



# Pittong Maiden Mineral Resource Estimate

- Mineral Resource estimate completed at Suvo's Pittong mining operation and reported in accordance with the 2012 JORC guidelines
- 3.74Mt Indicated and 1.97Mt Inferred Mineral Resource of kaolinized granite
- Total Indicated and Inferred Mineral Resource of 5.69Mt of kaolinized granite, yielding 1.97Mt of <45µm bright white kaolin with ISO Brightness 80.51 and bleached ISO Brightness of 83.61
- The Pittong mine is 100% owned by Kaolin Australia Pty Ltd, a subsidiary of Suvo Strategic Minerals Limited located less than 2km from the Pittong processing facilities
- Pittong currently produces ~25ktpa of refined kaolin products annually
- Suvo's Trawalla deposit holds a further total Indicated and Inferred Mineral Resource of 12.7Mt kaolinised granite, yielding 3.5Mt of <45µm bright white kaolin with ISO Brightness 80.8 and bleached ISO Brightness 83.7 (ASX announcement "Trawalla Maiden Mineral Resource Estimate" 22 September 2021)

# SUVO STRATEGIC MINERALS LIMITED

ABN: 97 140 316 463

#### **CORPORATE DETAILS:**

ASX: SUV

#### **DIRECTORS:**

**Robert Martin** *Executive Chairman* 

# **Aaron Banks** *Executive Director*

**Dr Ian Wilson** *Non-Executive Director* 

#### **CONTACT DETAILS:**

Level 11 40 The Esplanade Perth, Western Australia 6000

**P** +61 (8) 9389 4495

E info@suvo.com.au

W www.suvo.com.au



#### ASX ANNOUNCEMENT



Australian kaolin producer and silica sand exploration company, **Suvo Strategic Minerals Limited** ('Suvo or the Company'), is pleased to announce that the conversion of the Pittong Mine historical Resource from Pan European Reporting code (PERC) to JORC 2012 compliance has now been completed. The Company currently produces ~25,000tpa of refined kaolin products from its Pittong deposit through its hydrous processing facilities located approximately 1.8km from the Pittong mine site.

Commenting on the results, Suvo's Executive Chairman, Robert Martin said "the conversion of the Pittong mine from PERC to JORC 2012 compliance is a very important milestone in the company's development, which will support the company's asset revitalisation and plans to increase mining and plant output. The Resource allows us to fast track our future development strategies as these results provide certainty around our life of mine. We are also reviewing our Trawalla deposit which holds a further 12.7Mt of kaolinized granite and how this can be incorporated into these strategies"

The release of this announcement has been approved by the Board of Directors.

<ENDS>

#### Contacts:

**Robert Martin**Executive Chairman
Aaron Banks
Executive Director

E: <u>robert.martin@suvo.com.au</u> E: <u>aaron.banks@suvo.com.au</u>

#### Company Profile

Suvo Strategic Minerals Limited is an Australian hydrous kaolin producer and exploration company listed on the Australian Securities Exchange (ASX:SUV). Suvo is focused on production at, and redevelopment of, their 100% owned Pittong hydrous kaolin operation located 40km west of Ballarat in Victoria. Suvo's exploration focus is on their 100% owned White Cloud Kaolin Project located adjacent to Gabbin in the Central Wheat Belt, and the 100% owned Nova Silica Sands Project located in the Gin Gin Scarp near Eneabba, both situated in Western Australia.

#### **Pittong Operations**

The 100% owned Pittong Operations, located in Victoria 40km west of Ballarat, is the sole wet kaolin mine and processing plant in Australia and has been in operation since 1972. Pittong comprises the Pittong, Trawalla and Lal deposits located on approved Mining Licences MIN5408, MIN5365 and MIN5409 respectively.

At Pittong mining contractors deliver crude kaolin ore to stockpiles from the two currently operating mines, Pittong and Lal Lal. The plant takes its feedstock from the ROM and it is processed into four separate products for end users. These products are 10% moisture lump, high solids slurry, 1% moisture powder and 1% moisture pulverised powder. The solids slurry is used in paper and board manufacturing. The other products are used in paper, coatings, paint and specialist industries including rubber and pharmaceutical applications. Around 20-25kt per annum is supplied to various end users.

#### **Competent Person's Statement**

The information in this report that relates to Mineral Resources at Trawalla, is based on, and fairly reflects, information compiled by Dr Ian Wilson who is the Overall Competent Person and who is a member of IOM3, a Recognised Professional Organisation. Dr Ian Wilson has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as Competent Person as defined in the 2012 Edition of the Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code). Dr Ian Wilson is a full-time employee of Ian Wilson Consultancy Ltd and also a Non-Executive Director of Suvo Strategic Minerals Limited. Dr Ian Wilson receives board fees in relation to his directorship. Dr Ian Wilson consents to the inclusion of the information in the release in the form and context in which it appears.



#### ASX ANNOUNCEMENT



#### No New Information

Except where explicitly stated, this announcement contains references to prior exploration results and Mineral Resource estimates, all of which have been cross-referenced to previous market announcements made by the Company. The Company confirms that it is not aware of any new information or data that materially affects the information included in the relevant market announcements and, in the case of estimates of Mineral Resources, that all material assumptions and technical parameters underpinning the results and/or estimates in the relevant market announcement continue to apply and have not materially changed.

#### The White Cloud Kaolin Project

The 100% owned White Cloud Project is located 215km northeast of Perth, Western Australia. The project area comprises four granted exploration licences (E70/5039, E70/5332, E70/5333, E70/5517) for 413km², centred around the town and rail siding of Gabbin.

The generally flat area is primarily cleared farming land devoid of native bushland and is currently used for broadacre cereal cropping. A mining access agreement is in place over the current resource area with the landowner and occupier.

The main rock types at White Cloud are primarily Archaean granite, gneiss, and migmatite. These rocks are overlain and obscured by Tertiary sand and Quaternary sheetwash. The weathering profile is very deep and contains thick kaolin horizons capped by mottled clays or laterite zones. The current JORC 2012 Mineral Resources are 72.5Mt of bright white kaolinised granite with an ISO Brightness of 80.5%,  $<45\mu m$  yield of 41.2% results in 29.9Mt of contained kaolin.

#### **Nova Silica Sands Project**

The 100% owned Nova Silica Sands Project is located 300km north of Perth, Western Australia. The project comprises four granted exploration licences (E70/5001, E70/5322, E70/5323, E70/5324) for 169km<sup>2</sup>.

The project is located on the Eneabba Plain whose sandy cover is very flat to gently undulating. Outcrop is rare due to the accumulations of windblown and alluvial sand at surface. Below this is a thin hard silcrete or lateritic claypan which overlies deep white and yellow sands.

#### Forward looking statements

Information included in this release constitutes forward-looking statements. Often, but not always, forward looking statements can generally be identified by the use of forward looking words such as "may", "will", "expect", "intend", "plan", "estimate", "anticipate", "continue", and "guidance", or other similar words and may include, without limitation, statements regarding plans, strategies and objectives of management, anticipated production or construction commencement dates and expected costs or production outputs.

Forward looking statements inherently involve known and unknown risks, uncertainties and other factors that may cause the Company's actual results, performance and achievements to differ materially from any future results, performance or achievements. Relevant factors may include, but are not limited to, changes in commodity prices, foreign exchange fluctuations and general economic conditions, increased costs and demand for production inputs, the speculative nature of exploration and project development, including the risks of obtaining necessary licences and permits and diminishing quantities or grades of reserves, political and social risks, changes to the regulatory framework within which the Company operates or may in the future operate, environmental conditions including extreme weather conditions, recruitment and retention of personnel, industrial relations issues and litigation.

Forward looking statements are based on the Company and its management's good faith assumptions relating to the financial, market, regulatory and other relevant environments that will exist and affect the Company's business and operations in the future. The Company does not give any assurance that the assumptions on which forward looking statements are based will prove to be correct, or that the Company's business or operations will not be affected in any material manner by these or other factors not foreseen or foreseeable by the Company or management or beyond the Company's control.

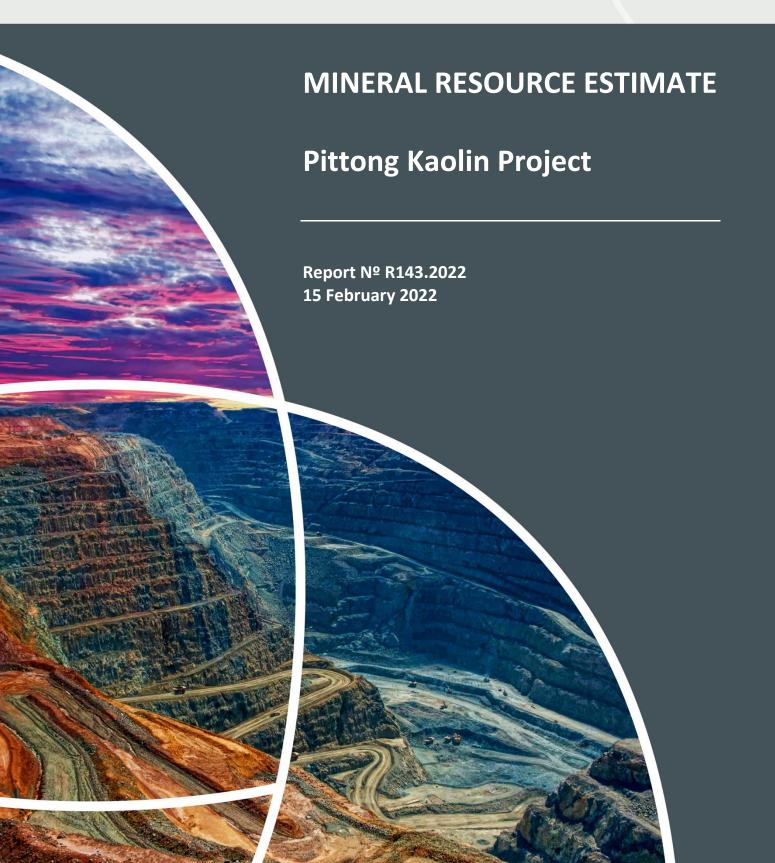
Although the Company attempts and has attempted to identify factors that would cause actual actions, events or results to differ materially from those disclosed in forward looking statements, there may be other factors that could cause actual results, performance, achievements or events not to be as anticipated, estimated or intended, and many events are beyond the reasonable control of the Company. Accordingly, readers are cautioned not to place undue reliance on forward looking statements. Forward looking statements in these materials speak only at the date of issue. Subject to any continuing obligations under applicable law or any relevant stock exchange listing rules, in providing this information the Company does not undertake any obligation to publicly update or revise any of the forward-looking statements or to advise of any change in events, conditions or circumstances on which any such statement is based.





# **CSA Global**Mining Industry Consultants

an ERM Group company





### **Prepared for**

Client Name	Suvo Strategic Minerals
Project Name/Job Code	SUVMRE02
Contact Name	Marty Helean
Contact Title	General Manager Mining & Geology
Office Address	Level 11, 40 The Esplanade, Perth WA 6000

### Report issued by

	CSA Global Pty Ltd
	Level 2, 3 Ord Street, West Perth, WA 6005 AUSTRALIA
	PO Box 141, West Perth, WA 6872 AUSTRALIA
CSA Global Office	T +61 8 9355 1677
	F +61 8 9355 1977
	Email: csaaus@csaglobal.com
	Division: Resources

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## **Author and Reviewer Signatures**

Coordinating Author	Serikjan Urbisinov BSc Geology, BSc Computer Science, MAIG	Electronic signature not for duplication. Ejectfonic signature not for duplication. Electronic signature not for duplication.
Contributing Author	Ian Wilson PhD (Geology), MIMMM	I.R. Will
Contributing Author	Andrew Scogings PhD (Geology), MAIG, RP Geo (Industrial Minerals)	Electronic signature not for duplication. Electronic signature not for duplication.  Electronic signature not for duplications flee fronic signature por fig. duplication.  Electronic signature of the duplication of the first duplication.  Electronic signature not for duplication. Electronic signature not for duplication.
Peer Reviewer (Report)	David Williams B.Sc. (Hons), MAIG, MAusIMM	Electronic signatura of polydupication. Electronic signature not for duplication.  Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication.
Approved by CSA Global Representative	Aaron Meakin Manager – Resources	Disciplination and for department. Configure spending out for displacation. Disciplination on the displacation. Disciplination out for displacation. Exception of the displacation. Disciplination of the displacation. Disciplination of the displacation. Disciplination of the displacation. Disciplination of the displacement of the displacation of the displacement of

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## Disclaimer

#### Purpose of this document

This Report was prepared exclusively for Suvo Strategic Minerals ("Client") by CSA Global Pty Ltd ("CSA Global"), an ERM Group Company. The quality of information, conclusions, and estimates contained in this Report are consistent with the level of the work carried out by CSA Global to date on the assignment, in accordance with the assignment specification agreed between CSA Global and the Client.

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The interpretations and conclusions reached in this Report are based on current scientific understanding and the best evidence available to the authors at the time of writing. It is the nature of all scientific conclusions that they are founded on an assessment of probabilities and, however high these probabilities might be, they make no claim for absolute certainty.

The ability of any person to achieve forward-looking production and economic targets is dependent on numerous factors that are beyond CSA Global's control and that CSA Global cannot anticipate. These factors include, but are not limited to, site-specific mining and geological conditions, management and personnel capabilities, availability of funding to properly operate and capitalise the operation, variations in cost elements and market conditions, developing and operating the mine in an efficient manner, unforeseen changes in legislation and new industry developments. Any of these factors may substantially alter the performance of any mining operation.



## **Executive Summary**

Suvo Strategic Minerals (Suvo) commissioned CSA Global Pty Ltd (CSA Global), an ERM Group company, to complete a geological interpretation, three-dimensional (3D) modelling and a Mineral Resource estimate (MRE) for the Pittong kaolin deposit (the "Project"), located in Victoria, Australia. The MRE has been reported in accordance with the JORC Code¹ and is therefore suitable for public reporting. The MRE is summarised in Table 2. The Mineral Resources have been reported in accordance with product specifications that have potential commercial interest.

Since granting of the original Pittong Exploration Licence, 352 holes at Pittong for a total of 6,906 m have been drilled. The initial MRE was completed in 2005 and was reported in accordance with the Pan European Reporting Code (PERC)<sup>2</sup> to the Imerys shareholders and the Paris Stock Exchange as part of the consolidated Resources and Reserves Statement. As these estimates were reported in accordance with PERC, they are considered to be a foreign estimate<sup>3</sup>. The combined tonnage for Pittong Indicated Resource and Probable Reserves was reported to be 2.37 Mt of kaolin product.

The following summary presents a fair and balanced representation of the information contained within the full MRE report in accordance with ASX Listing Rule 5.8.1:

- The Pittong kaolin deposit is located approximately 35 km southwest of Ballarat in central Victoria. Pittong is located on Mining Licence MIN 5408.
- The Pittong kaolin deposit occurs as a sub horizontal layer up to about 20 m thick, derived by the in-situ
  weathering of granitic rocks. Granitic rocks typically consist of quartz and feldspar minerals. Feldspars in
  the granite were altered during the weathering process to kaolinite, an alumino-silicate mineral with the
  chemical formula Al₂Si₂O₅(OH)₄.
- The historical Pittong samples were tested at Suvo's Pittong laboratory in Victoria and in the United Kingdom (UK). The Pittong physical testwork determined kaolin recovery (yield), particle size distribution, brightness, yellowness and colour, flowability, viscosity concentration (VC), shape factor (NSF), and aspect ratio.
- 54 aircore holes totalling 1,012.5 m were drilled across the Pittong deposit in early 2021 to verify historical
  drill data and to test for extensions to known mineralisation. Four of the new holes were twinned with
  historical holes and verified the logged kaolin intersections.
- The 2021 twin holes were tested both at Pittong and at Nagrom in Perth, for umpire analyses and to compare different test procedures. Some samples were submitted to the Hutton Institute (UK) for quantitative x-ray diffraction (XRD) mineralogical analyses. The remaining 2021 holes are scheduled to be tested during 2022 when the Pittong laboratory has time available.
- The Competent Person (CP) concludes that the historical data is suitable for use in estimating and reporting a Mineral Resource under the guidelines of the JORC Code, based on the general similarity between the original and twinned drilling results (lithology, yield, brightness). The chemistry and mineralogy tested for twin drillhole T21005 verified the presence of kaolinite (plus halloysite) in concentrates, with low levels of impurities such as quartz and feldspar.

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<sup>&</sup>lt;sup>1</sup> Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. The JORC Code, 2012 Edition. Prepared by: The Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia (IORC)

<sup>&</sup>lt;sup>2</sup> The Pan European Reporting Code (PERC) is the European equivalent of the JORC Code in Australasia, SAMREC in South Africa, and similar reserves standards bodies elsewhere, and is a constituent member of CRIRSCO (www.crirsco.com). Representation on PERC covers major and junior mining sectors, industrial minerals, aggregates, coal, the investment and financial community and the professional accreditation organisations including the Institute of Materials, Minerals, and Mining (IOM3); the European Federation of Geologists; the Geological Society of London; the Institute of Geologists of Ireland; the Fennoscandian Association for Metals and Minerals Professionals; the Iberian Mining Engineers Board

<sup>&</sup>lt;sup>3</sup> The ASX Listing Rules define a foreign estimate as an estimate of quantity and grade of mineralisation that was prepared using a mineral resources classification and reporting standard from another jurisdiction prior to an entity acquiring, or entering into an agreement to acquire, an interest in a mining tenement that contains the deposit, and which the entity has not verified as mineral resources or ore reserves in accordance with ASX LR Appendix 5A (JORC Code).



- Four grades were selected by the CP for kaolin of potential commercial interest. These designations are based on bleached brightness values (ISOB) and VC measured on a refined (-12μ) sample of clay. All product grades of potential economic potential have bleached brightness >80.
- The Mineral Resources were estimated within constraining wireframe solids using a combination of logged geological boundaries from historical and new holes and analytical data such as brightness and viscosity. The Mineral Resource is quoted from all classified blocks within these wireframe solids.
- The wireframe objects were used as hard boundaries for grade interpolation.
- Grade estimation was completed using Inverse Distance Weighting (IDW).
- The block model of the deposit with interpolated grades was validated both visually and by statistical/software methods.
- Mineral Resources were reported in accordance with product specifications that have potential commercial interest and as described above.
- The Mineral Resource was classified as Indicated and Inferred, accounting for the level of geological understanding of the deposit, quality of samples, density data, drillhole spacing and sampling, analytical and metallurgical processes. Material classified as Indicated was considered sufficiently informed by adequately detailed and reliable geological and sampling data to assume geological, grade and quality continuity between data points. Material classified as Inferred was considered sufficiently informed by geological and sampling data to imply geological, grade and quality continuity between data points.
  - The Mineral Resource was classed as Indicated in the areas of the drilling where the drillhole density was reduced to line spacing approximately 25-50 m and hole spacing to 25-50 m as well as in the areas that are within the current operating pit.
  - The Mineral Resource was classed as Inferred in the areas where the drillhole density exceeded the 50 m x 50 m grid as well as in the areas with limited laboratory data and in the areas with uncertainty over the vertical extent of mining and backfill.
- No X-ray fluorescence (XRF) information was available for historical drillholes; therefore, XRF chemistry
  could not be modelled and interpolated into the block model. The XRF data will reviewed when it
  becomes available for the samples obtained during 2021 drilling campaign. XRF data has been considered
  when evaluating twin holes drilled in 2021.
- The JORC Code Clause 49 requires that industrial minerals must be reported "in terms of the mineral or minerals on which the project is to be based and must include the specification of those minerals" and that "It may be necessary, prior to the reporting of a Mineral Resource or Ore Reserve, to take particular account of certain key characteristics or qualities such as likely product specifications, proximity to markets and general product marketability."
- Given that the Pittong mine is in production and has been for many years, the CP (Ian Wilson) concludes that the Pittong deposit is a Mineral Resource in terms of Clause 49.

Table 1: Selected grades and their parameters

Characteristics	Parameters		
High Brightness & Fluid "hbf"	ISOB ≥ 84.0, and VC ≥ 64.0		
Moderately Bright & Fluid "mbf"	ISOB ≥ 80 but < 84, and VC ≥ 64.0		
High Brightness & Non-Fluid "hnf"	ISOB ≥ 84.0, and VC < 64.0		
Moderately Bright & Non -Fluid "mnf"	ISOB ≥ 80.0 but < 84.0 and VC < 64.0		



Table 2: Pittong MRE summary table

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Zone	Category	Kaolinised Granite Tonnes	Yield <45μm	Kaolin Tonnes	ISO Brightness (Bleached)	ISO Brightness	Flow	PSD <2μm	VCPU	
		Mt	%	Mt	(bleached)			%		
High Bright	gh Brightness & Fluid "hbf": ISOB ≥ 84.0, and VC ≥ 64.0									
	Indicated	0.23	38.29	0.09	85.32	83.18	63.33	77.85	65.90	
Outside MIN5408	Inferred	0.14	37.29	0.05	85.76	83.09	67.39	77.47	68.23	
111113 100	Total	0.38	37.91	0.14	85.48	83.15	64.87	77.71	66.78	
	Indicated	0.98	35.39	0.35	86.07	83.03	65.48	78.02	66.81	
Within MIN5408	Inferred	0.31	33.43	0.10	85.86	80.51	65.64	77.49	66.54	
	Total	1.29	34.92	0.45	86.02	82.43	65.52	77.89	66.74	
	Indicated	1.21	35.95	0.44	85.92	83.06	65.07	77.99	66.63	
Total	Inferred	0.45	34.64	0.16	85.83	81.32	66.19	77.48	67.07	
	Total	1.67	35.59	0.59	85.90	82.59	65.38	77.85	66.75	
Moderately	y Bright & Flu	id "mbf": ISOB ≥ 80 bເ	ıt < 84, and VC ≥ 64.0					-		
	Indicated	0.15	34.57	0.05	82.41	79.98	63.69	75.90	65.85	
Outside MIN5408	Inferred	0.12	31.60	0.04	82.15	79.10	69.12	74.79	69.19	
	Total	0.27	33.30	0.09	82.29	79.60	66.02	75.43	67.28	
	Indicated	0.52	34.00	0.18	82.40	78.74	65.37	79.09	67.14	
Within MIN5408	Inferred	0.38	32.49	0.12	82.06	75.51	65.39	73.79	66.22	
	Total	0.90	33.36	0.30	82.25	77.37	65.38	76.84	66.75	
	Indicated	0.67	34.13	0.23	82.40	79.03	64.99	78.36	66.84	
Total	Inferred	0.50	32.29	0.16	82.08	76.35	66.25	74.03	66.91	
	Total	1.17	33.34	0.39	82.26	77.89	65.53	76.52	66.87	
High Brigh	itness & Noi	n-Fluid "hnf": ISOB ≥	84.0, and VC < 64.0	)						
	Indicated	0.20	34.47	0.07	85.03	83.83	60.38	76.03	61.95	
Outside MIN5408	Inferred	0.05	35.64	0.02	84.78	83.48	60.59	81.49	62.18	
	Total	0.25	34.72	0.09	84.97	83.76	60.43	77.20	62.00	



Zone	Category	Kaolinised Granite Tonnes	Yield <45μm	Kaolin Tonnes	ISO Brightness (Bleached)	ISO Brightness	Flow	PSD <2μm	VCPU
		Mt	%	Mt	(bleached)			%	
	Indicated	0.40	36.92	0.15	85.14	82.69	60.65	75.32	61.66
Within MIN5408	Inferred	0.10	32.11	0.03	85.65	81.37	59.73	75.75	60.14
	Total	0.50	36.00	0.18	85.24	82.44	60.47	75.40	61.37
	Indicated	0.60	36.12	0.22	85.10	83.07	60.56	75.55	61.76
Total	Inferred	0.15	33.37	0.05	85.34	82.13	60.04	77.80	60.87
	Total	0.75	35.57	0.27	85.15	82.88	60.46	76.00	61.58
Moderate	ely Bright &	Non -Fluid "mnf": IS	OB ≥ 80.0 but < 84.0	and VC < 64.0					
Outstale	Indicated	0.41	35.41	0.15	81.91	80.24	59.99	77.81	61.30
Outside MIN5408	Inferred	0.39	39.48	0.16	81.88	80.88	57.41	79.57	58.19
	Total	0.80	37.41	0.30	81.90	80.55	58.72	78.68	59.77
Within MIN5408	Indicated	0.84	35.30	0.30	82.26	79.60	59.21	77.82	60.40
	Inferred	0.46	26.32	0.12	81.70	77.43	59.77	67.09	60.10
	Total	1.31	32.12	0.42	82.06	78.83	59.41	74.02	60.30
	Indicated	1.25	35.34	0.44	82.14	79.81	59.46	77.81	60.69
Total	Inferred	0.86	32.37	0.28	81.79	79.02	58.68	72.84	59.22
	Total	2.11	34.14	0.72	82.00	79.49	59.15	75.79	60.10
All Produc	cts Combine	d							
	Indicated	0.99	35.77	0.35	83.40	81.59	61.43	77.17	63.21
Outside MIN5408	Inferred	0.71	37.45	0.26	82.93	81.23	61.59	78.51	62.32
1411143-400	Total	1.70	36.47	0.62	83.20	81.44	61.49	77.73	62.84
	Indicated	2.75	35.33	0.97	84.07	81.12	62.82	77.76	64.14
Within MIN5408	Inferred	1.25	30.41	0.38	83.14	77.91	62.94	72.38	63.57
5700	Total	4.00	33.79	1.35	83.78	80.12	62.86	76.08	63.96
	Indicated	3.74	35.45	1.32	83.89	81.25	62.45	77.61	63.90
Total	Inferred	1.96	32.95	0.64	83.06	79.11	62.45	74.59	63.12
	Total	5.69	34.59	1.97	83.61	80.51	62.45	76.57	63.63

#### SUVO STRATEGIC MINERALS

PITTONG KAOLIN PROJECT – MINERAL RESOURCE ESTIMATE



#### Notes:

- Resources are reported in accordance with the JORC Code.
- Resources are in million metric tonnes of final product. Differences may occur due to rounding
- In situ density applied = 1.6 t/m<sup>3</sup>.



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# **Appendices**

Appendix A JORC Code, 2012 Edition – Table 1



## 1 Introduction

#### 1.1 Specification Assignment

Suvo Strategic Minerals (Suvo) commissioned CSA Global Pty Ltd (CSA Global), an ERM Group company, to complete a geological interpretation, three-dimensional (3D) modelling, and a Mineral Resource estimate (MRE) according to the guidelines of the JORC Code for the Pittong kaolin deposit (the "Project"), located in the state of Victoria, Australia.

The scope of work under the Specification Assignment included the following:

- 1) Acquisition and desktop review of all available data and reports for the deposit.
- 2) A site visit and laboratory inspection were aimed at identifying material flaws and verifying data, as well as meeting with key field personnel and obtaining additional information and documentation. CSA Global notes that due to global COVID-19 pandemic travel restrictions, the Competent Person (CP), Dr Ian Wilson, was unable to visit site, but that he has visited the site on numerous occasions during previous drilling campaigns.
- 3) In-office review of the additional essential information and documents obtained during the site visit.

The main objective of the work completed by CSA Global was to estimate kaolin Mineral Resources of the Pittong deposit based on the analytical and geological data obtained from historical and recent drilling.

The following objectives were accomplished:

- Import and validation of the databases
- Classical statistical analysis of sampling data and selection of cut-off grades for interpretation of mineralisation domains
- Interpretation of the mineralisation, primarily based on lithology
- Wireframe modelling of the mineralised bodies and geological features
- Coding of sampling data using wireframes
- Classical statistical analysis, involving selection and application of top cut grade values for each domain
- Creation of composited intervals by length
- Creation of block models, their coding and preparation
- Grade interpolation using Inverse Distance Weighting (IDW)
- Mineral Resource classification in accordance with JORC Code requirements
- Preparation of a Mineral Resource report.

#### 1.2 JORC Code Compliance

The MRE for the Pittong deposit is reported in accordance with the JORC Code4.

#### 1.3 Sources of Information and Reliance on Other Experts

CSA Global has completed the scope of work largely based on the information provided by Suvo. CSA Global has supplemented this information where necessary with other publicly available information.

CSA Global has made all reasonable endeavours to confirm the authenticity and completeness of the technical data on which this report is based; however, CSA Global cannot guarantee the authenticity or completeness of such third-party information.

<sup>&</sup>lt;sup>4</sup> Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. The JORC Code, 2012 Edition. Prepared by: The Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia (JORC).



CSA Global is not responsible for any issues relating to the Project, such as economics, processing, environmental and legal status, property rights, estate liabilities, or any other law matters. These matters are not considered in the context of this report.

#### 1.4 Prior Association and Independence

Neither CSA Global, nor the authors of this report who are the employers of CSA Global, have or have had previously, any material interest in the Pittong deposit or the mineral properties in which Suvo has an interest. Relationships of CSA Global with Suvo are solely of professional association between client and independent consultants. CSA Global is an independent geological and mining consultancy. This report is prepared in return for professional fees based upon agreed commercial rates and the payment of these fees is not contingent on the results of this report. No member or employee of CSA Global is, or is intended to be, a director, officer, or other direct employee of Suvo.

Dr Ian Wilson, who is a contributing author and the CP of this report, is a Non-Executive Director of Suvo. Dr Ian Wilson received board fees in relation to his directorship.

#### 1.5 Company and Authors Summary

#### 1.5.1 CSA Global

This report has been prepared by CSA Global, an ERM group company, that has been providing consulting services to the international mining industry for over 35 years. CSA Global is based in Perth, Western Australia, with offices in Brisbane, Vancouver, Toronto, Dublin, Horsham (UK), Johannesburg, and Jakarta. CSA Global provides multi-disciplinary services to clients including project generation, exploration, resource estimation, project evaluation, development studies, mining operations assistance, and corporate consulting such as valuations and independent technical reports. CSA Global has worked for major clients globally and many junior resource companies. CSA Global personnel have been involved in the preparation of independent reports for listed companies in most international mining jurisdictions.

#### 1.5.2 Authors

The principal authors of this report are Dr Ian Wilson (a Non-Executive Director of Suvo), Serikjan Urbisinov (CSA Global Principal Resource Geologist), and Dr Andrew Scogings (CSA Global Geologist and Industrial Minerals Expert). Peer review of this report was completed by David Williams (CSA Global Principal Resource Geologist).

#### 1.6 Competent Persons Statements

The information in this report that relates to Mineral Resources is based on, and fairly reflects, information compiled by Dr Ian Wilson who is the Overall Competent Person and who is a member of IOM3, a Recognised Professional Organisation. Dr Wilson has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as Competent Person as defined in the 2012 Edition of the "Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves" (JORC Code). Dr Wilson is a full-time employee of Ian Wilson Consultancy Ltd and also a Non-Executive Director of Suvo. Dr Wilson receives board fees in relation to his directorship. Dr Wilson consents to the inclusion of the information in the release in the form and context in which it appears.

The geological modelling included in the Mineral Resource report was prepared, and fairly reflects information compiled, by Mr Serik Urbisinov and Dr Andrew Scogings, each of whom have sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Persons as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" (the JORC Code). Mr Urbisinov is a full-time employee of CSA Global and is a Member of the Australian Institute of Geoscientists. Dr Scogings is an employee of CSA Global, a Member of the Australian Institute of

#### SUVO STRATEGIC MINERALS

PITTONG KAOLIN PROJECT – MINERAL RESOURCE ESTIMATE



Geoscientists, and is a Registered Professional Geoscientist (RP Geo. Industrial Minerals). Mr Urbisinov and Dr Scogings consent to the inclusion of information in the Mineral Resource report that is attributable to each of them, and to the inclusion of the information in the release in the form and context in which they appear.



# 2 Location and Exploration History

#### 2.1 Location, Access and Infrastructure

The Pittong kaolin deposit is located approximately 35 km southwest of Ballarat in central Victoria, Australia. Pittong mine is accessed by the Pittong Lesmore Road which runs directly across the eastern part of the deposit and connects the deposit with the Pittong Plant that is approximately 2 km north of the mine (Figure 1).



Figure 1: Pittong deposit location

Access to the site is year-round via the sealed road, and numerous farm tracks are used to access either the east or west side of the Pittong Lesmore Road. The area is dominated by cleared and fenced grazing land.

#### 2.2 Topography, Vegetation and Climate

Pittong is moderately undulating, with farm dams scattered throughout the property.

Grazing has resulted in the widespread removal of native vegetation from the area. There is scattered individual indigenous species such as Yellow Box, Scentbark and Drooping Sheoak.

The region around Ballarat has a temperate climate with annual rainfall around 600–700 mm. The heaviest rain falls in winter and spring. January and February are the hottest months with a mean daily maximum temperature of 25°C, July is the coldest month, with a mean daily temperature range of 3°C to 10°C.

#### 2.3 Tenure

The Pittong deposit, located within MIN 5408, was first granted on 18 December 1990 as Mining Lease (ML) 1169 and ML 1141. In July 1997, ML 1141 and ML 1169 were amalgamated into ML 1169. In December 2004 ML 1169 was renewed for 15 years under the Mineral Resources Development Act 1990 and is now known as Mining Licence (MIN) 5408 and comprises 66.73 hectares (ha). MIN 5408 had an expiry date of 18/12/2020, and the application for renewal was submitted and submission was confirmed by Earth Resources Regulator of Victoria (ERR). The Victorian regulator provides that if the renewal application is lodged before expiry, the license continues in effect until application is granted and registered or refused. Application for renewal has been lodged and is currently pending. ERR requested revised rehabilitation assessment to be provided together with the renewal request which was submitted in December 2021. See MIN 5408 outline in Figure 2.



Areas to the south and north of MIN 5408 are currently under agreement with private land owners, as informed by Suvo.



Figure 2: The mining area realtive to MIN5408 and the Pittong processing plant Note: map  $grid = 1,000 \text{ m} \times 1,000 \text{ m}$ 

#### 2.4 Exploration History and Geology

Previous exploration and foreign resource estimates relied on work comprising:

- drilling of 300 holes at Pittong for a total of 5,940 m, of which ~150 holes were used to inform the resource model
- the exploration holes were mainly aircore with some diamond core, and were drilled between 1970 and the 1990's
- drill spacing at Pittong is somewhat irregular and close-spaced at about 25 m to 50 m
- all holes were vertical, to intercept the sub-horizontal kaolin mineralisation at right angles
- kaolin thicknesses at Pittong range from 5-40 m
- 2,170 samples of 1-3 m width from Pittong were analysed



- All samples were analysed for physical properties specific to kaolin products such as brightness, viscosity and particle size
- Representative samples of final kaolin concentrate from the analytical process were analysed by X-Ray Diffraction (XRD) methods to determine kaolinite and other mineral contents, and by Scanning Electron Microscopy (SEM) to determine crystal shape, aspect ratio (shape factor) and delamination behaviour which are important properties in kaolin markets
- Geological logging of drill holes, in conjunction with the physical quality test results, were used to
  interpret three dimensional models. Geological codes used were 'ovb' (overburden), 'gfk' (granite
  fully kaolinized) and 'pkg' (poor quality kaolinised granite) which were in turn used to code model
  blocks
- Inverse distance squared (IDW) estimation was then used to estimate quality
- Quality results were assigned according to the following quality parameters:
  - o brightness,
  - unbleached violet,
  - yellowness,
  - viscosity concentration,
  - o flow,
  - bleached violet,
  - o % <2 μm, and
  - o yield.
- The estimated resource tonnages were derived from the modelled volumes by using an assumed in situ bulk density (ISBD) of 1.5 t/m<sup>3</sup>.

The CP notes that the target was primary kaolinised granite, to be used at Suvo's Pittong processing plant as the source material for kaolin suitable for use primarily in paper coating applications, and to a lesser degree for paint, rubber, adhesive, plastics, and other specialised applications.

#### 2.5 Previous Mineral Resource Estimates

In November 2020, Suvo acquired Imery's Australian kaolin mining operations (Suvo, 2020), with the assets consisting of three mining leases and a processing plant:

- Pittong Plant.
- Pittong Mine an operating mine producing in the order of 90% of plant feedstock
- Lal Lal Mine an operating mine producing limited feedstock for specific products
- Trawalla a greenfield mine site.

The initial MRE for Pittong was completed by Pettett (2005). The 2005 estimate (Figure 3) was reported in accordance with the Pan European Reporting Code (PERC)<sup>5</sup> to Imerys shareholders and the Paris Stock Exchange as part of the consolidated Resources and Reserves statement.

<sup>&</sup>lt;sup>5</sup> The Pan European Reporting Code (PERC) is the European equivalent of the JORC Code in Australasia, SAMREC in South Africa, and similar reserves standards bodies elsewhere, and is a constituent member of CRIRSCO (www.crirsco.com). Representation on PERC covers major and junior mining sectors, industrial minerals, aggregates, coal, the investment and financial community and the professional accreditation organisations including the Institute of Materials, Minerals, and Mining (IOM3); the European Federation of Geologists; the Geological Society of London; the Institute of Geologists of Ireland; the Fennoscandian Association for Metals and Minerals Professionals; the Iberian Mining Engineers Board.



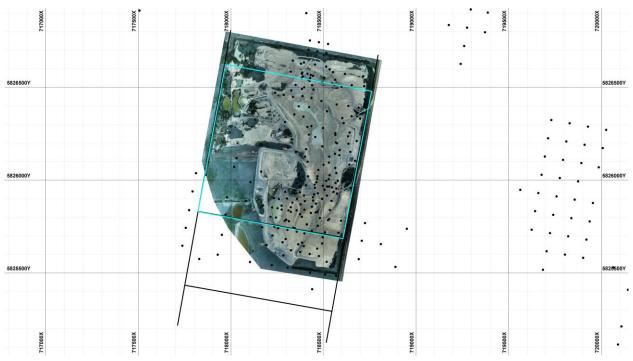


Figure 3: Historical resource outline and planned pit outlines relative to MIN5408

As the estimates were reported in accordance with PERC, they are considered as a foreign estimate<sup>6</sup>. The combined tonnage for Pittong deposit of the Indicated Resource and Probable Reserves in 2005 was 2.83 Mt of kaolin product. This was later revised to 2.37 Mt of kaolin product in November 2019.

Table 3: Kaolin resources as of 2005 and 2019, reported in accordance with PERC (2001 Edition)

Project area	Resource (Mt)			Reserv	es (Mt)
	Measured Indicated		Inferred	Proved	Probable
Pittong 2005	-	2.1	-	-	0.72
Pittong 2019	-	2.0	-	-	0.37

#### Notes:

- "Resources and Reserves" are not reported in accordance with the 2012 edition of the JORC Code.
- "Resources and Reserves" are in million metric tonnes of final product. Differences may occur due to rounding.
- "Reserves and Resources" are EXCLUSIVE. Quantities and qualities quoted for "Resources" do not include the "Reserves" material.
- In-situ density = 1.5 t/m<sup>3</sup>.

<sup>&</sup>lt;sup>6</sup> The ASX Listing Rules define a foreign estimate as an estimate of quantity and grade of mineralisation that was prepared using a mineral resources classification and reporting standard from another jurisdiction prior to an entity acquiring, or entering into an agreement to acquire, an interest in a mining tenement that contains the deposit, and which the entity has not verified as mineral resources or ore reserves in accordance with ASX LR Appendix 5A (JORC Code).



## 3 Kaolin – General Review

#### 3.1 Introduction

Kaolin is typically a soft white rock consisting primarily of kaolinite, with lesser amounts of other minerals such as quartz, feldspar and various forms of iron and titanium oxide (e.g. Harben and Kuzvart, 1996).

Kaolin deposits may be classified into two broad types according to mode of occurrence: (1) residual (primary); and (2) transported (secondary) deposits (Abeysinghe and Fetherston, 1999). The Pittong kaolin occurrence is classified as a residual deposit.

Residual deposits such as at Pittong are formed in situ by the alteration or weathering of feldspar-rich rocks such as granite, gneiss, or sandstone. The weathering process mainly results in the leaching and removal of silicon, potassium, sodium and calcium from the original granitoid rock. The outcome of such weathering is that feldspar is transformed into the hydrous alumino-silicate minerals kaolinite and sometimes halloysite, whereas mica and quartz are resistant minerals and remain relatively unchanged. Some feldspar may remain, depending on the degree of weathering. See example mineral compositions in Table 4.

Table 4: Approximate chemical compositions of minerals that commonly occur in residual (primary) kaolin deposits

Mineral	SiO₂ (%)	Al <sub>2</sub> O <sub>3</sub> (%)	K₂O (%)	Na₂O (%)	CaO (%)	H <sub>2</sub> O (%)
Quartz	100.0					
Kaolinite, Halloysite	46.5	39.5				14.0
K-feldspar	64.8	18.3	16.9			
Na-feldspar	67.4	20.4		11.2	1.1	
Muscovite	45.2	38.4	11.8			4.5

Note: Totals may not add up to 100% due to rounding to one decimal place.

Source: www.webmineral.com

Pure kaolinite has the formula  $Al_2Si_2O_5(OH)_4$  and consists of ~39.5%  $Al_2O_3$ , ~46.6%  $SiO_2$  and ~13.9%  $H_2O$ . It is noted that weathering processes may be affected by the composition of the original rock, topography, fracture zones (e.g. joints or faults), groundwater and the balance between the weathering process and erosion.

#### 3.2 Kaolin Processing

Kaolin products are often purified from weathered granite by wet (hydrous) processing methods. This involves mixing the kaolin with water in a blunger, which is a type of high-speed mixer. The blunger breaks the kaolin lumps into discrete individual particles, after which grit (minerals such as quartz and feldspar) is removed. The kaolin slurry may be further purified into different particle sizes by hydrocyclones or centrifuges, after which it is dewatered and dried. Kaolin products may be further upgraded by bleaching to improve brightness, and by delamination methods which use attrition grinding or extrusion, or by calcination (e.g. Murray, 2007; Pruett and Pickering, 2006).

**Hydrous kaolin** is characterised by fine particle size, plate-like/lamellar shape and chemical inertness.

**Metakaolin** is manufactured by the calcination of kaolin at about 600°C to form an amorphous pozzolanic white mineral additive for use in cement-based products.

**Calcined kaolin** is an anhydrous aluminium silicate produced by heating natural kaolin to high temperatures around 1,000°C in a kiln, which increases whiteness, hardness, improves electrical properties and alters the size and shape of the kaolin particles.



# 4 Sampling Techniques and Data

This section addresses the requirements for the JORC Code Table 1 Section 1. The information is summarised in Appendix A of this report.

#### 4.1 Drilling Techniques and History

During historical exploration programs a variety of drilling contractors were used with methods including auger, reverse circulation (RC) and diamond (DD) core holes.

In 2021, 54 aircore drillholes for 1012.5 m were completed by Indicator Drilling with a track mounted Mantis 200 aircore drill rig with 80 mm diameter, 3 m drill rods utilising a blade bit.

The 54 aircore holes were drilled with the objective of validating the historical drilling and converting the foreign resources reported in accordance with PERC, to a Mineral Resource reported according to JORC Code guidelines.

#### 4.2 Sampling and Core Recovery Method

DD drilling core samples were placed in core boxes and taken to Pittong Laboratory where sampling would take place. Core recovery was more than 90%.

Aircore samples were collected from a Mantis 200c aircore rig. The 1 m samples were approximately 3 kg each and collected from beneath the cyclone. Sample quality and representivity were acceptable, with no appreciable loss of sample noted. Drilling generally continued to blade refusal or until the material type changed to a non-kaolinitic domain.

#### 4.3 Geological Core Logging

The drillholes samples were geologically logged for all intervals by an experienced geologist on site. Logging noted the lithology, colour, degree of weathering and alteration.

A lithology control file (LCF) was established:

- ovb overburden
- gfk granite fully kaolinised
- pkg poor quality kaolinised granite
- obb basaltic lithology
- oib interburden
- guk granite unkaolinised.

The level of detail was deemed sufficient to enable the delineation of geological domains appropriate to support a future Mineral Resource estimation and classification. The geology log and data are deemed to be qualitative.

Photographs were taken of the chip trays for the 2021 drilling program and were compared to logging when selecting composite samples. All kaolinised intercepts were logged and sampled. Examples of chip tray photographs are presented in Figure 4 to Figure 7.





Figure 4: Chip tray examples P21016 to P21019, note twin hole P21018



Figure 5: Chip tray examples P21023 to P21027, note twin hole P21023





Figure 6: Chip trays for holes P21029 to P21032, note twin hole P21030



Figure 7: Chip tray examples P21050 to P21053, note twin hole P21051

#### 4.4 Sample Preparation



Each 1 m interval was collected from the drill and bagged at the rig. Historical DD core samples were split and bagged at Pittong. Samples from the 2021 aircore drilling were collected from the splitter and were approximately 3 kg each and consistent apart from lithological changes. No significant sample loss was recorded, and the samples are considered representative and were of a generally even volume.

Composites were prepared using weighted subsamples of the one metre intervals. Field samples were sufficiently dry to obtain a representative sample and create appropriate composites.

Kaolinitic domains show good continuity between drillholes and horizons are generally >5 m and <20 m thick. The method of manually homogenising each 1 m interval equally to obtain a representative composite of each domain is deemed appropriate and representative.

#### 4.5 Analytical Method

Quality of assay data was based on the standards set by English China Clays and subsequently Imerys, both recognised industry leaders in kaolin. Much of the routine testing for borehole evaluation was carried out at Pittong Laboratory and included:

- Kaolin recovery (Yield)
- Particle size distribution (Micromeritics)
- Brightness (ISO B), yellowness (ISO Y)
- Flowability, viscosity concentration (VC)
- Shape factor (NSF), aspect ratio
- Delaminate
- Fluid clay, non-fluid clay
- X-ray fluorescence (XRF) analysis of SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, Fe<sub>2</sub>O<sub>3</sub>, TiO<sub>2</sub>, CaO, MgO, Na<sub>2</sub>O, K<sub>2</sub>O, and loss on ignition (LOI).

All the borehole data has been categorised in terms of "fitness for use criteria"

Four lithology designations have been selected for clay of potential commercial interest. These designations are based on bleached brightness values ("ISOB") and viscosity concentration ("VC") measured on a refined (-12 um), unpugged sample of clay.

A list of the four categories together with a fifth denoting clay of no commercial interest ("pkg") are shown below.

- High Brightness & Fluid "hbf"
  - o ISOB ≥84.0, and VC ≥64.0.
- Moderately Bright & Fluid "mbf"
  - o ISOB ≥80 but ≤84 and VC≥64.
- High Brightness & Non-Fluid "hnf"
  - ISOB <84.0 and, VC≤64.</li>
- Moderately Bright & Non-fluid "mnf"
  - o ISOB ≥80, but <84 and VC<64.
- Poor quality Kaolinised Granite "pkg"
  - o ISOB <80.0.

Mineralogy was undertaken by XRD and SEM testwork was carried out on some samples by Ballarat University, with some samples tested by ECC/Imerys in the UK at James Hutton Institute. XRD was completed by Bruker D8 using nickel-filtered Cu Kα radiation, fixed divergence slits, and a Lynxeye XE detector. Sample preparation used McCrone milling followed by spray drying as per the description in Hillier (2000).



Umpire laboratory testing was completed at Nagrom in Perth and duplicated the Pittong preparation method which included:

- Crush approx. 3 kg sample to 10 mm
- Attrition and blunging with a water pulp density of 50% with conditioning agents 10% NaOH and 80% dispersant, blunge with D12 Joy Denver Unit double propeller unit at 800 RPM, until sample is dispersed and then allow to stand for three minutes
- Decant sample over 0.25 mm sieve to produce a fine and coarse fraction
- Adjust refined clay to pH 3.8–4.2 using 10% H<sub>2</sub>SO<sub>4</sub>
- Analysis by XRF, sizing by Malvern, ISO Brightness and Yellowness.

Some samples were also prepared and tested by Nagrom to check the veracity of the Pittong method which included the following preparation:

- Crush approximately 2 kg sample to 10 mm
- Attrition with a water pulp density of 50% for 30 minutes with a D12 Joy Denver Unit double propeller unit at 800 RPM until sample is dispersed
- Wet screen sample at 0.18 mm and 0.045 mm
- Analysis by XRF, sizing by Malvern, ISO Brightness and Yellowness.

#### 4.6 Verification of Sampling and Laboratory Assays

Dr Ian Wilson, when working for ECC/Imerys, would visit Australia on a regular basis in his capacity as the Group Geologist for ECC Pacific. No historical twinned holes were drilled but detailed drilling was carried out. In 2021, four historical drillholes were twinned with aircore drilling.

#### 4.7 Location of Data Points

Historical surveying was carried out on a regular basis by registered surveyors and entered into the company system by onsite staff. All holes were vertical, and depths of drilling were generally less than 30 m.

The 2021 drilling was surveyed using a Leica GS18T GNSS RTK Rover used in conjunction with the Trimble VRS New Cors Network. Coordinate system used was MGA94 zone 54 and the accuracy 10–25 mm in Easting and Northing position, and 50–100 mm in elevation.

#### 4.8 Data Spacing and Distribution

Drill spacing at Pittong is somewhat irregular and close-spaced at about 25 m to 50 m. This is sufficient to establish continuity of kaolin which can be traced between drillholes 100 m apart. The data and geological continuity are considered sufficient to estimate a Mineral Resource.

Downhole composites were prepared using weighted subsamples of the 1 m intervals. Composite samples were mostly 1 m in length.

#### 4.9 Orientation in Relation to Geological Structure

All drillholes are vertical, which means that the sampling is orthogonal to the horizontal to sub-horizontal kaolin zones. Orientation based sampling bias is not expected from vertical drillholes.

#### 4.10 Sample and Data Security

Samples were in the care of Suvo personnel during drilling and transport to Pittong Laboratory.

#### 4.11 Audits and Reviews

An audit of the Mineral Resources and Ore Reserves of Imerys Kaolin Australia was carried out by Imerys in 2018.



#### 4.12 Site Visit

The CP, Dr Ian Wilson, visited Australia on numerous occasions as the Regional Geologist for ECC Pacific (subsequently Imerys). He visited the Pittong prospect many times during various drilling programs.

The objectives of the visits were as follows:

- Inspect drilling sites and check drillhole collar locations
- Check selected drillhole collar locations
- Review the systems for collection of geological data on site (mapping, geological logging, maintaining of logs, etc.)
- Review the geological conditions and setting of the deposit
- Discuss quality control aspects with the geological staff
- Discuss data acquisition and storage aspects as well as review the drillhole database.

No flaws were identified according to the results of the completed inspections, and all the samples and geological data were assessed as consistent with the objectives of this MRE.



## 5 Twin Holes

#### 5.1 Background

Twinned holes are specifically referred to in JORC 2012 Table 1 for the verification of sampling and assaying and are traditionally drilled for verification of historical data, or confirmation of drillhole data during geological due diligence studies (Abzolov, 2009). Twinned holes are typically drilled less than 5 m apart and are best compared according to geological units and individual or composite sample analyses.

#### **5.2 2021 Twin Holes**

Four original holes C205P, C447P, C533P and C1039P were twinned by holes P21030, P21051, P21023 and P21018 respectively during the 2021 drill program (Figure 8, Table 5). Three of the twins were drilled further from the original holes than desired; however, the CP is of the opinion that given the style of mineralisation the logging and testwork should be useful for verifying historical data.

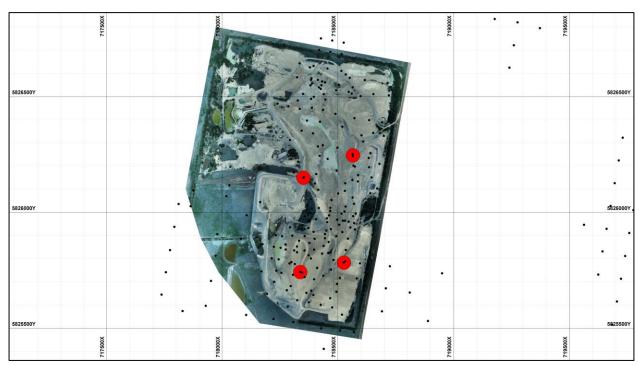


Figure 8: Location map of four twin holes drilled in 2021

Table 5: Twin and original collar survey data

Collar	X (m)	Y (m)	Z (m)	Final depth (m)	Azimuth (°)	Dip (°)	Distance apart (m)
C205P	718531.31	5825789.63	322.66	21.0	0	-90	8.7
P21030	718524.54	5825784.14	323.57	20.0	0	-90	
C447P	718336.85	5825743.71	317.40	34.0	0	-90	8.2
P21051	718344.46	5825740.73	303.99	24.0	0	-90	
C533P	718350.71	5826150.20	328.00	12.4	0	-90	3.8
P21023	718352.86	5826153.35	326.72	20.0	0	-90	
C1039P	718564.07	5826243.62	313.40	17.0	0	-90	9.6
P21018	718563.67	5826253.18	313.74	23.0	0	-90	

The twin holes were tested at the Pittong laboratory and at Nagrom for yield, brightness, chemistry, and mineralogy. The test method used was the standard "Pittong" batching procedure used for testing of mining, stockpile and exploration drill samples, which was the method used for the historical holes.



The batching method can give different levels of yields, depending on the products being tested for, as the "Pittong" methodology is looking at the likely commercial properties of the kaolin. The more the kaolin is refined to smaller particle sizes, the lower the yield. For example, higher quality products would have about  $85-90\% < 2 \mu m$ .

Kaolin can also be tested by blunging and wet screening at 45  $\mu$ m (325 mesh). This method returns higher yields than the batching method if the fine fraction is not further refined, as other minerals such as quartz, smectite, feldspar and mica may be included with the kaolinite that passes the sieve.

#### 5.2.1 Lithology

The logged intercepts of "fully kaolinised granite" are considered by the CP to be reasonably similar in terms of depths and widths, and that the twinned drillholes verify the original geology logging (Figure 9, Figure 10, Table 6).

#### 5.2.2 Mineralogy

Refer to Table 7 to Table 15 for XRF chemistry and XRD mineralogy results. Examples of Pittong product specifications, including brightness, chemistry, mineralogy, particle size and flow are given in Table 29.

Twin holes P21018 and P21051 were tested by XRD at The Hutton Institute in Scotland. The results verified that the concentrates are essentially composed of kaolinite with minor amounts of quartz and feldspar. Some halloysite ~5-10% was detected in R21018.

Twin hole P21030, which is located near the western extent of the kaolin mineralisation, is characterised by significant quantities of smectite in the crude clay samples and in -45  $\mu$ m fractions processed by Nagrom. Smectite is a clay that swells in water and is known to cause processing problems at the Pittong plant. Samples from 21030 were unable to be refined at the Pittong laboratory due to the high smectite content.

#### 5.2.3 Chemistry

Twin holes P21018 and P21051 were tested by XRF and demonstrated that the concentrates are essentially alumino silicates with approximately 13–14% LOI.

#### 5.2.4 Brightness

As shown in Table 16, Table 17 and Table 18, the brightness values are similar for the historical and twin samples tested at the Pittong Laboratory. However, the brightness for samples tested by the same method at Nagrom are slightly lower but verify the same trends across the drilled intercepts.

#### 5.2.5 Yield

Although the data is limited, yields appear to be similar for the historical and twin samples tested at the Pittong Laboratory (Table 19).

#### 5.2.6 Particle Size and Flow

Although the data is limited, particle size and flow appear to be similar for twins and historical holes (Table 20, Table 21 and Table 22).



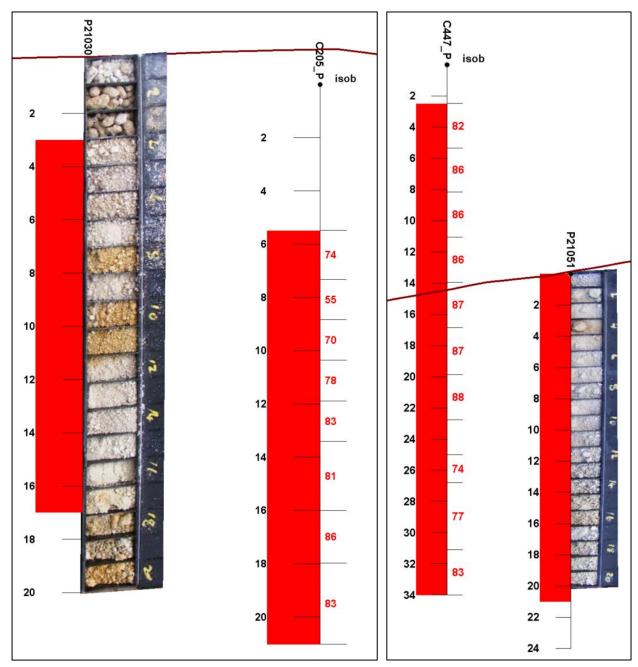


Figure 9: Cross sections through twin and original holes, showing logged intercepts of "fully kaolinised granite" Note: ISO brightness values are for bleached kaolin



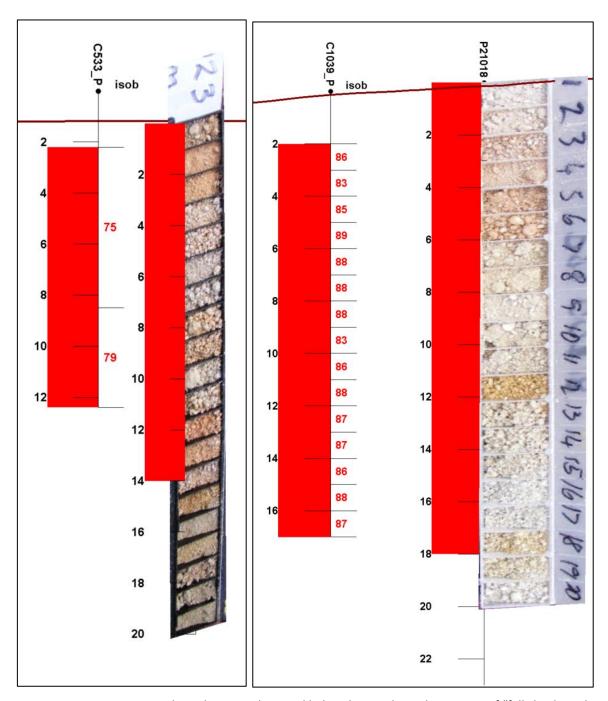


Figure 10: Cross sections through twin and original holes, showing logged intercepts of "fully kaolinised granite" Note: ISO brightness values are for bleached kaolin

Table 6: Twin vs original logged intercepts of "fully kaolinised granite"

Collar	Туре	From (m)	To (m)	Thickness (m)
C205P	Original	5.5	21	16.5
P21030	Twin	3	17	14
C447P	Original	~14 (current pit floor)	34	20
P21051	Twin	0 (current pit floor)	21	21
C533P	Original	2.2	12.4	10.2
P21023	Twin	0	14	14
C1039P	Original	2	17	15



P21018	Twin	0	18	18
121010		_	10	1

Table 7: Key major element analyses and LOI for P21018 twin (Nagrom Laboratory, batching method)

Collar	From (m)	To (m)	SiO₂ (%)	Al <sub>2</sub> O₃ (%)	Fe₂O₃ (%)	TiO₂ (%)	CaO (%)	MgO (%)	Na₂O (%)	K₂O (%)	LOI1000 (%)
P21018	0	3	46.8	37.5	0.8	0.5	0.0	0.1	0.1	0.1	13.8
P21018	3	6	47.2	37.0	1.0	0.4	0.0	0.2	0.1	0.1	13.6
P21018	6	9	46.7	37.5	0.8	0.5	0.0	0.1	0.1	0.3	13.9
P21018	9	12	46.5	36.3	0.9	0.5	0.0	0.2	0.5	0.6	13.9
P21018	12	15	46.7	36.3	0.7	0.5	0.0	0.2	0.5	0.8	13.7
P21018	15	18	46.5	36.7	0.4	0.5	0.0	0.2	0.4	0.8	13.9

Table 8: Key major element analyses and LOI for P21018 (Pittong Laboratory, batching method)

Collar	From (m)	To (m)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	Fe <sub>2</sub> O₃ (%)	TiO₂ (%)	CaO (%)	MgO (%)	Na₂O (%)	K₂O (%)	LOI1000 (%)
P21018	0	3									
P21018	3	6									
P21018	6	9									
P21018	9	12	46.8	37.2	0.8	0.6	0.0	0.1	0.2	0.7	13.5
P21018	12	15									
P21018	15	18	46.7	37.5	0.6	0.5	0.0	0.1	0.1	0.8	13.5

Table 9: P21018 key minerals determined by XRD from samples refined at Nagrom Laboratory (batch method)

Collar	From (m)	To (m)	Kaolinite (%)	Halloysite (%)	Quartz (%)	K spar (%)	Plagioclase (%)	Smectite (%)	Goethite (%)
P21018	0	3	92	5	1.7	nd	nd	nd	1.1
P21018	3	6							
P21018	6	9							
P21018	9	12	82.7	11.4	1	2.8	nd	0.7	1.1
P21018	12	15							
P21018	15	18	84.6	10	0.8	4	nd	nd	0.2

Note: ND = not detected. Results reported in James Hutton Institute (2021) Report Number: 2021-31895.

Table 10: Key major element analyses and LOI for P21030 twin (Nagrom Laboratory, batching method)

Collar	From (m)	To (m)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	Fe₂O₃ (%)	TiO₂ (%)	CaO (%)	MgO (%)	Na₂O (%)	K₂O (%)	LOI1000 (%)
P21030	3	5	52.0	31.8	2.8	0.4	0.0	0.5	0.2	0.13	12.2
P21030	5	7	-	-	-	-	-	-	-	-	-
P21030	7	9	53.5	30.6	1.7	0.4	0.0	0.9	0.3	1.86	10.7
P21030	9	11	-	-	-	-	-	-	-	-	-
P21030	11	13	64.1	22.1	1.4	0.4	0.1	1.6	0.4	2.67	7.3
P21030	13	15	60.3	23.9	2.1	0.5	0.1	1.9	0.7	2.13	8.5
P21030	15	17	58.8	23.6	3.9	0.5	0.1	1.9	0.7	2.13	8.5

Table 11: Key major element analyses and LOI for P21051 twin (Nagrom Laboratory, batching method)

Collar	From (m)	To (m)	SiO₂ (%)	Al <sub>2</sub> O <sub>3</sub> (%)	Fe <sub>2</sub> O₃ (%)	TiO₂ (%)	CaO (%)	MgO (%)	Na₂O (%)	K₂O (%)	LOI1000 (%)
P21051	0	3	45.8	37.4	0.8	0.7	0.0	0.1	0.4	0.2	14.1
P21051	3	6	45.6	37.3	0.9	0.6	0.0	0.1	0.4	0.2	14.3
P21051	6	9	45.8	38.0	0.7	0.7	0.0	0.1	0.1	0.1	14.0



P21051	9	12	45.9	37.4	0.7	0.6	0.0	0.1	0.4	0.2	14.2
P21051	12	15	46.1	36.8	1.0	0.7	0.0	0.1	0.4	0.5	13.8
P21051	15	18	46.0	36.7	0.9	0.7	0.0	0.1	0.5	0.6	14.0
P21051	18	21	46.1	36.0	0.9	0.8	0.0	0.1	0.5	0.8	13.9

Table 12: Key major element analyses and LOI for P21051 (Pittong Laboratory, batching method)

Collar	From (m)	To (m)	SiO₂ (%)	Al <sub>2</sub> O <sub>3</sub> (%)	Fe₂O₃ (%)	TiO <sub>2</sub> (%)	CaO (%)	MgO (%)	Na₂O (%)	K₂O (%)	LOI1000 (%)
P21051	0	3									
P21051	3	6									
P21051	6	9	45.8	38.4	0.7	0.7	0.0	0.1	0.1	0.2	13.9
P21051	9	12									
P21051	12	15	46.4	37.5	1.0	0.7	0.0	0.1	0.1	0.6	13.4
P21051	15	18									
P21051	18	21	46.5	37.2	0.9	0.9	0.0	0.1	0.1	0.7	13.3

Table 13: P21051 key minerals determined by XRD from samples refined at Nagrom Laboratory (batch method)

Collar	From (m)	To (m)	Kaolinite (%)	Halloysite (%)	Quartz (%)	K spar (%)	Plagioclase (%)	Smectite (%)	Goethite (%)
P21051	0	3	98.4	nd	0.7	0.4	0.1	nd	nd
P21051	3	6							
P21051	6	9	99.1	nd	0.5	nd	nd	nd	nd
P21051	9	12							
P21051	12	15	95.8	nd	0.7	1.6	nd	nd	1
P21051	15	18							
P21051	18	21	89.2	3.9	1	3.3	0.2	nd	1.4

Note: ND = not detected. Results reported in James Hutton Institute (2021) Report Number: 2021-31895.

Table 14: P21030 minerals determined by XRD from crude samples

Collar	From (m)	To (m)	Kaolinite (%)	Halloysite (%)	Quartz (%)	K spar (%)	Plagioclase (%)	Smectite (%)	Goethite (%)
P21030	3	5	-	-	-	-	-	-	-
P21030	5	7	29.9	2.5	51.1	3.8	0.2	10.8	1.3
P21030	7	9	28.3	3.5	46.9	12.2	ND	7.2	1.1
P21030	9	11	-	-	-	-	-	-	-
P21030	11	13	16.9	3	37.8	20.4	1.2	18.6	0.5
P21030	13	15	10.4	2.1	40.6	25.5	4.8	15.1	0.4
P21030	15	17	6.5	2.2	48.6	23.2	4	14.1	0.6

Note: ND = not detected. Results reported in James Hutton Institute (2021) Report Number: 2021-31443.

Table 15: P21030 minerals determined by XRD from samples refined at Nagrom Laboratory (-45 μm method)

Collar	From (m)	To (m)	Kaolinite (%)	Halloysite (%)	Quartz (%)	K spar (%)	Plagioclase (%)	Smectite (%)	Goethite (%)
P21030	3	5	66.9	7.7	11	0.8	ND	10.1	3.1
P21030	5	7	-	-	-	-	-	-	-
P21030	7	9	60.9	3.9	6.4	12.1	0.1	13.6	1.9
P21030	9	11	32.4	4.3	15.4	14.7	0.1	28.9	2.5



P21030	11	13	30.5	5.2	13.9	9.4	0.9	36.9	0.7
P21030	13	15	-	-	-	-	-	-	-
P21030	15	17	17.9	5.8	14.9	13.8	5.1	39.9	0.9

Note:

ND = not detected. Results reported in James Hutton Institute (2021) Report Number: 2021-31443.

Table 16: P21051 vs C447\_P unbleached brightness

Collar	From (m)	To (m)	ISO brightness*	ISO brightness**	Collar	From (m)	To (m)	ISO brightness		
Twin P21051						Original C447_P				
P21051	0	3	76.4	1	C447_P	13.95	16.85	85.7		
P21051	3	6	73.9	-	C447_P	16.85	19.85	84.1		
P21051	6	9	78.6	81.7	C447_P	19.85	22.75	85.5		
P21051	9	12	78.8	ı	C447_P	22.75	25.00	-		
P21051	12	15	76.2	78.4	C447_P	25.00	26.80	69.9		
P21051	15	18	73.9	1	C447_P	26.80	31.10	76.5		
P21051	18	21	85.6	78.3	C447_P	31.10	34.00	82.6		

<sup>\*</sup>Nagrom Laboratory. \*\*Pittong Laboratory.

Table 17: P21018 vs C1039\_P unbleached brightness

Collar	From	To	ISO brightness*	ISO	Collar	From	To	ISO
	(m)	(m)		brightness**		(m)	(m)	brightness
Twin P21018						Origi	nal C1039_P	
P21018	0	3	72.1	-	C1039_P	2.0	3.0	79.3
P21018	3	6	64.9	1	C1039_P	3.0	4.0	75.8
P21018	6	9	74.6	-	C1039_P	4.0	5.0	78.6
P21018	9	12	70.1	78.7	C1039_P	5.0	6.0	85.6
P21018	12	15	74.6	-	C1039_P	6.0	7.0	83.3
P21018	15	18	83.2	79.7	C1039_P	7.0	8.0	83.6
					C1039_P	8.0	9.0	82.4
					C1039_P	9.0	10.0	77.4
					C1039_P	10.0	11.0	80.1
					C1039_P	11.0	12.0	83.7
					C1039_P	12.0	13.0	80.7
					C1039_P	13.0	14.0	80.8
					C1039_P	14.0	15.0	78.3
	·				C1039_P	15.0	16.0	82.6
			_		C1039_P	16.0	17.0	83.0

<sup>\*</sup>Nagrom Laboratory. \*\*Pittong Laboratory. Original hole at 1 m intervals vs 3 m twin composites

Table 18: P21030 vs C205\_P unbleached brightness

Collar	From (m)	To (m)	ISO brightness*	ISO brightness**	Collar	From (m)	To (m)	ISO brightness
Twin P21030					Original C205_P			
P21030	3	5	44.5	46.7	C205_P	5.5	7.3	47.7
P21030	5	7	54.9	-	C205_P	7.3	8.8	45.6
P21030	7	9	55.1	57.1	C205_P	8.8	10.4	51.6
P21030	9	11	43.7	-	C205_P	10.4	11.9	51.3
P21030	11	13	67.2	72.1	C205_P	11.9	13.4	60.0
P21030	13	15	67.8	72.6	C205_P	13.4	16.0	60.0



Collar	From (m)	To (m)	ISO brightness*	ISO brightness**	Collar	From (m)	To (m)	ISO brightness
P21030	15	17	60.8	63.6	C205_P	16.0	18.0	60.0

<sup>\*</sup>Nagrom Laboratory -45 $\mu$ m method. \*\*Nagrom Laboratory batching method. Original hole sampled at ~1.5 m intervals compared with 2 m composites for the twin.

Table 19: P21051 vs C447\_P Yield (batching method)

Collar	From (m)	To (m)	Yield %	Collar	From (m)	To (m)	Yield %		
	Pittong Laboratory (twin)				Pittong Laboratory (original)				
P21051	0	3		C447_P	13.95	16.85	36.5		
P21051	3	6		C447_P	16.85	19.85	35.1		
P21051	6	9	43.3	C447_P	19.85	22.75	35.9		
P21051	9	12		C447_P	22.75	25.00	33.7		
P21051	12	15	35	C447_P	25.00	26.80	23.9		
P21051	15	18		C447_P	26.80	31.10	27.6		
P21051	18	21	25.8	C447_P	31.10	34.00	25.3		

Table 20: P21051 vs C447\_P flow and -2 μm sizing (batching method)

Collar	From (m)	To (m)	Flow	-2 μm %	Collar	From (m)	To (m)	Flow	-2 μm %
	Pittong	Laboratory (			Pittong Laboratory (original)				
P21051	0	3			C447_P	13.95	16.85	66	71.7
P21051	3	6			C447_P	16.85	19.85	65.8	74.5
P21051	6	9	68.7	81.9	C447_P	19.85	22.75	66.7	77.4
P21051	9	12			C447_P	22.75	25.00	62.7	74.2
P21051	12	15	67.3	79.7	C447_P	25.00	26.80	61.2	72.8
P21051	15	18			C447_P	26.80	31.10	59.3	74.5
P21051	18	21	68.0	84.5	C447_P	31.10	34.00	60.2	78.3

Table 21: P21018 vs C1039\_P Yield (batching method)

Tuble 21.	7 2 1 0 1 0 V.	F21016 V3 C1039_F Tield (batching method)								
Collar	From (m)	To (m)	Yield %	Collar	From (m)	To (m)	Yield %			
	Pittong Lal	ooratory (twin	)		Pittong Labor	ratory (original)				
P21018	0	3		C1039_P	2.0	3.0	No data			
P21018	3	6		C1039_P	3.0	4.0	No data			
P21018	6	9		C1039_P	4.0	5.0	No data			
P21018	9	12	29.2	C1039_P	5.0	6.0	No data			
P21018	12	15		C1039_P	6.0	7.0	No data			
P21018	15	18	30.2	C1039_P	7.0	8.0	No data			
P21018				C1039_P	8.0	9.0	No data			
				C1039_P	9.0	10.0	No data			
				C1039_P	10.0	11.0	No data			
				C1039_P	11.0	12.0	No data			
				C1039_P	12.0	13.0	No data			
				C1039_P	13.0	14.0	No data			
				C1039_P	14.0	15.0	No data			
				C1039_P	15.0	16.0	No data			
				C1039_P	16.0	17.0	No data			

Table 22: P21018 vs C1039\_P flow and -2 μm sizing (batching method)

_				, ,	, ,	,				
Collar	From (m)	To (m)	Flow	-2 μm %	Collar	From (m)	To (m)	Flow	-2 μm %	
	Pittong Laboratory (twin)					Pittong Laboratory (original)				
P21018	0	3			C1039_P	2.0	3.0	68	No data	



Collar	From (m)	To (m)	Flow	-2 μm %	Collar	From (m)	To (m)	Flow	-2 μm %
P21018	3	6			C1039_P	3.0	4.0	65.9	No data
P21018	6	9			C1039_P	4.0	5.0	64.4	No data
P21018	9	12	66.0	84.4	C1039_P	5.0	6.0	67	No data
P21018	12	15			C1039_P	6.0	7.0	66.9	No data
P21018	15	18	68.3	83.4	C1039_P	7.0	8.0	67.4	No data
P21018					C1039_P	8.0	9.0	67.4	No data
					C1039_P	9.0	10.0	66.2	No data
					C1039_P	10.0	11.0	67.3	No data
					C1039_P	11.0	12.0	67.7	No data
					C1039_P	12.0	13.0	69.6	No data
					C1039_P	13.0	14.0	69.2	No data
					C1039_P	14.0	15.0	69	No data
					C1039_P	15.0	16.0	68.8	No data
	· · · · · · · · · · · · · · · · · · ·				C1039_P	16.0	17.0	69	No data

### 5.3 Conclusions

The CP notes that test methods may have a significant effect on the quality of refined kaolin produced at a laboratory scale, and that such tests should be tailored for specific geological and mineralogical conditions and desired product outcomes for specific markets.

The XRD data verifies that the laboratory test methods at Pittong and Nagrom produced kaolin concentrates with mineralogy and chemistry appropriate for kaolin products, in agreement with current mine product quality.

The CP, Dr Ian Wilson, is of the opinion that the historical Pittong data is suitable for use in estimating and reporting a Mineral Resource under the guidelines of the JORC Code, based on the general similarity between the original and twinned drilling results.

## 5.4 Data Quality Assessment by Competent Person

Based on the assessment of the data, the CP, Dr Ian Wilson, considers the data acceptable for Mineral Resource estimation, with the laboratory results posing minimal risk to the reliability of the MRE.

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## 6 Geological Modelling

### 6.1 Software

Geological modelling was undertaken by CSA Global using Micromine 2018 software (version 18.0.1008.8 x64).

### 6.2 Data Import and Validation

The Pittong database included the following:

- Drillhole collar coordinates file
- Downhole survey data file
- Analytical data file (assay intervals)
- Geology/lithology data file.

The database was provided by Suvo in Microsoft Excel format. Table 23 summarises the database.

Table 23: Summary table – database provided

Category	Historical drillholes	Recent drillholes	Total
Workings/drillholes	298	54	352
Metres driven/drilled	5,893.3	1,012.5	6,905.8
Lithology records	2,631	1,012	3,643
Assay intervals	2,630	-	2,630
Assay intervals (in metres)	5,886.9	-	5,886.9
Including:			
Parameters:			
Brightness (isoa)	2,165	-	2,165
Brightness bleached (isob)	2,170	-	2,170
PSD <2 μm	2,149	-	2,149
Flow	1,977	-	1,977
VCPU	1,991	-	1,991
Yield	2,016	-	2,016

No data for auger drilling was included in the database and therefore not used in the MRE.

All drillhole analytical results were used for interpretation and grade estimation of the lithological zones. Data were imported into a Micromine database for statistical analysis and grade interpolation. Lithological descriptions were entered into the database as an interval file with lithological codes assigned. The lithological codes assisted with domain interpretation and were compared visually with chip tray photographs supplied by Suvo.

The analytical databases were validated by specially designed processes in Micromine software.

The database was then checked using macros and processes designed to detect the following errors:

- Duplicate drillhole names
- One or more drillhole collar coordinates missing in the collar file
- FROM or TO missing or absent in the assay file
- FROM > TO in the assay file
- Sample intervals are not contiguous in the assay file (gaps exist between the assays)
- Sample intervals overlap in the assay file
- First sample is not equal to 0 m in the assay file



- First depth is not equal to 0 m in the survey file
- Several downhole survey records exist for the same depth
- Azimuth is not between 0 and 360° in the survey file
- Dip is not between 0 and 90° in the survey file
- Azimuth or dip is missing in survey file
- Total depth of the holes is less than the depth of the last sample.

The validation revealed no critical errors.

## 6.3 Preliminary Statistical Analysis

CSA Global carried out statistical analysis of the analytical data for the GFK (granite fully kaolinised) lithological unit. Initial assessment of the values for both bleached brightness and yield (<45  $\mu$ m fraction) within the Project data reveals a pseudo-normal population for yield, centred around a value of approximately 33% (Figure 11) and slightly negatively skewed population for brightness values around a median 84% (Figure 12).

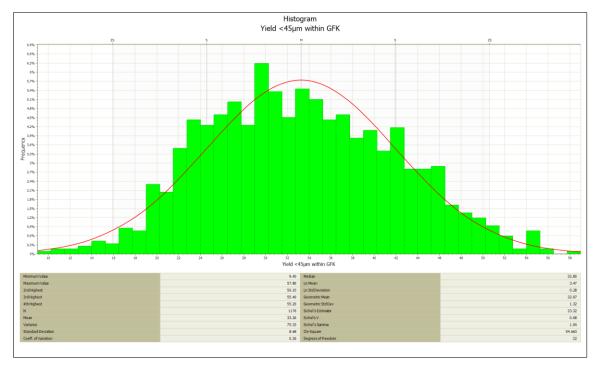


Figure 11: Histogram of Yield (<45 μm fraction) distribution within the GFK unit



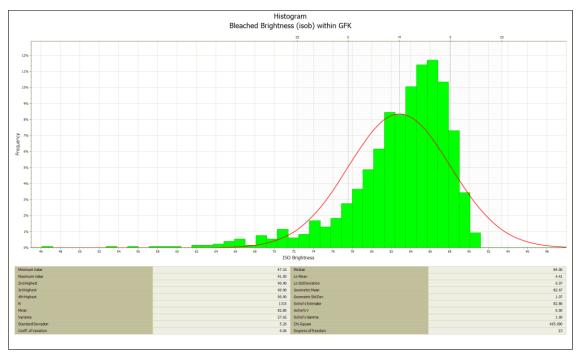


Figure 12: Histogram of Bleached Brightness distribution within the GFK unit

## 6.4 Lithology, Structure and Alteration

The mineralisation contained within the Pittong Kaolin Project is the product of weathering of the underlying granitoids. Modelling of the upper and lower surfaces of the host horizon for kaolin mineralisation is equivalent to modelling the various oxidation states within the weathered granitoid.

## 6.4.1 Geological Interpretation

Interpretation was carried out interactively for 31 vertical cross-sections from south to north through the weathering profile of the deposit (Figure 13).

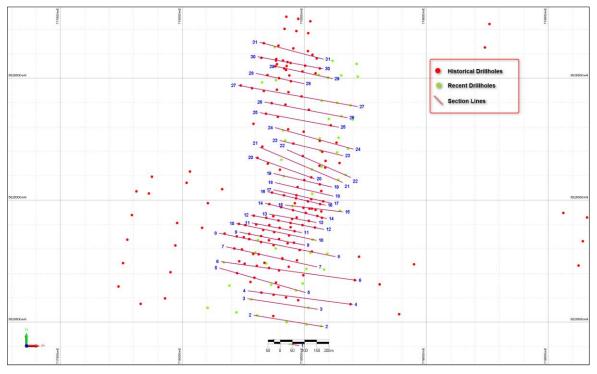


Figure 13: Exploration profiles in plan view (map grid 500 m x 500 m)



Interpretation was carried out by initially creating strings of mineralisation. Geological knowledge relating to weathering profile development formed the basis for interpretation. All strings were saved separately for each lithological domain.

The following approach was applied during interpretation:

- Each view was displayed on screen with a clipping window equal to half the distance from the adjacent plan sections
- All interpreted strings were snapped to drillholes.
- The interpretation was extended perpendicular to the first and last interpreted section a distance equal
  to half the distance between the adjacent data points. Consideration was given to the general direction
  of the structure.
- If a lithological envelope did not extend to the adjacent section, it was pinched out to the next section and then terminated. The general shape of the envelope was maintained

Figure 14 shows an interpretation of the GFK lithological unit for the deposit using the lithological codes. Coloured hatches along the drillhole traces show the distribution of the various lithological units.

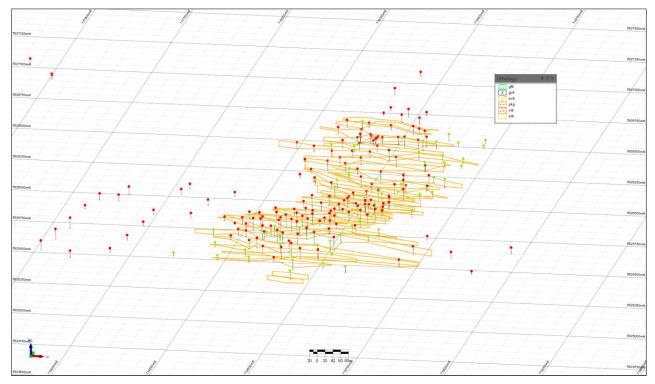


Figure 14: Example of geological interpretation of the GFK domain, looking northwest, with drill holes (red=historical, green = recent drilling)

## 6.5 Topography

A topographic surface was provided by Suvo as digital terrain model (DTM) in the DXF format and imported into Micromine (Figure 15).



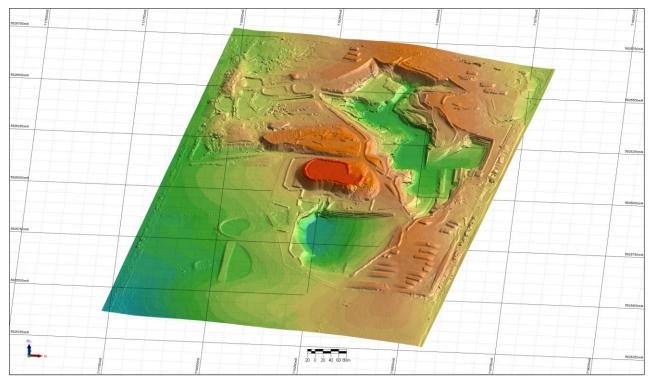


Figure 15: Topographic Surface

## 6.6 Wireframing

The interpretation strings were used to generate 3D models. A wireframe has a name that corresponds to its zone. One set of wireframes were created for the deposit: namely, GFK domain. Examples of the wireframe constructed is shown in Figure 16 for GFK.

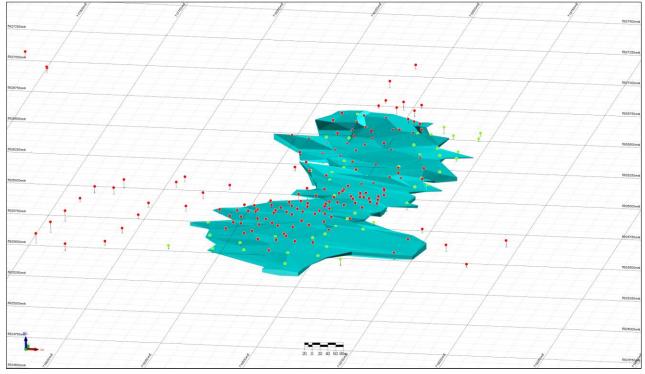


Figure 16: GFK wireframe, looking northwest, with drill holes (red = historical, green = recent drilling)



Working in a 3D environment ensured accurate modelling of the weathering zones. Table 24 shows volumes of the wireframe models.

Table 24: Volume statistics for the wireframe models of the deposit

Domain	Volume (m³)
GFK	6,677,105

Each wireframe model was assigned a unique name so that it was possible to carry out the subsequent grade interpolation individually for each modelled mineralised body.



# 7 Statistical and Geostatistical Analysis

### 7.1 Summary

Before undertaking the block modelling, statistical assessment of the data was completed to understand how the grade estimates should be accomplished. The main variables under consideration for the Pittong Kaolin Project are ISO brightness and yield. Each of these variables was subject to classical exploratory data analysis in preparation for estimation.

Statistical analysis was carried out using Micromine software.

## 7.2 Data Coding and Selecting Composite Length

Drillhole interval compositing is a standard procedure which is used to set all sampling intervals to the same length ("volume support") so that all the samples will have the same weight during grade interpolation and geostatistical analysis. Usually, the composite interval length is selected to be close to the standard or mean sampling length [Reference: Mineral Resource and Ore Reserve Estimation, The AusIMM Guide to Good Practice, Monograph 23].

The most common sampling interval was analysed (Figure 17) and a 1 m sampling interval was selected. The selected samples within each mineralised envelope were separately composited over the defined intervals, starting at the drillhole collar and progressing downhole. Compositing was stopped and restarted at all boundaries between mineralised envelopes and waste material, as well between different oxidation zones. If a gap of less than 10 cm occurred between samples, it was included in the sample composite. If the gap was longer than 10 cm, the composite was stopped, and another composite was started from the next sample.

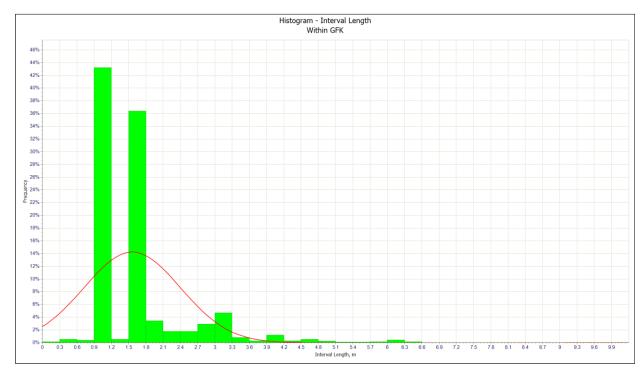


Figure 17: Histogram for interval length within GFK



## 7.3 Statistical Analysis

Once the mineralisation had been interpreted and wireframed, classical statistical analysis was repeated, but only for the samples that were within the mineralised envelopes. This was carried out to meet the following objectives:

- To estimate the mixing effect of grade populations for each element within each zone
- To assess the potential for separation of grade populations if more than one population exists
- To define the top cut grades.

Samples were coded separately for each mineralisation zone and visual validation then performed to check sample coding.

Statistical parameters for all grades (weighted over the interval length) are shown in Table 25.

Table 25: Statistical parameters of brightness and yield analytical results within GFK (composited data)

Domain	Parameter	No. of samples	Minimum	Maximum	Mean	Variance	Standard deviation	Coefficient of variation	Median	
Analyses	Analyses within GFK lithological domain									
	Yield	1,880	9.4%	56.1%	33.9%	79.3	8.9	0.26	33.3	
GFK	Bleached brightness	2,035	47	91	82.8	25.5	5.0	0.06	84	

The coefficient of variation for composited grades in the geological domain was low (between 0.06 and 0.26).

A review of grade outliers was undertaken to ensure that extreme grades are treated appropriately during grade interpolation. Brightness and yield values for each mineralised domain were assessed using distribution coefficient of variation values, log-probability and histogram plots, to identify any extreme highgrade values. Data for both brightness and yield for each mineralised domain showed pseudo-normal distributions with no significantly high-grade outliers. Consequently, no top cuts were applied to either variable for any domain.

## 7.4 Geostatistical Analysis

No geostatistical analysis, including variography, was carried out due to insufficient number of samples.



## 8 Density

### 8.1 Introduction

Ten core samples of kaolinised granite were collected from the floor of the open pit at Suvo's Pittong mine in November 2018 (Table 26). The core samples were obtained by manually pushing a short metal tube into kaolin in the Pittong pit floor.

Table 26: GPS locations and descriptions of Pittong density core samples

Sample	GPS	GPS	Description
PGD 1	718314 E	5825572 N	Sample depth 50 mm (below compacted surface)
PGD 2	718277 E	5825576 N	Sample depth 100 mm (below compacted surface)
PGD 3	718208 E	5825522 N	Sample depth 200 mm (below compacted surface)
PGD 4	718227 E	5825597 N	Sample depth 100 mm (below compacted surface)
PGD 5	718244 E	5825710 N	Sample depth 100 mm (below compacted surface)
PGD 6	718124 E	5825684 N	Sample depth 100 mm (below compacted surface)
PGD 7	718110 E	5825669 N	Sample depth 100 mm (below compacted surface) - wet surface
PGD 8	718111 E	5825668 N	Sample depth 50 mm (below compacted surface) - wet surface
PGD 9	718151 E	5825550 N	Sample depth 100 mm (below compacted surface)
PGD 10	718200 E	5825495 N	Sample depth 150 mm (below compacted surface)

Eight of the core samples were used to determine in-situ wet and dry bulk densities. Sample PGD 01 was destroyed during the process and PGD10 suffered significant sample mass, so their results were disregarded.

### 8.2 Method

The sample was removed from the core tube and then weighed in air to obtain mass in situ of damp kaolinised granite. Paraffin wax was melted in a water bath at 60°C, after which the core was dipped into the liquid wax for about 10 seconds. A thin piece of copper wire about 0.5 m in length and weighing about 0.5 g was wound around the core and used to suspend the core in the wax and for suspending the waxed core under a balance to measure weight in air and weight in water. Refer to Figure 18 for examples of core being weighed.





Figure 18: Core sample being weighed in air (left) and waxed core being weighed in water (right)

The wire and wax were then removed from the core, and the sample reweighed. Minor loss of clay was noted to be between 0.5 g and 1 g.

The core was then dried at 105°C for two days, after which it was weighed to get the dry weight and establish moisture content.



### 8.3 Results

The data and results are summarised in Table 27 and Table 28.

Table 27: In-situ bulk densities for kaolinised granite at the Pittong mine, November 2018

Sample ID	PGD 2	PGD 3	PGD 4	PGD 5	PGD 6	PGD 7	PGD 8	PGD 9
Mass (g)	184.5	137.4	126.8	190.9	172.4	220.3	185.1	100.8
Mass with wax (g)	198.4	149.1	136.6	203.9	185.2	233.9	199.6	108.7
Wire mass (g)	2.1	2.5	2.5	2.5	2.1	2.4	2.2	1.6
Wax mass (g)	11.8	9.2	7.3	10.5	10.7	11.2	12.3	6.3
Mass in water (g)	84.6	62.2	61.2	91.5	81.3	105.3	83.2	44.6
Displacement (ml)	900	880	850	880	870	890	890	830
Volume (ml)	98.59	74.18	64.79	98.23	89.91	113.76	100.53	55.50
Wet density (g/ml)	1.87	1.85	1.96	1.94	1.92	1.94	1.84	1.82
Mass after wax removed (g)	182.8	137.2	125.2	190.2	170.4	218.4	184.9	99.5
Dry mass (g)	158.5	114.0	104.1	158.4	135.1	178.8	151.6	85.9
Moisture (%)	15.3	20.4	20.3	20.1	26.1	22.1	22.0	15.8
Dry density (g/ml)	1.62	1.54	1.63	1.62	1.52	1.59	1.51	1.57

Table 28: In-situ densities – summary data

	Wet bulk density (t/m³)	Dry bulk density (t/m³)
Maximum	1.96	1.63
Minimum	1.82	1.51
Average	1.89	1.57

The wet bulk density was determined to range between 1.82  $t/m^3$  and 1.96  $t/m^3$  with an arithmetic average of 1.89  $t/m^3$ .

Dry bulk density was determined to range between  $1.51 \text{ t/m}^3$  and  $1.63 \text{ t/m}^3$  for an arithmetic average of  $1.57 \text{ t/m}^3$ .

The CP, Dr Ian Wilson, is of the opinion that an average in-situ dry bulk density of 1.6 t/m³ determined for Pittong kaolinised granite is appropriate for the Pittong deposit, and is slightly higher than the density of 1.5 t/m³ used for historical resource estimates.



# 9 Metallurgy and Mineral Processing

### 9.1 Introduction

The Mineral Resource is a primary kaolinised granite, which is processed by dispersion in a trommel then wet separation in hydrocyclones, followed by a chemical bleaching step, filter pressing and drying.

Borehole samples were processed in the Pittong and Nagrom Laboratories to simulate the production process, and the physical properties of the resultant clay were measured to characterise the clay.

The detailed analysis of all the different types of clay leads to processes which will improve the performance of the product. For example, the pugging of kaolin puts energy into the clay and some delamination takes place, increases the percentage of the  $<2 \mu m$  level and gives rise a higher aspect ratio clay.

The CP notes that the following parameters were tested for Pittong historical samples: Kaolin Recovery (Yield), Particle Size Analysis, Brightness unbleached and bleached (ISOB), Yellowness unbleached and bleached (ISOY), Flowability, Viscosity Concentration (VC) and Pugged Viscosity Concentration (PVC).

### 9.2 Product Specifications

Examples of Suvo Pittong kaolin product specifications are given in Table 29. Actual product names have been kept confidential due to commercial sensitivities.

Table 29: Selected Pittong product specifications

		Product 1	Product 2	Product 3	Product 4	Product5	Product 6
Physical Properties							
Brightness	ISO 457nm	84.0 ± 1.0	75.0 typical	84.0 ± 1.0	86.0 ± 1.0	80.0 ± 1.0	84.0 ± 1.0
% > 53 micron	weight %	0.05 max	1.5 max	0.05 max	0.05 max	0.05 max	0.05 max
% > 10 micron	weight %	1.0 max	20 typical	1.0 max	1.0 max	9.0 max	1.0 max
% < 2 micron	weight %	92.0 ± 3.0	55 typical	87.0 ± 3.0	87.0 ± 3.0	73.0 ± 3.0	87.0 ± 3.0
			Fired Prop	erties			
Brightness (%)	@ 1180°C	-	93	95	-	93	-
			Mineralog	y (XRD)			
Kaolinite	%	99	94	99	99	98	99
Mica	%	1	2	1	1	1	1
Quartz	%	trace	4	trace	trace	1	trace
			Chemistry	(XRF)			
SiO <sub>2</sub>	%	46	49	46	46	49	46
Al <sub>2</sub> O <sub>3</sub>	%	38	37	38	38	37	38
Fe <sub>2</sub> O <sub>3</sub>	%	0.8	0.83	0.6	0.6	0.83	0.6
TiO <sub>2</sub>	%	0.6	0.72	0.7	0.7	0.72	0.7
CaO	%	0.05	0.05	0.05	0.05	0.05	0.05
MgO	%	0.1	0.08	0.07	0.07	0.08	0.07
K <sub>2</sub> O	%	0.12	0.25	0.14	0.14	0.25	0.14
Na₂O	%	0.1	0.1	0.1	0.1	0.1	0.1
LOI (1000° C)	%	14	13	14	14	13.7	14



All borehole data has been categorised in terms of "fitness for use criteria". Four lithology designations have been selected for clay of potential commercial interest. These designations are based on bleached brightness values and viscosity concentration measured on a refined (-12  $\mu$ ), unpugged sample of clay. A list of the four categories together with a fifth denoting clay of no commercial interest ("pkg") are shown in Table 30.

Table 30: Product specifications used for the Mineral Resource estimation

Characteristics	Parameters
High Brightness & Fluid "hbf"	ISOB ≥ 84.0, and VC ≥ 64.0
Moderately Bright & Fluid "hbf"	ISOB ≥ 80 but < 84, and VC ≥ 64.0
High Brightness & Non-Fluid "hnf"	ISOB ≥ 84.0, and VC < 64.0
Moderately Bright & Non -Fluid "mnf"	ISOB ≥ 80.0 but <84.0 and VC < 64.0
Poor Quality Kaolinised Granite "pkg"	ISO < 80.0

### 9.2.1 High Bright Fluid

The category of most interest is potential paper coating clay known as High Bright Fluid. High brightness and good rheological properties of a slurry of high clay solids (c. 68.5 wt.% to ~70.5 wt.%) are two properties essential to a basic paper coating pigment. Particle size is also important; however, this can be controlled to a degree through processing.

A minimum unprocessed VC of 64 wt.% solids was selected as a starting rheology for "hbf". Not all clays with a VC of 64 wt.% solids will, after processing, achieve specification (69.5  $\pm$  1 wt.% solids). VC is greatly reduced by small amounts of mixed layer mineral contamination and/or particle morphology. In practice, blending with more fluid clays in addition to process beneficiation is the basis for achieving the required specification.

### 9.2.2 Moderately Bright Fluid

Moderately bright fluid kaolin is the next most useful category. This type of clay can be used in a blend with brighter clay to produce a paper coating clay. It can also be used as general filler clay or in a blend with bright non-fluid clays to produce a limited range of filler and ceramic grades.

## 9.2.3 High Bright Non-Fluid and Moderately Bright Non-Fluid

High bright non-fluid and moderately bright non-fluid clay can be used in a limited number of non-paper coating applications such as paper filling, paint, ceramic and some other more specific performance mineral applications that depend on chemical and mineralogical properties of the clay, where rheology is of secondary importance.

### 9.3 Test Methods

### 9.3.1 Minus 45 μm Method

This method consisted of crushing and wet attritioning the kaolinised granite drill samples in a slurry. The slurry was wet screened to yield three sieve fractions. The sieve fractions were dried, riffle split and analysed by XRF for major and trace elements and LOI at  $1,000^{\circ}$  C followed by brightness measurements. The yield was calculated as a percentage of -45  $\mu$ m kaolinitic material recovered from the head sample.

### 9.3.2 Pittong Batching Method

Batching (refining) is a process in which a kaolin sample is chemically dispersed in water and allowed to settle uninterrupted for specific time. This separates the coarse (sandy) fraction of the crude material from the fine (clay) fraction and is intended to simulate the actual plant refining process.

Batching is described by the time taken, which will govern the maximum size particle still in suspension. Typically, samples are batched at "11/2 hours per foot (of slurry depth)" which will give a separation at approximately 12  $\mu$ .

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PITTONG KAOLIN PROJECT – MINERAL RESOURCE ESTIMATE



The test method may typically use 3 kg kaolin crude in 3.5 litres of water, plus 10 ml NaOH 10% w/v and 20 ml Dispersant 80% w/v. Examples of kaolin test methods are presented in Murray (2007).

## 9.4 Conclusions

The CP, Dr Ian Wilson, is of the opinion that the process testing methods and product specifications are appropriate for the Pittong deposit and for use in Mineral Resource estimation according to the JORC Code.



## 10 Block Modelling

#### 10.1 Software

Block modelling was undertaken by CSA Global using Micromine 2018 (Version 18.0. 18.0.1008.8 x64).

### 10.2 Block Model Construction

An empty block model was created with dimensions sufficient to encompass the closed wireframe models for the mineralised envelopes that were modelled. Blocks that fell into the boundaries of the wireframes were then coded as GFK blocks.

Blocks were sub-celled at the margins of mineralisation domains and at the topographic surface during coding, to preserve volumetric resolution. The parent cell size was chosen based on drill spacing, the general morphology of the interpreted bodies and in order to avoid the generation of too large block models. The sub-celling size was chosen to maintain the resolution of the mineralised bodies. The sub-cells were optimised in the models where possible to form larger cells. The block model dimensions and parameters are shown in Table 31.

Table 31: Block model dimensions and parameters

Axis	Extent (m)		Block size	Maximum sub-celling	
AXIS	Minimum	Maximum	(m)	(m)	
Easting	718,100	718,775	25	5	
Northing	5,825,350	5,826,700	25	5	
RL	270	330	1	0.5	

Initial filling with parent cell size was followed by sub-celling where necessary. The sub-celling occurred near the boundaries of the modelled bodies or where models were truncated with the digital terrain models of the topographic surface and/or lithological boundaries.

Coding of the block model was based on the separate wireframe models for deposit.

## 10.3 Interpolation Methodology

Brightness, bleached brightness, flow, viscosity and yield values were interpolated into the empty block model using the IDW power of two method.

For the purposes of domain coding, input data selection and estimation, each domain boundary was treated as a hard boundary. Each zone domain was estimated separately.

The interpolation was performed using multiple passes, with expanding search radii until all cells were interpolated. The initial search radii were determined by the drillhole density used at the deposit is mostly  $50 \text{ m} \times 50 \text{ m}$  and in some localised area is reduced to  $25 \text{ m} \times 25 \text{ m}$ .

Due to the drilling grid at the deposit and to ensure that local grade distribution is preserved, the first run was set to be equal to the block size dimension. The second and the third interpolation runs used a multiplier to the search axes, which was started from two and incremented by one with requirement of minimum three samples and two drillholes. The search radii for the last three interpolation runs were set to five, 10 and 100 block sizes, respectively. For the last three runs, estimation parameters such as minimum number of informing samples, and restrictions on informing composites contributed from individual drillholes were relaxed and set to one minimum sample and one minimum drillhole. The search ellipse was relatively flat in the horizontal plane, so as to model the assumed high vertical variability of grades in the deposit's weathering profile.

Table 32: Interpolation parameters

Interpolation method	IDW
----------------------	-----



Search radii	Equal to block size dimension (25 m x 25 m x 1 m)	2 or 3 block sizes in all directions	5, 10, 100 block sizes in all directions	
Minimum number of samples	1	3	1	
Maximum number of samples	16	16	16	
Minimum number of drill holes	1	2	1	

The blocks were interpolated using only composite intervals within the corresponding wireframe domains.

Search ellipses were divided into quadrants in the XY plane to minimise input sample clustering. The following constraints were applied on each quadrant for all profile zones: a maximum of four points was used within each quadrant. Thus, a maximum of 16 composite samples was available for interpolation. Target blocks were discretised into  $5 \times 5 \times 5$  points, with punctual estimation centred on each point. Then the grade estimation in the centre of the block consisted of the simple average value of the estimated points throughout the block volume.

### 10.4 Block Model Validation

Validation of the grade estimate was completed by:

- Visual checks on screen in sectional view to ensure that block model grades honour the general grade tenor of downhole composites.
- Generation of swath plots to compare input and output brightness and yield values in a semi-local sense, by easting, northing and elevation (Figure 19 to Figure 24). The swath plots were constructed for the blocks and sample intervals that fall into the GFK zone.

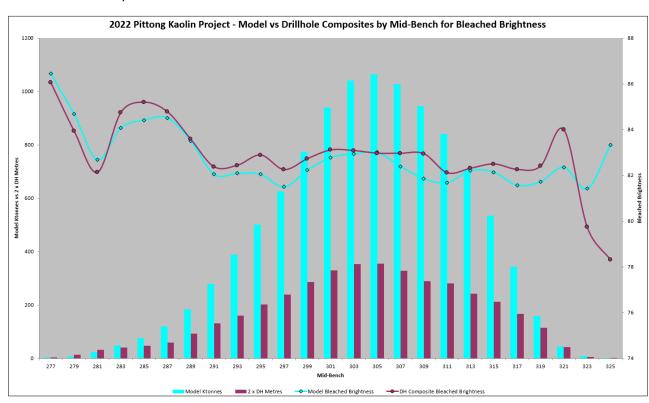


Figure 19: Swath plot by 2 m bench – Brightness (cyan = block results; burgundy = input data)



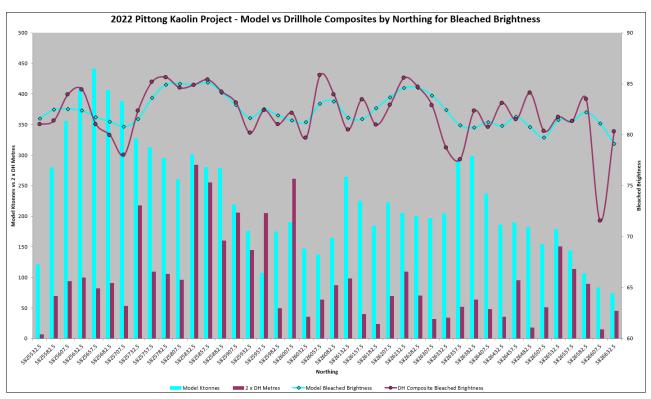


Figure 20: Swath plot by northing – Brightness (cyan = block results; burgundy = input data)



Figure 21: Swath plot by easting – Brightness (cyan = block results; burgundy = input data)



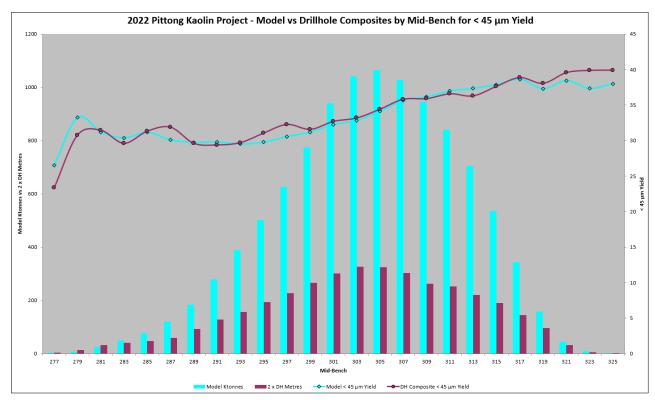


Figure 22: Swath plot by 2 m bench – Yield (cyan = block results; burgundy = input data)

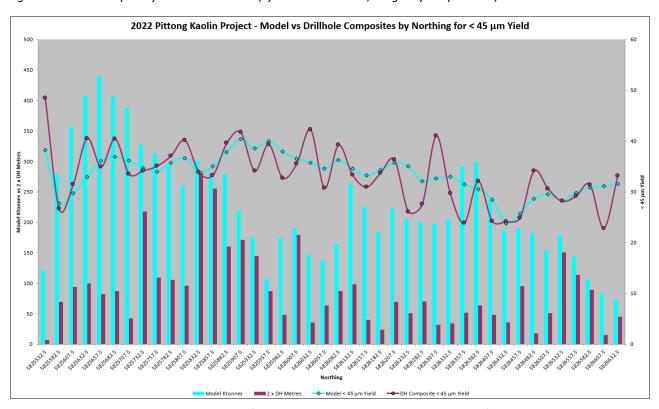


Figure 23: Swath plot by northing – Yield (cyan = block results; burgundy = input data)



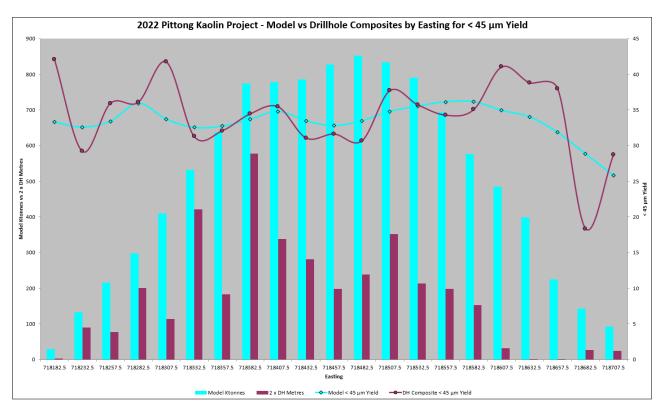


Figure 24: Swath plot by easting – Yield (cyan = block results; burgundy = input data)

Visual validation of block grades against input grades in each area confirmed that the block model reflects the grade tenor of the input composites. Example cross sections with yield and bleached brightness values are shown in Figure 25 and Figure 26, respectively.

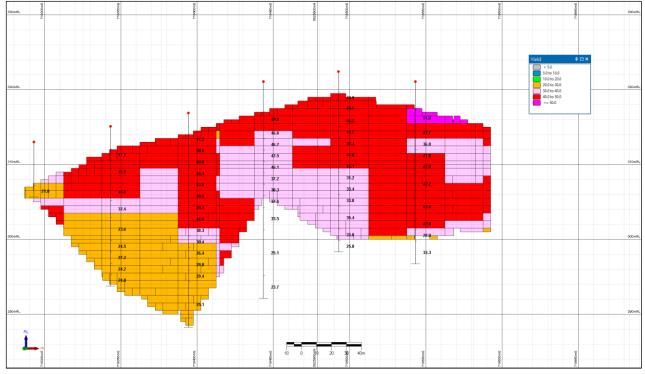


Figure 25: Visual validation of block model grades vs drillhole grades (Yield); vertical exaggeration 5



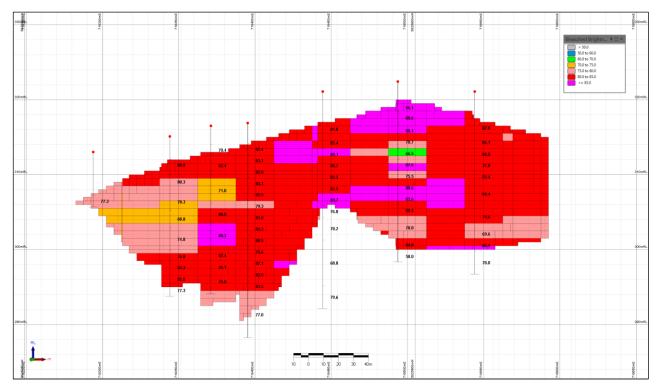


Figure 26: Visual validation of block model grades vs drillhole grades (Bleached Brightness); vertical exaggeration 5

Validation histograms and probability plots were generated for composites and block model grades. Grade distribution, populations and swath plots were reviewed and compared. They show that the distribution of block grades honours the distribution of input composite grades. There is a degree of smoothing evident, which is to be expected given the volume variance effect. Smoothing is particularly evident in areas of wide spaced drilling where the number of composites was relatively low. However, the general trend in the composites is reflected in the block model.



## 11 Mineral Resource Reporting

## 11.1 Reasonable Prospects Hurdle

Clause 20 of the JORC Code requires that all reports of Mineral Resources must have reasonable prospects for eventual economic extraction, regardless of the classification of the resource.

The overall CP, Dr Ian Wilson, deems that there are reasonable prospects for eventual economic extraction on the following basis:

- The geometry of the mineralisation is conducive to open pit mining, being close to the surface
- The Project is well situated for transport of product
- The Pittong Project is an operating mine.

Clause 49 of the JORC Code requires that industrial minerals including kaolin that are produced and sold according to product specifications, must be reported "in terms of the mineral or minerals on which the project is to be based and must include the specification of those minerals".

### 11.2 JORC Code Clause 49

### 11.2.1 Introduction

Mineral Resource tonnes, in-situ chemistry and mineralogy are key metrics for initially assessing kaolin projects; however, these projects also require attributes such as brightness, size distribution, chemical purity and particle shape to be evaluated to allow consideration of potential product specifications (e.g. Scogings, 2014). These specifications and ultimate markets are parameters that drive the value in kaolin projects.

Clause 49 of the JORC Code (2012) requires that industrial minerals such as kaolin that are produced and sold according to product specifications be reported "in terms of the mineral or minerals on which the project is to be based and must include the specification of those minerals".

Clause 49 also states that "It may be necessary, prior to the reporting of a Mineral Resource or Ore Reserve, to take particular account of certain key characteristics or qualities such as likely product specifications, proximity to markets and general product marketability".

Therefore, kaolin Mineral Resources must be reported at least in terms of product purity (e.g., brightness and chemistry including deleterious minerals/chemistry) and size distribution, in addition to the basic in-situ tonnes and grade. Logistics and proximity to markets should also be considered.

## 11.2.2 Kaolin Specifications

It is generally considered that a fundamental industry specification for commercial white kaolin products is colour, or brightness (e.g., Murray, 2007; Pruett and Pickering, 2006). Brightness is in essence a measure of the percentage of light reflected by the product.

Kaolin brightness may be affected by deleterious elements, in particular iron and titanium. These elements may be present within the kaolinite mineral structure and/or as coatings on the kaolinite and associated minerals in the product. As a rule of thumb, the lower the iron and titanium contents, the higher the brightness.

Kaolin products are sold according to specifications such as natural colour (brightness), chemical purity, particle size, casting properties and fired colour (when used in ceramics), salt content, abrasion, viscosity, and particle shape (e.g., Murray, 2007; Pruett and Pickering, 2006).

Elements such as potassium in a kaolin product indicate the presence of potassium-bearing minerals such as feldspar, mica or illite, which may be deleterious for some applications.



Product specifications for the Pittong kaolin deposit are supported by the results of drill sample testwork undertaken to date, in conjunction with actual production data and sales of products to existing kaolin markets.

#### 11.2.3 Kaolin Markets

Kaolin is used in several markets, the main being paper, paint fibre glass, rubber and polymers, ceramics, ink and Portland cement. Kaolin is also used as a carrier, adsorbent, diluent and a polishing agent (Murray et al., 2007). Historically, the most important use of kaolin is paper coating, which commands the most stringent kaolin specifications which include brightness, particle size, particle size distribution, particle shape, and rheology. Along with fine particle size, kaolin for film formation must have thin platelet shape.

Calcined kaolins for paper applications must be bright, fine in particle size, and have aggregate structures with high internal void volume for enhanced light scatter.

Surface chemistry and particle size are of primary importance for polymer extension and reinforcement, such as in plastics and rubber. As a rule of thumb, the smaller the particle size the better the reinforcement.

Chemical composition is most critical when kaolin use involves reconstitution, as in catalyst supports, cement, fibre glass, and to produce aluminium compounds.

Pozzolanic additives were discovered by the ancient Romans when they found that adding volcanic ash to lime mortar increased the strength of the mortar. Similarly, metakaolin (kaolin that has been heated at high temperature ~600° C) can be used as a pozzolanic additive in cements, especially where high strength is needed. The reactive amorphous alumina and silica in the metakaolin reacts with excess calcium to form calcium aluminium silicate which has an elongate crystal structure and increases the strength of concrete (Murray, 2007).

The wide utility of kaolin is a function of numerous characteristics, but the most important are for traditional markets are low cost, high brightness, fine particle size, platelet shape, and hydrophilic surface chemistry (Murray et al., 1993).

#### 11.2.4 Conclusions

The CP is of the opinion that available process testwork on drill samples, in conjunction with actual production data and product sales to existing kaolin markets support the classification of the deposit as a Mineral Resource in terms of Clause 49.

Regarding Modifying Factors, it should be noted that as the Pittong Project is an operating mine with, for example, existing mining and environmental permits, mining methods, process methods, production infrastructure, saleable products, experienced operational personnel and market agreements, the economic Modifying Factors already exist as reliable operating parameters that can be used in assessing the economically mineable parts of the deposit.

### 11.3 JORC Classification

The Mineral Resource has been classified in accordance with guidelines contained in the JORC Code. The classification applied reflects the CP's view of the uncertainty that should be assigned to the Mineral Resources reported herein. Key criteria that have been considered when classifying the Mineral Resource are detailed in JORC Table 1.

This classification is based upon assessment and understanding of the deposit style, geological and grade continuity, drillhole spacing, input data quality (including drill collar surveys and bulk density), and interpolation parameters using IDW.

The Mineral Resource was classified as Indicated and Inferred, accounting for the level of geological understanding of the deposit, quality of samples, density data, drillhole spacing and sampling, analytical and metallurgical processes. Material classified as Indicated was considered sufficiently informed by adequately detailed and reliable geological and sampling data to assume geological, grade and quality continuity



between data points. Material classified as Inferred was considered sufficiently informed by geological and sampling data to imply geological, grade and quality continuity between data points.

- The Mineral Resource was classed as Indicated in the areas of the drilling where the drillhole density was reduced to line spacing approximately 25-50 m and hole spacing to 25-50 m as well as in the areas that are within the current operating pit.
- The Mineral Resource was classed as Inferred in the areas where the drillhole density exceeded the 50 m x 50 m grid as well as in the areas with limited laboratory data and in the areas with uncertainty over the vertical extent of mining and backfill.

The classification reflects the level of data available for the estimate, including input drillhole data spacing, and high level of confidence in geological continuity for this particular style of deposit.

The classification of the MRE appropriately reflects the view of the CP, Dr Ian Wilson.

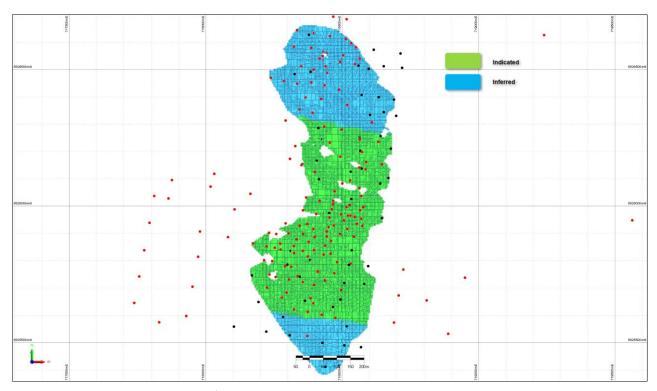


Figure 27: Mineral Resource classification

### 11.4 Mineral Resource Estimate

Mineral Resources for Pittong (Table 33) were reported based on the product specifications that are described in Chapter 9.2.



Table 33: Pittong MRE summary table

		THE Summary tubic		T.					
Zone	Category	Kaolinised Granite Tonnes	Yield <45μm	Kaolin Tonnes	ISO Brightness (Bleached)	ISO Brightness	Flow	PSD <2μm	VCPU
		Mt	%	Mt	(Dicacinca)			%	
High Bright	gh Brightness & Fluid "hbf": ISOB ≥ 84.0, and VC ≥ 64.0								
	Indicated	0.23	38.29	0.09	85.32	83.18	63.33	77.85	65.90
Outside MIN5408	Inferred	0.14	37.29	0.05	85.76	83.09	67.39	77.47	68.23
1411145 100	Total	0.38	37.91	0.14	85.48	83.15	64.87	77.71	66.78
	Indicated	0.98	35.39	0.35	86.07	83.03	65.48	78.02	66.81
Within MIN5408	Inferred	0.31	33.43	0.10	85.86	80.51	65.64	77.49	66.54
	Total	1.29	34.92	0.45	86.02	82.43	65.52	77.89	66.74
	Indicated	1.21	35.95	0.44	85.92	83.06	65.07	77.99	66.63
Total	Inferred	0.45	34.64	0.16	85.83	81.32	66.19	77.48	67.07
	Total	1.67	35.59	0.59	85.90	82.59	65.38	77.85	66.75
Moderately	/ Bright & Flu	id "mbf": ISOB ≥ 80 bu	ıt < 84, and VC ≥ 64.0		<u>.</u>				
	Indicated	0.15	34.57	0.05	82.41	79.98	63.69	75.90	65.85
Outside MIN5408	Inferred	0.12	31.60	0.04	82.15	79.10	69.12	74.79	69.19
1411145-400	Total	0.27	33.30	0.09	82.29	79.60	66.02	75.43	67.28
	Indicated	0.52	34.00	0.18	82.40	78.74	65.37	79.09	67.14
Within MIN5408	Inferred	0.38	32.49	0.12	82.06	75.51	65.39	73.79	66.22
1411145 100	Total	0.90	33.36	0.30	82.25	77.37	65.38	76.84	66.75
	Indicated	0.67	34.13	0.23	82.40	79.03	64.99	78.36	66.84
Total	Inferred	0.50	32.29	0.16	82.08	76.35	66.25	74.03	66.91
	Total	1.17	33.34	0.39	82.26	77.89	65.53	76.52	66.87
High Brigh	itness & Noi	n-Fluid "hnf": ISOB ≥	84.0, and VC < 64.0	)					
	Indicated	0.20	34.47	0.07	85.03	83.83	60.38	76.03	61.95
Outside MIN5408	Inferred	0.05	35.64	0.02	84.78	83.48	60.59	81.49	62.18
	Total	0.25	34.72	0.09	84.97	83.76	60.43	77.20	62.00

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Zone	Category	Kaolinised Granite Tonnes	Yield <45μm	Kaolin Tonnes	ISO Brightness (Bleached)	ISO Brightness	Flow	PSD <2μm	VCPU
		Mt	%	Mt	(bleacheu)			%	
	Indicated	0.40	36.92	0.15	85.14	82.69	60.65	75.32	61.66
Within MIN5408	Inferred	0.10	32.11	0.03	85.65	81.37	59.73	75.75	60.14
	Total	0.50	36.00	0.18	85.24	82.44	60.47	75.40	61.37
	Indicated	0.60	36.12	0.22	85.10	83.07	60.56	75.55	61.76
Total	Inferred	0.15	33.37	0.05	85.34	82.13	60.04	77.80	60.87
	Total	0.75	35.57	0.27	85.15	82.88	60.46	76.00	61.58
Moderate	ly Bright & I	Non -Fluid "mnf": ISC	OB ≥ 80.0 but < 84.0	and VC < 64.0					
	Indicated	0.41	35.41	0.15	81.91	80.24	59.99	77.81	61.30
Outside MIN5408	Inferred	0.39	39.48	0.16	81.88	80.88	57.41	79.57	58.19
	Total	0.80	37.41	0.30	81.90	80.55	58.72	78.68	59.77
	Indicated	0.84	35.30	0.30	82.26	79.60	59.21	77.82	60.40
Within MIN5408	Inferred	0.46	26.32	0.12	81.70	77.43	59.77	67.09	60.10
	Total	1.31	32.12	0.42	82.06	78.83	59.41	74.02	60.30
	Indicated	1.25	35.34	0.44	82.14	79.81	59.46	77.81	60.69
Total	Inferred	0.86	32.37	0.28	81.79	79.02	58.68	72.84	59.22
	Total	2.11	34.14	0.72	82.00	79.49	59.15	75.79	60.10
All Produc	cts Combine	d							
	Indicated	0.99	35.77	0.35	83.40	81.59	61.43	77.17	63.21
Outside MIN5408	Inferred	0.71	37.45	0.26	82.93	81.23	61.59	78.51	62.32
1411145-400	Total	1.70	36.47	0.62	83.20	81.44	61.49	77.73	62.84
	Indicated	2.75	35.33	0.97	84.07	81.12	62.82	77.76	64.14
Within MIN5408	Inferred	1.25	30.41	0.38	83.14	77.91	62.94	72.38	63.57
	Total	4.00	33.79	1.35	83.78	80.12	62.86	76.08	63.96
	Indicated	3.74	35.45	1.32	83.89	81.25	62.45	77.61	63.90
Total	Inferred	1.96	32.95	0.64	83.06	79.11	62.45	74.59	63.12
	Total	5.69	34.59	1.97	83.61	80.51	62.45	76.57	63.63

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### SUVO STRATEGIC MINERALS

PITTONG KAOLIN PROJECT – MINERAL RESOURCE ESTIMATE



#### Notes:

- Resources are reported in accordance with the JORC Code.
- Resources are in million metric tonnes of final product. Differences may occur due to rounding
- In situ density applied =  $1.6 \text{ t/m}^3$ .

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## 11.5 Audits and Reviews

Internal audits were completed by CSA Global which verified the technical inputs, methodology, parameters, and results of the estimate. No external audit of the MRE has been undertaken.

## 11.6 File Storage

All files associated with the work that forms the focus of this report have been saved on the CSA Global Perth server under the directory \Clients\Files\Suvo\SUVMRE02.



## 12 Conclusions and Recommendations

### 12.1 Conclusions

- An analytical database was used in the process of modelling and MRE of the deposit, allowing estimation
  of brightness, flow, particle size distribution <2 μm, yield values, and other elements for GFK. The deposit
  database was imported into the Micromine system environment and checked for errors. All logical errors
  were corrected, and the database was found valid for the purposes of modelling the deposit and gradetonnage estimation.</li>
- The GFK weathering zone was interpreted and modelled using geological logs and geological understanding of the deposit.
- All model cells have been coded according to their occurrence in weathering zones.
- All sample analytical data were composited to 1 m to reflect the possible vertical variability of the deposit.
- The IDW method was used to interpolate values in the block model.
- The process testwork and results provided by the client are appropriate and are an industry standard for this style of kaolin mineralisation.
- The Pittong deposit has high-quality kaolinite with high ISO Brightness, flowability and low iron and titania. The kaolinite when mined is sent to the processing plant at Pittong.

### 12.2 Recommendations

- Carry out additional twin and infill aircore drilling at Pittong south of the MIN5408 Licence.
- Drill triple-tube DD holes to twin new and historical aircore holes, to verify historical data and to obtain samples for density measurements.
- Use the above additional data to underpin a technical study that may be used to estimate Ore Reserves.
- Complete testing of the 54 drillholes completed during 2021 drilling campaign.
- Incorporate the 2021 data into the drill database and re-assess the Mineral Resource classification, in particular the southern extent that is presently classified as Inferred.



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## 14 Abbreviations and Units of Measurement

° degrees

 $^{\circ}$ C degrees Celsius 3D three-dimensional Al $_2$ O $_3$  aluminium oxide CaO calcium oxide cm centimetres

CP Competent Person
CSA Global CSA Global Pty Ltd

DD diamond

Fe<sub>2</sub>O<sub>3</sub> iron(III) oxide (or ferric oxide)

g grams

g/ml grams per millilitre
GFK granite fully kaolinised
GPS global positioning system

 $\begin{array}{ll} \text{ha} & \text{hectares} \\ \text{H}_2\text{O} & \text{water} \end{array}$ 

IDW inverse distance weighting

 $K_2O$  potassium oxide kg kilograms km kilometres

kt thousand tonnes (or kilo-tonnes)

LCF lithology control file
LOI loss on ignition
m metre(s)
m³ cubic metres
ml millilitres

MOR modulus of rupture

MRE Mineral Resource estimate

millimetres

 $\begin{array}{ll} Mt & \mbox{million tonnes} \\ Na_2O & \mbox{sodium oxide} \\ NSF & \mbox{shape factor} \end{array}$ 

mm

PERC Pan European Reporting Code
PSD particle size distribution

PVC pugged viscosity concentration

RC reverse circulation

SEM scanning electron microscopy SiO<sub>2</sub> silicon dioxide (or silica)

Suvo Suvo Strategic Minerals t/m³ tonnes per cubic metre

TiO<sub>2</sub> titanium dioxide UK United Kingdom

VC viscosity concentration

wt.% weight percent
XRD x-ray diffraction
XRF x-ray fluorescence



# Appendix A JORC Code, 2012 Edition – Table 1

Note: Section 1 and Section 2 of Table 1 were primarily completed by Suvo and Section 3 was completed by CSA Global and Suvo.

**Section 1: Sampling Techniques and Data** 

Criteria	JORC Code explanation	Commentary		
Sampling techniques	Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as downhole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.	352 aircore and diamond core holes have been drilled, for a total depth of approximately 6,906 m.  Drilling targeted kaolinised granite, to be used at the Pittong processing plant as the source material for kaolin suitable for use primarily in coating applications.  Drilling at Pittong was carried out by various contractors over time. Diamond drilling core samples were placed in		
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	core boxes and taken to Pittong laboratory where sampling would take place. Core recovery was more than 90% recovery.  In 2021, an aircore drilling program was completed, 54		
	Aspects of the determination of mineralisation that are Material to the Public Report.	holes for 1,012.5 m with the purpose of converting the PERC resources to JORC compliance.		
	In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m	Samples were collected from a Mantis 200c aircore rig. The 1 m samples were approximately 3 kg each and collected from beneath the cyclone.		
	samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases, more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.	Sample quality and representivity was acceptable with nappreciable loss of sample noted.  Drilling generally continued to blade refusal or until the material type changed to a non-kaolinitic domain.		
Drilling techniques	Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc.).	A variety of drilling contractors were used with methods including auger, reverse circulation (RC) and diamond core holes.  In 2021, the drillholes were completed by Indicator Drilling with a track mounted Mantis 200 aircore drill rig with 80 mm 3 m drill rods utilising a blade bit.		
Drill sample recovery	Method of recording and assessing core and chip sample recoveries and results assessed.	A quantitative assessment of recovery was made by the supervising geologist/driller.		
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	Samples were geologically logged and composite samples based on the colour of the matrix for testing purpose.		
	Relationship between sample recovery and grade/sample bias.	Drill and sampling equipment is routinely cleaned to reduce any sample contamination.  There was no evidence of bias in the samples.		
Logging	Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.	The drillholes samples were geologically logged for all intervals by an experienced geologist on-site.  Logging noted the lithology, colour, degree of weathering and alteration.  A lithology control file (LCF) was established:		
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	<ul> <li>ovb – overburden</li> <li>gfk – granite fully kaolinised</li> <li>pkg – poor quality kaolinised granite</li> </ul>		
	The total length and percentage of the relevant intersections logged.	<ul> <li>pkg – poor quality kaolinised grafite</li> <li>obb – basaltic lithology</li> <li>oib – interburden</li> <li>guk – granite unkaolinised.</li> </ul>		



Criteria	JORC Code explanation	Commentary			
		Level of detail deemed sufficient to enable the delineation of geological domains appropriate to support a future Mineral Resource estimation and classification.  The geology logs and data are deemed to be qualitative.			
		Photographs were taken of the chip trays for the 2021 drilling program and were compared to logging when selecting composite samples.			
		All kaolinised intercepts were logged and sampled.			
Subsampling techniques and sample	If core, whether cut or sawn and whether quarter, half or all core taken.	Each 1 m interval was collected from the drill was collected separately and bagged at the rig. Historically, core was split and bagged at Pittong.			
preparation	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	Samples from the 2021 drilling were collected from the			
	For all sample types, the nature, quality, and appropriateness of the sample preparation technique	splitter and were approximately 3 kg each and consistent apart from lithological changes. No significant sample loss was recorded, and the samples are considered representative and were of a generally even volume.			
	Quality control procedures adopted for all subsampling stages to maximise representivity of samples.	Composites were prepared using weighted subsamples of the 1 m intervals. Composite samples were mostly 2 m or 3 m in length.			
	Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling.	Field samples were sufficiently dry to obtain a representative sample and create appropriate composites.  Kaolinitic domains show good continuity between drillholes, and horizons are generally >5 m and <20 m thick.			
	Whether sample sizes are appropriate to the grain size of the material being sampled.	The method of manually homogenising each 1 m interval equally to obtain a representative composite of each domain is deemed appropriate and representative.			
Quality of assay data and laboratory tests	The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.	Quality of assay data was based on the standards set by English China Clays and subsequently Imerys, both recognised industry leaders in kaolin. Much of the routine testing for borehole evaluation was carried out at Pittong			
	For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.	<ul> <li>Laboratory and included:</li> <li>Kaolin recovery (Yield).</li> <li>Particle size distribution (Micromeritics).</li> <li>Brightness (ISO B), Yellowness (ISO Y).</li> <li>Flowability, Viscosity Concentrations (VC).</li> </ul>			
	Nature of quality control procedures adopted and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	<ul> <li>Shape Factor (NSF), Aspect Ratio.</li> <li>Delaminate.</li> <li>Fluid Clay, Non-fluid Clay.</li> </ul>			
		All the borehole data has been categorised in terms of "fitness for use criteria".			
		Four lithology designations have been selected for clay of potential commercial interest. These designations are based on bleached brightness values ("ISOB") and viscosity concentration ("VC") measured on a refined  (120xx) very least to the following the selection of the			
		<ul> <li>(-12um), unpugged sample of clay.</li> <li>A list of the four categories together with a fifth denoting clay of no commercial interest ("pkg") are shown below.</li> </ul>			
		<ul> <li>High Brightness &amp; Fluid – "hbf"</li> <li>ISOB ≥84.0, and VC ≥64.0</li> <li>Moderately Bright &amp; Fluid – "mbf"</li> </ul>			
		<ul> <li>ISOB ≥80 but ≤84 and VC ≥64</li> <li>High Brightness &amp; Non-Fluid – "hnf"</li> <li>ISOB ≤84.0 and, VC ≤64</li> </ul>			
		<ul> <li>Moderately Bright &amp; Non-fluid – "mnf"</li> <li>ISOB ≥80, but ≤84 and VC &lt;64</li> <li>Poor quality Kaolinised Granite - "pkg"</li> </ul>			



Criteria	JORC Code explanation	Commentary		
		■ ISOB ≤80.0.		
		Mineralogical (by x-ray diffraction – XRD) and scanning electron microscopy (SEM) testwork on some samples by Ballarat University with some being tested by ECC/Imerys in the UK at James Hutton Institute.		
		XRD completed by Bruker D8 using nickel-filtered Cu K $\alpha$ radiation, fixed divergence slits, and a Lynxeye XE detector, sample preparation is McCrone milling followed by spray drying as per the description in Hillier (1999).		
		Umpire laboratory testing was completed at Nagrom in Perth and duplicated the Pittong preparation method which included:		
		<ul> <li>Crush approx. 3 kg sample to 10 mm</li> <li>Attrition and blunging with a water pulp density of 50% with the following conditioning agents 10% NaOH and 80% dispersant, blunge with D12 Joy Denver Unit double propeller unit at 800RPM until sample is dispersed and then allow to stand for 3 minutes</li> </ul>		
		Decant sample over 0.25 mm sieve to produce a fine and coarse fraction		
		<ul> <li>Adjust refined clay to pH 3.8–4.2 using 10% H<sub>2</sub>SO<sub>4</sub></li> <li>Sizing by Malvern, ISO Brightness and Yellowness.</li> </ul>		
		Some samples also prepared and tested via Nagrom to check the veracity of the Pittong method which included the following preparation:		
		Crush approx. 2 kg sample to 10 mm		
		Attrition with a water pulp density of 50% for 30 minutes with a D12 Joy Denver Unit double propeller unit at 800 RPM until sample is dispersed		
		Wet screen sample at 0.18 mm and 0.045 mm		
		<ul> <li>Analysis by XRF, sizing by Malvern, ISO Brightness and Yellowness.</li> </ul>		
Verification of sampling and assaying	The verification of significant intersections by either independent or alternative company personnel.	Dr Ian Wilson, when working for ECC/Imerys would visit Australia on a regular basis when he was the Group Geologist for ECC Pacific.		
	The use of twinned holes.	No historical twinned holes were drilled but detailed		
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	drilling was carried out.  In 2021 three historical drill holes were twinned with air core drilling.		
	Discuss any adjustment to assay data.	No adjustments were made to assay data.		
Location of data points	Accuracy and quality of surveys used to locate drillholes (collar and downhole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.	The drilling data utilised MGA94 Zone 54 grid.  Historical surveying was carried out on a regular basis by registered surveyors and entered into the company system by onsite staff.		
	Specification of the grid system used.	All holes were vertical, and depths of drilling were generally		
	Quality and adequacy of topographic control.	less than 30 m.		
Data spacing	Data spacing for reporting of Exploration Results.	Drill spacing at Pittong is somewhat irregular and close-		
and distribution	Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation	spaced at about 25 m to 50 m. This is sufficient to establish continuity of kaolin which can be traced between drillhole 100 m apart. The data and geological continuity is considered sufficient to estimate a Mineral Resource.		
	procedure(s) and classifications applied.  Sample compositing.	Down-hole composites were prepared using weighted subsamples of the one metre intervals. Composite samples were mostly 1 m in length.		
Orientation of data in relation	Whether the orientation of sampling achieves unbiased sampling of possible structures and the			



Criteria	JORC Code explanation	Commentary
to geological structure	extent to which this is known, considering the deposit type.	All drill holes are vertical, which means that the sampling is orthogonal to the horizontal to sub-horizontal kaolin zones.
	If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	Orientation based sampling bias is not expected from vertical drillholes.
Sample Security	The measures taken to ensure sample security.	Samples are in the care of Company personnel during drilling and transport to Pittong.
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	An audit of the resources and reserves of Imerys Kaolin Australia was carried out by Imerys in 2018, which included Pittong.

## **Section 2: Reporting of Exploration Results**

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.	The Pittong deposit, located within MIN 5408, was first granted on 18 December 1990 as Mining Lease (ML) 1169 and ML 1141. In July 1997, ML 1141 and ML 1169 were amalgamated into one ML 1169. In December 2004 ML 1169 was renewed for 15 years under the Mineral Resources Development Act 1990 and is now known as
	The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	Mining Licence 5408 and comprises 66.73 hectares (ha). MIN5408 had an expiry date of 18/12/2020, the application for renewal was submitted and submission was confirmed by Earth Resources Regulator of Victoria (ERR). ERR provides that if the renewal application is lodged before expiry, the license continues in effect until application is granted and registered or refused. Application for renewal has been lodged and is currently pending. ERR requested revised rehabilitation assessment to be provided together with the renewal request which was submitted in December 2021.
		Areas to the south and north of MIN 5408 are currently also under agreement with private land owners as informed by Suvo.  There are no known impediments to mining in the area
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	The original exploration licence was granted in 1991 and 298 holes have been drilled, for a total depth of approximately 5,893 m, prior to 2021.
Geology	Deposit type, geological setting and style of mineralisation.	The Pittong deposit was formed from the meteoric weathering of coarse-grained granite mainly composed of quartz and feldspar with minor amounts of other constituents. Pittong is considered to be a weathering deposit. The intense weathering of this rock has dissolved and leached selected constituents in the rock and formed an in-situ deposit of white kaolin, halloysite and quartz.
		Kaolinite and halloysite are silicate clay minerals of interest. The feldspar in the granite has been altered to kaolinite and halloysite.
		Kaolinite and halloysite have the same formula - $Al_2Si_2O_5(OH)_4$ , kaolinite is a platy silicate clay mineral, halloysite has a tubular crystal structure.



Criteria	JORC Code explanation	Commentary
Drillhole information	A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drillholes:  • easting and northing of the drillhole collar  • elevation or RL (Reduced Level – elevation above sea level in metres) of the drillhole collar  • dip and azimuth of the hole  • downhole length and interception depth  • hole length.  If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.	All holes were drilled vertically with none inclined
Data aggregation averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.  Where aggregate intercepts incorporate short lengths of high-grade results and longer lengths of low-grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.  Most samples were tested in the at Nagrom and some in the UK ( The range of quality is determin and various parameters explains	Most samples were tested in the Pittong Laboratory, some at Nagrom and some in the UK (James Hutton Institute).  The range of quality is determined from all the testwork and various parameters explained earlier.	
	of low-grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.	
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	
Relationship between mineralisation widths and intercept lengths	These relationships are particularly important in the reporting of Exploration Results.  If the geometry of the mineralisation with respect to the drillhole angle is known, its nature should be reported.	The kaolin is hosted within a horizontal near-surface weathering profile. It is an in-situ weathered product of a granitic intrusive rock. The weathering profile is zoned vertically. Drillholes are all vertical. Reported widths of kaolin are assumed to be true widths.
	If it is not known and only the downhole lengths are reported, there should be a clear statement to this effect (e.g. 'downhole length, true width not known').	
Diagrams	Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drillhole collar locations and appropriate sectional views.	Exploration results are not being reported.
Balanced reporting	Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	Exploration results are not being reported.
Other substantive exploration data	Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.	The report shows the detailed metallurgical work that has been carried out. The testwork was carried out in Pittong Laboratory and some in the UK laboratory of ECC/Imerys. The deposit is shallow, and no groundwater problems are foreseen.



Criteria	JORC Code explanation	Commentary
Further work	The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).	Detailed work will continue to be carried out on the Pittong deposit, including metallurgical and performance tests on the remaining aircore samples drilled in 2021.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	

## **Section 3: Estimation and Reporting of Mineral Resources**

Criteria	JORC Code explanation	Commentary
Database integrity	Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.	Data used in the Mineral Resource estimate is sourced fro Microsoft Excel files provided by Suvo Strategic Minerals. All data was validated in Micromine software and verified that all the available data was submitted.
	Data validation procedures used.	Validation of the data import include checks for overlapping intervals, missing survey data, missing and incorrectly recorded assay data, missing lithological data and missing collars.
		Manual checks were carried out by plotting and review of sections and plans.
Site visits	Comment on any site visits undertaken by the Competent Person and the outcome of those visits.	The Competent Person, Dr Ian Wilson (MIMMM), who is UK-based, was able to visit Pittong many times where he was the Group Geologist for ECC Pacific (including Australia and New Zealand). No issues were reported or revealed during the visits.
	If no site visits have been undertaken indicate why this is the case.	Not applicable.
Geological interpretation	Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral	The deposit is an in-situ kaolin deposit formed by near-surface weathering of granitoids rocks.  The geological interpretation of the kaolin deposit at Pittong is well understood, and the logged lithologies are coherent and traceable over numerous drillholes and drill sections.  Drillhole intercept logging and assay results have formed the basis for the geological interpretation.  The grade and lithological interpretation form the basis for modelling. Lithological envelopes defining prospective GF zone within which the grade estimation has been completed.
	deposit.  Nature of the data used and of any assumptions made.	
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	
	The use of geology in guiding and controlling Mineral Resource estimation.	
	The factors affecting continuity both of grade and geology.	
		The lithological units are recognised based on mineralogy, chemistry and colour.
		Resource estimation assumes that these units formed a series of conformable, sub horizontal, pseudo-stratified, in situ-weathering units.
Dimensions	The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.	The Mineral Resource extends for 1,260 m in the southwest to northeast direction and for 650 m in the southeast to northwest direction and extends to 50 m below surface.



Criteria	JORC Code explanation	Commentary
Estimation and modelling techniques	The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.  The availability of check estimates, previous estimates and/or mine production records and whether the MRE takes appropriate account of such data.  The assumptions made regarding recovery of by-	The mineralisation interpretation was extended perpendicular to the corresponding first and last interpreted cross section to the distance equal to a half distance between the adjacent exploration lines.  If a mineralised envelope did not extend to the adjacent drillhole section, it was pinched out to the next section and terminated. The general direction and dip of the envelopes was maintained.  The size of the parent block used in creating the block model was selected on the basis of the exploration grid (50 m x 50 m and 25 m x 25 m), the general morphology of mineralised bodies, and with due regard for the geology of the weathering profile and the high vertical grade
	products.  Estimation of deleterious elements or other non- grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).	variability and to avoid creating excessively large block models. The sub-block dimensions were chosen accordingly to maintain resolution of the mineralised bodies The block model was constructed using a 25 m E x 25 m N x 1 m RL parent block size, with sub-celling to 5 m E x 5 m N x
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	0.5 m RL for domain volume resolution.  Input data did not display significant outliers in their distributions and so no top cuts were applied.
	Any assumptions behind modelling of selective mining units.  Any assumptions about correlation between	Grade estimation was by Inverse Distance Weighting (IDW) to the power of 2, using Micromine 2018 software.
	Any assumptions about correlation between variables.  Description of how the geological interpretation was used to control the resource estimates.	Kaolin mineralisation is considered to have formed as a weathering product within the regolith horizon, and envelopes as modelled are constrained by this lithological horizon.
	Discussion of basis for using or not using grade cutting or capping.	The wireframe objects were used as hard boundaries for grade interpolation.
	The process of validation, the checking process used, the comparison of model data to drillhole data, and use of reconciliation data if available.	The block model of the deposit with interpolated grades was validated both visually and by statistical/software methods.
Moisture	Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.	Tonnages have been estimated on a dry in-situ basis. No moisture values were reviewed.
Cut-off parameters	The basis of the adopted cut-off grade(s) or quality parameters applied.	Mineral Resources were reported in accordance with product specifications that have potential commercial interest
Mining factors or assumptions	Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	Due to the very shallow/near-surface nature of the deposit, it is being mined by open pit methods.
Metallurgical factors or assumptions	The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral	



Criteria	JORC Code explanation	Commentary
	Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	
Environmental factors or assumptions	Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.	Pittong is situated under cultivated land that has been cleared of native vegetation. The deposit is mined as a sequence of blocks, the first blocks that are mined would be backfilled by subsequent blocks, resulting in a final level that will be around 2–3 m below original level. The final surface will be contoured to allow drainage but avoid erosion prior to topsoil being spread and pastures restored.
Bulk density	Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.  The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc.), moisture and differences between rock and alteration zones within the deposit.  Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	Ten core samples of kaolinised granite were collected from the floor of the open pit at Suvo's Pittong mine in November 2018. The core samples were obtained by manually pushing a short metal tube into kaolin in the Pittong pit floor.  The wet bulk density was determined to range between 1.82 t/m³ and 1.96 t/m³ with an arithmetic average of 1.89 t/m³.  Dry bulk density was determined to range between 1.51 t/m³ and 1.63 t/m³ for an arithmetic average of 1.57 t/m³.  The Competent Person is of the opinion that an average in situ dry bulk density of 1.6 t/m³ determined for Pittong kaolinised granite is appropriate for the Pittong deposit — slightly higher than the density of 1.5 t/m³ used for historical Resource estimation.
Classification	The basis for the classification of the Mineral Resources into varying confidence categories.  Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity, and distribution of the data).  Whether the result appropriately reflects the Competent Person's view of the deposit.	<ul> <li>The Mineral Resource was classified as Indicated and Inferred, accounting for the level of geological understanding of the deposit, quality of samples, density data, drillhole spacing and sampling, analytical and metallurgical processes. Material classified as Indicated was considered sufficiently informed by adequately detailed and reliable geological and sampling data to assume geological, grade and quality continuity between data points. Material classified as Inferred was considered sufficiently informed by geological and sampling data to imply geological, grade and quality continuity between data points.</li> <li>The Mineral Resource was classed as Indicated in the areas of the drilling where the drillhole density was reduced to line spacing approximately 25-50 m and hole spacing to 25-50 m as well as in the areas that are within the current operating pit.</li> <li>The resource was classed as Inferred in the areas where the drillhole density exceeded the 50 m x 50 m grid as well as in the areas with limited laboratory data and in the areas with uncertainty over the vertical extent of mining and backfill.</li> <li>The Mineral Resource estimate appropriately reflects the view of the Competent Person.</li> </ul>



Criteria	JORC Code explanation	Commentary
Audits or reviews	The results of any audits or reviews of Mineral Resource estimates.	Internal audits were completed by CSA Global which verified the technical inputs, methodology, parameters and results of the estimate.
Discussion of relative accuracy/ confidence	Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.	No external audits have been undertaken.  The Mineral Resource accuracy is communicated through the classification assigned to the deposit. The Mineral Resource estimate has been classified in accordance with the JORC Code (2012 Edition) using a qualitative approach. All factors that have been considered have been adequately communicated in Section 1 and Section 3 of this table.  The Mineral Resource statement relates to a global estimate of in-situ tonnes and grade.
	The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation.  Documentation should include assumptions made and the procedures used.  These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	



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