, animal feed and leather. High flowability that has been demonstrated means it is important in paint and paper coating. The observed high Al<sub>2</sub>O<sub>3</sub> & loss on ignition (LOI) and low K<sub>2</sub>O indicate high kaolinite and low mica, illite and feldspar shows that Brumby kaolin would make an ideal feed for metakaolin for use as a pozzolan to improve the qualities of concrete. In fact, the chemical composition is likely to qualify as High Reactivity Metakaolin (HRM) after calcining. HRM is used to offer an increase in compressive strength as well as substantially increasing concrete's resistance to chloride ingress. This helps to mitigate the effect of alkali-silica reaction (ASR) - "concrete cancer" that can damage or destroy concrete structures. Also, Brumby metakaolin has shown the potential to be upgraded to become 4N and possibly 5N HPA for electronics and batteries.

Metakaolin is a leading SCM which are materials that may be used as a part of cement. The cement industry has one of the worst records for CO<sub>2</sub> emissions accounting for 5-8% of the global total. Leading cement producers are committing to delivering carbon-neutral cement by 2050, with the use of metakaolin as a mineral admixture in concrete being a central theme. Metakaolin looks well placed to become more important as alternatives like fly ash, silica fume and slag, which are by-products of industrial processes, are either rapidly disappearing or becoming increasingly more expensive. Current studies show that kaolin could be used to replace up to 30% of cement in green concrete and reduce up to 40% of the cement industry's CO<sub>2</sub> emissions. There are big economic incentives for the building/cement/concrete industry to switch to metakaolin and more eco-friendly practices which offer the opportunity to earn carbon credits. Over the last 3 years or so the price of a carbon credits on the EU's Emissions Trading System (ETS) has increased by more than 400% to well over €50. It does seem that the carbon credit market represents an additional important end-market driver.

## DEFINING A LARGE KAOLIN RESOURCE

Past drilling work at the Surprise Kaolin Prospect has led to the determination of an approximate 700,000 tonnes Inferred Mineral Resource reported from blocks within the “White” domain, and within the moderately and strongly weathered geological domains. This 700,000t maiden Surprise Kaolin Resource spans an area which is 600m in strike, between 600-800m in width and between 5m and 18m in thickness. This small initial area could provide adequate feedstock for a 20-year operation of the demonstration plant.



### ***Kaolinized zone at Brilliant Brumby and the current drill programme at Clydesdale & along 18km long trend***

In late-August 2021, drilling began over the new 60km<sup>2</sup> exploration licence that has only been recently granted and covers the majority of the 18km kaolin trend discovered by the Company. This drilling programme is targeting the delineation of a JORC-compliant resource over this far larger area.

Early results from drilling to the west of Surprise have not only shown that kaolin extends significantly under the thin cover but also have confirmed that the kaolinization is of higher quality and of a much greater thickness compared to the maiden initial resource. With thickness of kaolin up to 40m being reported, it looks as though it could result in a JORC-compliant resource being delineated that is significantly larger than the IGM’s geologists’ initial 100Mt mid-range estimate.



***Resource drilling at Clydesdale in late-August 2021***

## CO-MINING OF KAOLIN & GOLD SUGGESTS HIGHLY ATTRACTIVE ECONOMICS

IGM is focused on developing a major high-quality kaolin and gold project in NE Queensland Australia. High-grade near-surface gold mineralisation suggests low-cost mining via a series of shallow open pits. Conversion of kaolin into metakaolin opens up new markets of potential significant scale, notably cement and HPA, in addition to kaolin's existing markets in ceramics, paper, paint etc. Extracting value from Brumby's kaolin will further improve project economics.

With a view to taking the kaolin project into production rapidly, an application for changes to the existing mining lease and an application for new mining leases are planned. The various work streams for a Preliminary Economic Assessment (PEA or Scoping Studies) have already begun which includes all mining, plant, infrastructure and logistics - in order to evaluate the economic potential of the growing number of operational alternatives that are fast becoming apparent. Further test work is now being undertaken to demonstrate the various end products that can be delivered to market.

Based on completed studies the kaolin opportunity would include a full-scale production plant to separate the ore into silica and quartz followed by further processing. The goal is to develop a mining and processing operation with a full-scale production 250,000tpa facility for metakaolin for an initial 20-year period. To begin with, a 10,000tpa metakaolin pilot plant is planned to confirm the flowsheet and project economics as well as providing product for market development.

Metakaolin clearly provides sustainable high-performance concrete with impressive green credentials. In the cement industry there seems to be a bifurcation between the use of high quality more reactive SCMs and filler SCMs. Metakaolin and silica fume show promising durability performance in a variety of important applications whilst all the other SCMs are deemed second rate. IGM plans to employ state-of-the-art flash calcining technology to produce a consistent high-quality HRM at the upper end of the reactivity level. Such a premium product clearly deserves to attract a premium price.

Initially, the Company's geologists mid-range estimate of the kaolinized mineralisation along the 18km long trend was of the order of 100 million tonnes. Since then, confirmatory resource to JORC 2012 definition drilling, assaying and testing have continued. Drilling to the west of this has now clearly highlighted kaolinization of higher quality and a much greater thickness than in the maiden initial resource which confirmed the initial 100Mt estimation following the drilling and analysis of the small initial area. But the identification now of kaolin up to 40m thick, which is far thicker than that used in the initial assumptions, suggests the potential to establish a significantly larger resource than 100Mt.

The unique co-mining opportunity for kaolin and gold at the Company's flagship Brilliant Brumby project opens up the possibility of mining gold at costs expected to be amongst the lowest in the world which continues to grow thanks to the high-quality, near surface kaolin deposits that encase the gold bearing veins in key areas of this property. Mining costs could be shared between kaolin and gold, creating the opportunity for a low-cost operation by global standards.

### About the author

Dr Michael Green is an independent analyst specialising in growth and resources companies. He gained a BSc Honours degree in Mining Engineering from Nottingham University, UK and PhD for a thesis that looked at the economic analysis of mining projects. Having been involved in consultancy work, Michael began working in the City in the 1980s as a Mining Analyst with stockbrokers Buckmaster & Moore and then HSBC-owned Greenwell Montagu Securities. Subsequently, he was involved in analysing a wide range of growth companies and became Head of Research at stockbroker Everett Financial which specialised in the small cap market. Since, 2006 Michael has been an independent analyst specialising in analysing companies in the resources sector and providing research for mining companies, stockbrokers, corporate finance houses, advisers and independent research firms. He was formerly a Non-Executive Director of Ascot Mining PLC, a quoted Central American gold mining company. In addition, Michael has also worked closely with resources companies on IR.

### **RISK WARNING**

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