



22 September 2021

# **ASX ANNOUNCEMENT**

# Trawalla Maiden Mineral Resource Estimate

- Mineral Resources estimate completed at Suvo's Trawalla project and reported in accordance with the 2012 JORC Code guidelines
- 9.9Mt Indicated and 2.8Mt Inferred Mineral Resource of kaolinised granite
- 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
- The maiden Mineral Resource estimate reported in accordance with JORC has resulted in an increase of approximately 20% to 3.5Mt of kaolin product, compared with the previous historical estimate
- Trawalla is 100% owned by Suvo Minerals Australia and located only 23km from the Pittong processing facilities, has an approved work plan, land access agreement and is mining ready
- Test work on Trawalla refined clay from a recent aircore hole showed significant concentrations of halloysite up to ~39% with ~84 ISO Brightness
- Trawalla halloysite-kaolin offers Suvo the opportunity to address new, traditional and evolving markets, such as battery and nano technologies subject to test work with Suvo's partners, BGRIMM, LIXIL and Rezel
- A maiden Mineral Resource estimate is expected for Pittong in the coming weeks, to be reported in accordance with the JORC Code guidelines

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 9 182 St Georges Terrace Perth, Western Australia 6000

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

E info@suvo.com.au

**W** www.suvo.com.au





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 Trawalla deposit historical Resources from Pan European Reporting Code 2001 (PERC) to JORC 2012 compliance has now been completed. This conversion has resulted in an increase of around 20% of kaolin product to 3.5Mt.

Commenting on the results, Suvo's Executive Chairman, Robert Martin said "The conversion of the Trawalla Mineral Resource Estimate to JORC compliance is an important milestone in the development of a larger multi-decade operation at Pittong. The occurrence of halloysite is truly encouraging as it opens large traditional markets not currently addressed by Pittong, allowing immediate entry to newly emerging sectors for halloysite-kaolin including battery and nano technologies. Work is ongoing to define its extent, as is associated test work with our global industry partners. The Trawalla resource is essentially a shovel ready project that offers Suvo some very exciting opportunities".

#### **Mineral Resources**

A Mineral Resource estimate has been completed for the Trawalla deposit by CSA Global Pty Ltd (CSA) and has been reported in accordance with the JORC Code, suitable for public reporting.

Samples from twin holes drilled during 2021 verified historical drill data as suitable for use in the estimating and reporting of a Mineral Resource based on four commercial grades of clay. The designations are represented below based on bleached brightness values (ISOB) and viscosity concentration (VC) of the refined clay:

•	High Brightness & Fluid "hbf"	ISOB ≥ 84.0, and VC ≥ 64.0
•	Moderate Brightness & Fluid "mbf"	ISOB ≥ 80 but < 84, and VC ≥ 64.0
•	High Brightness & Non-Fluid "hnf"	ISOB ≥ 84.0, and VC < 64.0
•	Moderate Brightness & Non-Fluid "mnf"	ISOB ≥ 80.0 but < 84.0 and VC < 64.0

The categorised Mineral Resource estimate is displayed below in Table 1 (note that the total Mineral Resources are summarised in the lowermost three rows of the table).

The total Indicated and Inferred Mineral Resource estimate of Trawalla is 12.7Mt of kaolinised granite yielding 3.5Mt of bright white kaolin product with ISO Brightness of 80.8 and bleached ISO Brightness of 83.7 (Table 1).

Refer to the attached Mineral Resource Estimate for further details.





Table 1: Trawalla Mineral Resource Estimate as at September 2021, reported in accordance with JORC 2012 edition

	Kaolinised Granite	Yield <45μm	Kaolin Tonnes	ISO	ISO	-	PSD <2μm		Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	K₂0	Fe <sub>2</sub> O <sub>3</sub>	TiO <sub>2</sub>	LOI
Category	Mt	%	Mt	Brightness (Bleached)	Brightness	Flow	%	VCPU	%	%	%	%	%	%
High Brightr	ness & Fluid "hbf": IS	OB ≥ 84.0, and	VC ≥ 64.0						•					
Indicated	1.8	29.2	0.5	86.6	82.2	65.3	77.0	66.3	37.18	47.31	0.32	0.66	0.52	13.75
Inferred	0.1	29.7	0.0	86.5	82.2	64.8	74.4	65.8	37.21	47.22	0.39	0.66	0.59	13.80
TOTAL	1.9	29.2	0.6	86.6	82.2	65.2	76.8	66.3	37.18	47.31	0.32	0.66	0.53	13.75
Moderately	Bright & Fluid "mbf"	': ISOB ≥ 80 bu	t < 84, and VC ≥	64.0										
Indicated	1.3	30.7	0.4	82.1	77.6	64.8	79.2	66.0	36.89	47.57	0.28	0.84	0.56	13.71
Inferred	0.3	31.0	0.1	81.5	76.5	66.1	76.3	65.6	35.93	47.68	0.39	1.47	0.63	13.79
TOTAL	1.6	30.7	0.5	82.0	77.4	65.0	78.6	65.9	36.70	47.59	0.31	0.97	0.57	13.73
High Brightr	ness & Non-Fluid "hn	f": ISOB ≥ 84.0	), and VC < 64.0											
Indicated	2.8	27.1	0.8	85.8	83.5	61.2	76.0	61.2	36.62	48.02	0.45	0.72	0.55	13.47
Inferred	0.7	27.8	0.2	85.5	83.5	61.2	80.0	61.1	36.32	48.32	0.43	0.77	0.61	13.31
TOTAL	3.5	27.2	0.9	85.8	83.5	61.2	76.8	61.2	36.56	48.08	0.44	0.73	0.57	13.44
Moderately	Bright & Non -Fluid	"mnf": ISOB≥	80.0 but < 84.0 a	nd VC < 64.0										
Indicated	4.0	26.5	1.1	82.1	79.8	60.7	75.2	60.7	35.85	48.68	0.53	0.93	0.57	13.26
Inferred	1.7	27.9	0.5	81.8	78.8	60.6	75.8	60.4	35.63	49.69	0.53	1.08	0.58	13.34
TOTAL	5.7	26.9	1.5	82.0	79.5	60.7	75.4	60.6	35.79	48.97	0.53	0.97	0.57	13.28
TOTAL														
Indicated	9.9	27.7	2.8	84.0	81.0	62.2	76.3	62.5	36.44	48.10	0.43	0.81	0.55	13.47
Inferred	2.8	28.3	0.8	82.9	79.8	61.6	76.8	61.4	35.90	49.02	0.49	1.03	0.59	13.40
TOTAL	12.7	27.8	3.5	83.7	80.8	62.0	76.4	62.3	36.33	48.30	0.45	0.86	0.56	13.45

Mineral Resources are reported in accordance with the JORC Code. Resources are constrained by the ML5365 tenement boundaries. Resources are in thousand metric tonnes of final product.

Differences may occur due to rounding. In situ density applied = 1.6 t/m³.

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

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 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.



#### **Drilling and sampling**

Since 1991 some 1,220 auger, Reverse Circulation (RC) and diamond drill (DD) holes were drilled totalling approximately 9,800 metres. Of these, data from 240 historical holes were used in the present Mineral Resource estimation. The historical samples were tested at the Pittong laboratory in Victoria.

In 2021, Suvo completed a drilling program to convert the resources at Trawalla from PERC 2001 to JORC 2012 Code. This program included the completion of 14 aircore holes, of which three were twins of existing drill holes. The drill samples were composited and to date the three twins have been tested at both the Pittong laboratory and Nagrom in Perth.

Trawalla was first targeted for kaolinised granite to be used primarily in paper coating applications and to a lesser degree for paint, rubber, adhesive, plastics and other specialised applications. Apart from laboratory test work four bulk samples of approximately 100m<sup>3</sup> each were treated through the Pittong processing plant.

Refer to the attached Mineral Resource Estimate for further details.

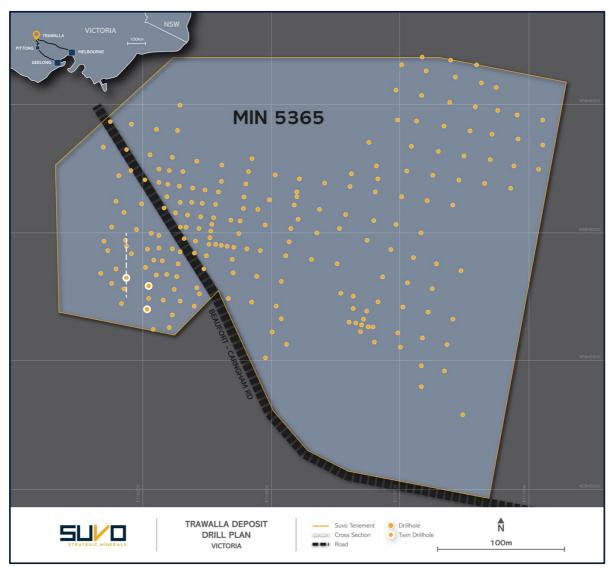


Figure 1: Trawalla drill hole location plan





#### **Tenure**

The Trawalla deposit, located within ML 5365, was first granted on 30 April 1991 as EL 2640. Tenements EL 3325 and 3326, located to the north and east respectively were granted in September 1992. After a period of consolidation and relinquishment ML 5365, with an area of 236 Ha was granted in June 2002 valid for 20 years.

Refer to the attached Mineral Resource Estimate for further details.

#### Geology

The resources at Trawalla are contained within a weathered granite where the feldspar in the coarse-grained granite has been altered to kaolinite and halloysite by meteoric weathering. This intense weathering has dissolved and leached selected constituents of the rock and formed an insitu deposit of white kaolin up to 20m thick with associated quartz.

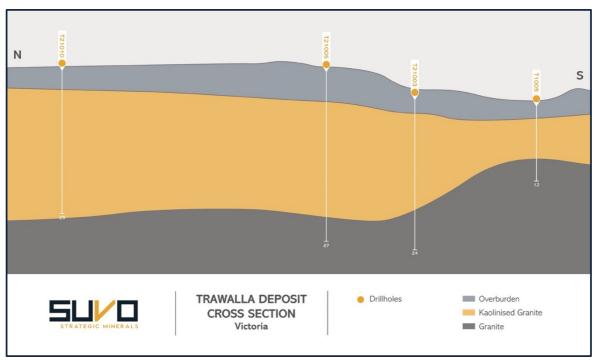


Figure 2: Trawalla drill hole cross section

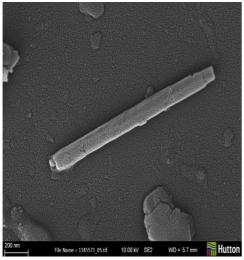
Granitic rocks have intruded Ordovician slates and sandstones, which in part have been covered by basalt flows of the newer Volcanics and Tertiary and Recent alluvial deposits.

The topsoil profile varies in depth from 25 to 30cm, below which a semi-plastic, sandy-gravel sub-soil was encountered, grading into a grey-brown plastic overburden at 50-60cm which overlayed the kaolin, sometimes this overburden forms thin intrusions down into the kaolin.

Refer to the attached Mineral Resource Estimate for further details.







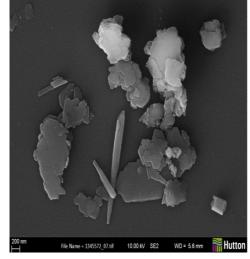


Figure 3: Trawalla Halloysite Nanotube

Figure 4: Trawalla Halloysite-Kaolinite Hybrid

#### **Historical Resources**

Historical estimates on the resources and reserves at Trawalla were most recently completed according to the Pan European Reporting Code (PERC) in August 2019 by Imerys Minerals Australia Pty Ltd. Refer to Suvo (2020) and the attached Mineral Resource Estimate for further details.

#### **Bibliography**

Suvo (2020). Suvo to acquire Imerys' Australian Kaolin Mining Operations. ASX announcement 23 November 2020.

Suvo (2021a). Up to 38.9% halloysite in Trawalla refined clay sample. ASX announcement 9 September 2021.

Suvo (2021b). First Test Minerals to exclusively support Suvo's development of Trawalla Halloysite Kaolin Deposit. ASX announcement 13 September 2021.

The release of this announcement has been approved by the board of directors.

<ENDS>

#### **Contacts:**

**Robert Martin** 

**Executive Chairman** 

E: robert.martin@suvo.com.au

#### **Aaron Banks**

**Executive Director** 

E: aaron.banks@suvo.com.au

#### **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 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.

Current Reserves and Resources at Pittong are reported to PERC code and are in the process of being upgraded to JORC 2012 compliance.

#### 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.

Preliminary exploration has included 54 drillholes for 1,620 metres to depths of up to 30m. This program is anticipated to deliver an initial resource for the project and a process route.

#### 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.

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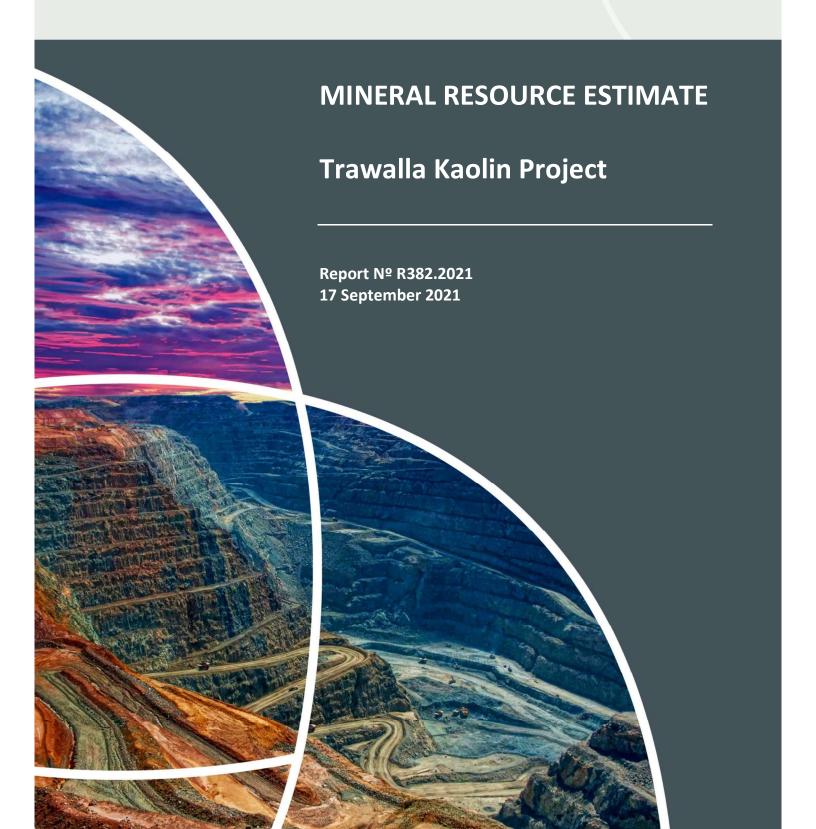
Although the Company attempts and has attempted to identify factors that would cause actual actions, events or results to differ materially from those disclosed in forward looking statements, there may be other factors that could cause actual results, performance, achievements or events not to be as 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	SUVMRE03
Contact Name	Jeremy Whybrow
Contact Title	General Manager Mining & Geology
Office Address	Level 9, 182 St Georges Terrace 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.
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.
Peer Reviewer (Report)	David Williams B.Sc. (Hons), MAIG, MAusIMM	Electronic signature of 60 duplication. Electronic signature not for duplication.  EIGTOR that the business are electronic signature not for duplication.
Peer Reviewer (Block Model)	Dmitry Pertel MSc (Geology), MAIG, GAA	Bectronic signature not for duplication. Electronic signature not for duplication. Bectronic signature not for duplication. Electronic signature not for duplication.
Approved by CSA Global Representative	Aaron Meakin Manager – Resources	Decreases quasions and to apply doors, and person growth of the displacement. In the results of the displacement is the displacement of the displacement features agreement on the displacement of the displac

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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 Trawalla 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 Trawalla Exploration Licence (EL 2640, 30 April 1991), 254 aircore and diamond core holes have been drilled, for a total depth of approximately 4,830 m. 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 Trawalla Indicated Resource and Probable Reserves was reported to be 2.95 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 Trawalla kaolin deposit is located approximately 10 km southeast of Beaufort and about 25 km west of Ballarat, in central Victoria, Australia.
- The Trawalla 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, which is an alumino-silicate mineral with the chemical formula Al<sub>2</sub>Si<sub>2</sub>O<sub>5</sub>(OH)<sub>4</sub>.
- The historical Trawalla 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 delaminate.
- Fourteen aircore holes were drilled in the western part of the Trawalla deposit in early 2021 to verify historical drill data. Three of the new holes were twinned with historical holes and verified the logged kaolin intersections.
- The three 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 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

<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 (JORC).

<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).



- mineralogy tested for twin T21005 verified the presence of kaolinite (plus halloysite) in concentrates, with low levels of impurities such as quartz and feldspar.
- 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 50–100 m and hole spacing to 50–100 m
  - The resource was classed as Inferred in the areas where the drillhole density exceeded the 100 m x 100 m grid.
- 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."
- Therefore, the likelihood of eventual economic extraction was considered in terms of possible open pit mining, likely product specifications, possible product marketability and potentially favourable logistics and the CP concludes that the Trawalla deposit is an industrial 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

#### SUVO STRATEGIC MINERALS

TRAWALLA KAOLIN PROJECT – MINERAL RESOURCE ESTIMATE



Table 2: Trawalla MRE summary table

Table 2:	Trawaiia ivik	E summary to	аріе											
Category	Kaolinised Granite	Yield <45μm	Kaolin Tonnes	ISO Brightness	ISO	Flow	PSD <2μm	VCPU	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	K <sub>2</sub> 0	Fe₂O₃	TiO₂	LOI
cutego. y	Mt	%	Mt	(Bleached)	Brightness	1.0	%	10.0	%	%	%	%	%	%
High Brightn	ess & Fluid "hbf":	ISOB ≥ 84.0, and	VC ≥ 64.0	1										
Indicated Inferred	1.8 0.1	29.2 29.7	0.5 0.0	86.6 86.5	82.2 82.2	65.3 64.8	77.0 74.4	66.3 65.8	37.18 37.21	47.31 47.22	0.32 0.39	0.66 0.66	0.52 0.59	13.75 13.80
TOTAL	1.9	29.2	0.6	86.6	82.2	65.2	76.8	66.3	37.18	47.31	0.32	0.66	0.53	13.75
Moderately I	Bright & Fluid "mb	rf": ISOB ≥ 80 bu	t < 84, and VC	64.0										
Indicated Inferred	1.3 0.3	30.7 31.0	0.4 0.1	82.1 81.5	77.6 76.5	64.8 66.1	79.2 76.3	66.0 65.6	36.89 35.93	47.57 47.68	0.28 0.39	0.84 1.47	0.56 0.63	13.71 13.79
TOTAL	1.6	30.7	0.5	82.0	77.4	65.0	78.6	65.9	36.70	47.59	0.31	0.97	0.57	13.73
High Brightne	ess & Non-Fluid "I	nf": ISOB ≥ 84.0	), and VC < 64.0											
Indicated Inferred	2.8 0.7	27.1 27.8	0.8 0.2	85.8 85.5	83.5 83.5	61.2 61.2	76.0 80.0	61.2 61.1	36.62 36.32	48.02 48.32	0.45 0.43	0.72 0.77	0.55 0.61	13.47 13.31
TOTAL	3.5	27.2	0.9	85.8	83.5	61.2	76.8	61.2	36.56	48.08	0.44	0.73	0.57	13.44
Moderately I	Bright & Non -Flui	d "mnf": ISOB ≥	80.0 but < 84.0	and VC < 64.0										
Indicated Inferred	4.0 1.7	26.5 27.9	1.1 0.5	82.1 81.8	79.8 78.8	60.7 60.6	75.2 75.8	60.7 60.4	35.85 35.63	48.68 49.69	0.53 0.53	0.93 1.08	0.57 0.58	13.26 13.34
TOTAL	5.7	26.9	1.5	82.0	79.5	60.7	75.4	60.6	35.79	48.97	0.53	0.97	0.57	13.28
TOTAL									•					
Indicated Inferred	9.9 2.8	27.7 28.3	2.8 0.8	84.0 82.9	81.0 79.8	62.2 61.6	76.3 76.8	62.5 61.4	36.44 35.90	48.10 49.02	0.43 0.49	0.81 1.03	0.55 0.59	13.47 13.40
TOTAL	12.7	27.8	3.5	83.7	80.8	62.0	76.4	62.3	36.33	48.30	0.45	0.86	0.56	13.45

#### Notes:

- Resources are reported in accordance with the JORC Code.
- Resources are constrained to the ML 5365 tenement boundaries.
- Resources are in million metric tonnes of final product. Differences may occur due to rounding
- In situ density applied = 1.6 t/m³.

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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 Trawalla 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 Trawalla 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 Trawalla deposit is reported in accordance with the JORC Code<sup>4</sup>.

#### 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.

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<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 Trawalla 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

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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 Trawalla kaolin deposit is located approximately 10 km southeast of Beaufort and about 25 km west of Ballarat, in central Victoria, Australia. Trawalla is accessed by the Beaufort-Carngham Road which runs directly across the western part of the deposit (Figure 1).



Figure 1: Trawalla 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 Beaufort-Carngham Road. The area is dominated by cleared, fenced, grazing land.

#### 2.2 Topography, Vegetation and Climate

Trawalla 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 Trawalla deposit, located within ML 5365, was first granted on 30 April 1991 as EL 2640. Tenements EL 3325 and EL 3326, located to the north and east respectively, were granted in September 1992. After a period of consolidation and relinquishment, ML 5365, with an area of 236 ha, was granted in June 2002 and valid for 20 years. See ML 5365 outline in Figure 1.

#### 2.4 Exploration History and geology

Dr Ian Wilson (CP) notes that since granting of the original EL (EL 2640, 30 April 1991), 254 aircore and diamond core holes have been drilled, for a total depth of approximately 4,930 m.

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.

Laboratory and process plant testing of these samples, plus four bulk samples of approximately 100 m<sup>3</sup> each, has been carried out. Process trials carried out on the bulk samples extracted from the Trawalla kaolin deposit have indicated that it is suitable for paper coating pigment in terms of the major criteria of particle size, brightness, and rheology.

Dr Ian Wilson has described the project geology as granite that intruded highly weathered Ordovician slates and sandstone, which in part have been covered by basalt flows of the Newer Volcanics, and Tertiary-Recent alluvial deposits. The feldspars in the granite were altered to kaolin by weathering.

The basalt-granite contacts provided the most promising kaolin occurrences. Along the northern boundary of the Trawalla deposit the basalt contact is very irregular. Most if not all the area has a granite base, with several small windows within the basalt where granitic material has been exposed. These weathered granite outcrops probably constituted hilltops prior to the basalt flows. The degree and type of weathering associated with these granitoids can be significantly different, with the breakdown of the granite being generally of a physical rather than a chemical nature. The basalt is highly weathered in places with underlying clay depths varying from 1 m to 10 m.

Dr Wilson has visually examined the Trawalla kaolin exposed along the wall of the trench below the subsoil to a depth of 5 m, indicated a relatively hard, medium to fine grained fully kaolinised granodiorite containing globular, smoky quartz veins. The matrix is relatively hard with a surface coating of red-brown iron oxide or oxyhydroxide. White kaolin could be observed after scratching away the iron coating, and little or no evidence of mica was to be found in the exposed zone. The overall appearance could be described as mottled due to the varying degree of iron staining which ranged in colour from light pink to red-brown.

#### 2.5 Previous Mineral Resource Estimates

In November 2020, Suvo acquired Imery's Australian kaolin mining operations (Suvo, 2020); 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 Trawalla was completed by Pettett (2005). The 2005 estimate (Figure 2) 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.

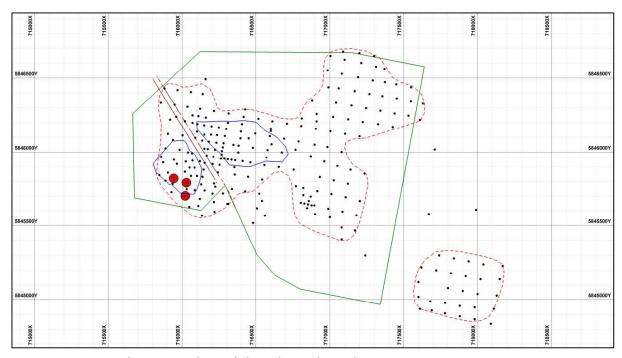


Figure 2: Historical resource outline and planned pit outlines relative to ML 5365

Red polygons = historical resource outline; blue polygons = planned pit crests; green polygon = ML 5365.

As the estimates were reported in accordance with PERC, they are considered as a foreign estimate<sup>6</sup>. The combined tonnage for Trawalla deposit of the Indicated Resource and Probable Reserves in 2005 was 2.84 Mt of kaolin product. This was later revised to 2.95 Mt of kaolin product in November 2019.

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

Droinet area		Resource (Mt)	Reserves (Mt)			
Project area	Measured Indicated		Inferred	Proved	Probable	
Trawalla 2005	-	2.1	-	-	0.74	
Trawalla 2019	rawalla 2019 -		-	-	0.75	

#### 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 =  $1.5 \text{ t/m}^3$ .

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<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.

<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 Trawalla kaolin occurrence is classified as a residual deposit.

Residual deposits such as at Trawalla 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	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	K₂O (%)	Na₂O (%)	CaO (%)	H₂O (%)
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, 14 aircore drillholes for 332 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 14 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 from Trawalla to Pittong 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. Photographs of chip trays are presented in Figure 3 and Figure 4.





Figure 3: Chip tray for holes T21001 through T21008





Figure 4: Chip tray for holes T21009 through T21014

#### 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. Composite samples were mostly 2 m or 3 m in length. 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"
  - o ISOB <84.0 and, VC≤64.
- Moderately Bright & Non-fluid "mnf"
  - ISOB ≥80, but <84 and VC<64.</li>
- Poor quality Kaolinised Granite "pkg"
  - o ISOB <80.0.

Mineralogy was undertaken by x-ray diffraction (XRD) and scanning electron microscopy (SEM) testwork was carried out on some samples by Ballarat University, with some samples tested by ECC/Imerys in the UK at James Hutton. XRD was completed by Bruker D8 using nickel-filtered Cu K $\alpha$  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, three 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.

Instrumental surveying of historical drillhole collars using an electronic total station was completed. This survey was performed as recommended by CSA Global, by a surveyor engaged for this purpose by Suvo. Table 5 below shows a comparison of the collar coordinates for drillholes T1004, T1006, T1104. The results of verification of drillhole coordinates against the historical coordinates demonstrate good correlation.

Table 5: Comparison of the drillhole collar coordinates in the geological database against the verification survey

Drillhole	T1004	T1006	T1104
Original doordinates			
Easting	716022.6	715942.6	715964.6
Northing	5845703.4	5845825.4	5845919.4
RL	380.0	386.0	386.0
Verification survey			
Easting	716023.3	715943.5	715963.9
Northing	5845703.9	5845826.0	5845921.2
RL	380.1	385.7	386.6
Difference, m			
Easting	-0.7	-0.9	0.7
Northing	-0.5	-0.5	-1.7
RL	-0.1	0.3	-0.6



#### 4.8 Data Spacing and Distribution

Holes were drilled on a regular pattern of roughly 100 m spacing. 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.

Downhole composites were prepared using weighted subsamples of the 1 m intervals. Composite samples were mostly 2 m or 3 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.

#### 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 Trawalla 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 samples.

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

Three original holes T639, T1004 and T1006 were twinned by holes T21006, T21012 and T21005 respectively, west of the Carngham-Beaufort Road during the 2021 drill program (Figure 5, Table 6).

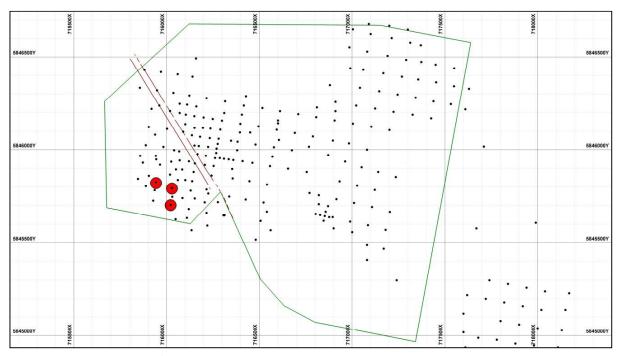


Figure 5: Location map of three twin holes drilled in 2021

Table 6: Twin and original collar survey data

Collar	X (m)	Y (m)	Z (m)	Final depth (m)	Azimuth (°)	Dip (°)
T639	716030.6	5845794.4	384	22	0	-90
T21006	716026.5	5845792.2	384.4	20	0	-90
T1004	716022.6	5845703.4	380	20	0	-90
T21012	716021.4	5845703.4	380.1	20	0	-90
T1006	715942.6	5845825.4	386	25	0	-90
T21005	715942.3	5845824.2	385.5	27	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, feldspar and mica may be included with the kaolinite that passes the sieve. Refer to Table 7 for examples of the differences between kaolin purification using 45  $\mu$ m sieve vs batching method.

Table 7: T21005 vs T1006 yield

Collar	From (m)	To (m)	Yield (%)*	Yield (%)**	Yield (%)	Collar	From (m)	To (m)	Yield (%)	
	Twin	(Nagrom La	aboratory)		Twin (Pittong Lab)	Original (Pittong Laboratory)				
T21005	4	5	68.6	45.6	40.8	T1006	4	6	35.8	
T21005	5	7	53.5	44.0	32.9	T1006	6	8	29.8	
T21005	7	9	50.4	46.5	27.6	T1006	8	10	37.2	
T21005	9	11	53.0	46.6	29.8	T1006	10	12	24.5	
T21005	11	13	54.4	45.1	33.8	T1006	12	14	33.3	
T21005	13	15	54.6	40.1	36.9	T1006	14	16	30.8	
T21005	15	17	50.1	36.5	22.1	T1006	16	18	32.8	
T21005	17	19	50.3		22.5	T1006	18	20	24.6	
T21005	19	21	41.4	26.4	18.4	T1006	20	22	17.3	
T21005	21	23	43.5	45.6	22.8					

<sup>\*-45</sup> μm method. \*\*Pittong batching method.

#### 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 6, Table 8).

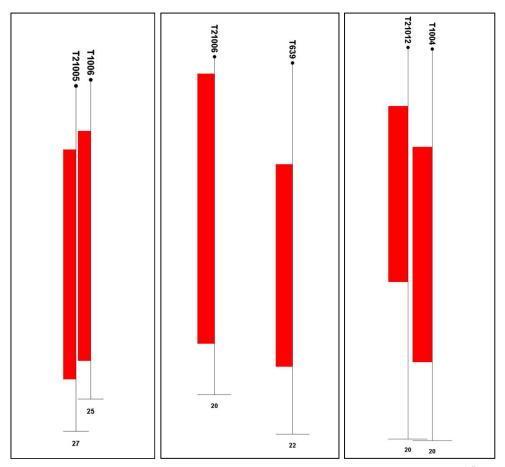


Figure 6: Cross sections through twin and original holes, showing logged intercepts of "fully kaolinised granite"



Table 8: Twin vs original logged intercepts of "fully kaolinised granite"

Collar	Туре	Final depth (m)	From (m)	To (m)	Width (m)
T639	Original	22	6	18	12
T21006	Twin	20	1	17	16
T1004	Original	20	5	16	11
T21012	Twin	20	3	12	9
T1006	Original	25	4	22	18
T21005	Twin	27	5	23	18

#### 5.2.2 Yield

The yields are similar for the historical and twin samples tested at the Pittong Laboratory (Table 7). However, the yields for samples tested by the same method at Nagrom are higher, indicating differences in the batching process. As expected, the yield for material sieved at 45  $\mu$ m is considerably higher, highlighting the complexity of testing kaolin and the need to understand the effects of mineral processing.

#### 5.2.3 Brightness

As shown in Table 9 to Table 11, 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.

Table 9: T21005 vs T1006 brightness

Collar	From (m)	To (m)	ISO brightness*	ISO brightness**	ISO brightness	Collar	From (m)	To (m)	ISO brightness
	Tw	in (Nagro	m Laboratory)		Twin (Pittong Lab)	0	riginal (Pi	ttong Labo	ratory)
T21005 4 5 53.7					59.8	T1006	4	6	72.8
T21005	5	7	59.1	59.5	64.8	T1006	6	8	81.2
T21005	7	9	63.6	62.8	67.4	T1006	8	10	70
T21005	9	11	67.6	66.7	71.3	T1006	10	12	71.2
T21005	11	13	70.2	68.9	72.9	T1006	12	14	79.5
T21005	13	15	77.3	78.2	79.9	T1006	14	16	80.3
T21005	15	17	74.8	76.7	78.7	T1006	16	18	88.6
T21005	17	19	82.3	84.8	86.7	T1006	18	20	89.2
T21005	19	21	78.6		84.5	T1006	20	22	79.5
T21005	21	23	74.7	76.0	79.4				

<sup>\*-45</sup> μm method. \*\*Pittong method.

Table 10: T21006 vs T639 brightness

Collar	From (m)	To (m)	ISO brightness	Collar	From (m)	To (m)	ISO brightness	
	Pittong La	boratory (twin)		Pittong Laboratory (original)				
T21006	1	3	69.7					
T21006	3	5	74.9					
T21006	5	7	75	T639	6	8	81.5	
T21006	7	9	81.2	T639	8	10	89.4	
T21006	9	11	86.2	T639	10	12	88.8	
T21006	11	13	86.6	T639	12	14	82	
T21006	13	16	69.6	T639	14	16	75.7	
T21006	16	18	74.2	T639	16	18	82	



Table 11: T21005 vs T1004 brightness

Collar	From (m)	To (m)	ISO brightness	Collar	From (m)	To (m)	ISO brightness		
	Pittong La	boratory (twin)		Pittong Laboratory (original)					
T21012	5	7	68.1	T1004	5	6	63.6		
T21012	7	9	54.9	T1004	6	8	70.2		
T21012	9	12	68.3	T1004	8	10	59.8		
T21012	12	14	52.8	T1004	10	12	66.3		
T21012	21012 14 16 68.1		T1004	12	14	84.1			
			T1004	14	16	61.5			

#### 5.2.4 Particle Size

Particle size is similar for twins and historical holes, although the twins are generally finer which may reflect minor changes in the method since the historical tests were done (see examples in Table 12).

Table 12: T21005 vs T1006 flow and -2 micron sizing

Collar	From (m)	To (m)	Flow	-2 micron %	Collar	From (m)	To (m)	Flow	-2 micron %		
	Pitto	ng Laborator	y (twin)		Pittong Laboratory (original)						
T21005	4	5	76.2	T1006	4	6	67.3	78.3			
T21005	5	7	59.0	84.6	T1006	6	8	66.2	83.1		
T21005	7	9	70.4	85.6	T1006	8	10	67.8	77.8		
T21005	9	11	70.4	87.3	T1006	10	12	62.1	73		
T21005	11	13	70.9	86.4	T1006	12	14	65.1	75		
T21005	13	15	69.2	84.8	T1006	14	16	65.1	67.9		
T21005	15	17		84.2	T1006	16	18	66.2	70.2		
T21005	17	19		77.5	T1006	18	20	66.2	66.2		
T21005	19	21		78.5	T1006	20	22	66.2	67.3		

#### 5.2.5 Chemistry

Twin hole T21005 was tested by XRF and demonstrated that the concentrates are essentially alumino silicates with approximately 13–14% LOI. Concentrates produced using the -45  $\mu$ m screening method are generally higher in SiO<sub>2</sub> and K<sub>2</sub>O than batched samples, which reflects higher quartz and feldspar (or mica) entrained in the -45  $\mu$ m concentrates (Table 13 to Table 15).

Table 13: Key major element analyses and LOI for T21005 twin (Nagrom Laboratory, -45 micron method)

_	-	-		-	-	•	_	,,			•
Collar	From (m)	To (m)	SiO₂ (%)	Al <sub>2</sub> O <sub>3</sub> (%)	Fe₂O₃ (%)	TiO₂ (%)	CaO (%)	MgO (%)	Na₂O (%)	K₂O (%)	LOI1000 (%)
T21005	4	5	47.3	35.4	2.6	0.9	0.1	0.1	0.1	0.20	13.2
T21005	5	7	46.4	36.2	2.6	0.5	0.0	0.1	0.0	0.26	13.5
T21005	7	9	46.8	37.0	1.6	0.5	0.0	0.0	0.0	0.18	13.6
T21005	9	11	47.4	37.0	1.2	0.5	0.0	0.1	0.0	0.24	13.5
T21005	11	13	47.0	37.5	1.1	0.5	0.0	0.1	0.0	0.17	13.6
T21005	13	15	47.1	37.8	0.7	0.4	0.0	0.1	0.0	0.19	13.7
T21005	15	17	47.3	37.6	0.6	0.5	0.0	0.1	0.0	0.20	13.6
T21005	17	19	47.4	37.6	0.3	0.5	0.0	0.1	0.0	0.40	13.6
T21005	19	21	49.2	35.6	0.5	0.4	0.0	0.1	0.1	1.61	12.4
T21005	21	23	51.1	33.3	0.6	0.6	0.0	0.1	0.2	3.03	11.0



Table 14: Key major element analyses and LOI for T21005 (Nagrom Laboratory, Pittong 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 (%)
T21005	4	5	46.8	36.3	2.4	0.5	0.0	0.1	0.1	0.25	13.6
T21005	5	7	46.4	37.3	1.6	0.5	0.0	0.1	0.1	0.15	13.8
T21005	7	9	46.8	37.5	1.2	0.5	0.0	0.1	0.1	0.19	13.8
T21005	9	11	46.4	38.0	1.0	0.5	0.0	0.1	0.1	0.12	14.0
T21005	11	13	46.3	38.3	0.6	0.4	0.0	0.1	0.1	0.17	13.9
T21005	13	15	46.2	38.4	0.5	0.4	0.0	0.1	0.1	0.16	14.2
T21005	15	17	46.0	38.5	0.3	0.4	0.0	0.1	0.1	0.16	14.4
T21005	17	19									
T21005	19	21	47.3	36.7	0.6	0.6	0.0	0.1	0.1	1.07	13.4
T21005	21	23	46.8	36.3	2.4	0.5	0.0	0.1	0.1	0.25	13.6

Table 15: Key major element analyses and LOI for T21005 (Pittong Laboratory, Pittong method)

Collar	From (m)	To (m)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	Fe <sub>2</sub> O <sub>3</sub> (%)	TiO₂ (%)	CaO (%)	MgO (%)	Na₂O (%)	K₂O (%)	LOI1000 (%)
T21005	4	5	48.1	34.8	2.6	0.8	0.0	0.1	0.1	0.27	13.2
T21005	5	7	45.3	37.7	2.2	0.5	0.0	0.1	0.1	0.13	14.3
T21005	7	9	45.1	38.2	1.6	0.4	0.0	0.0	0.1	0.10	14.5
T21005	9	11	45.4	38.5	1.2	0.4	0.0	0.0	0.1	0.12	14.3
T21005	11	13	45.6	38.7	1.0	0.4	0.0	0.0	0.1	0.10	14.3
T21005	13	15	45.5	38.9	0.6	0.3	0.0	0.1	0.1	0.14	14.4
T21005	15	17	45.1	38.6	0.5	0.5	0.0	0.1	0.1	0.15	14.5
T21005	17	19	45.7	39.0	0.3	0.4	0.0	0.1	0.1	0.16	14.7
T21005	19	21	46.2	38.4	0.4	0.4	0.0	0.1	0.1	0.41	14.3
T21005	21	23	46.5	37.3	0.6	0.6	0.0	0.1	0.2	0.92	14.0

#### 5.2.6 Mineralogy

Twin hole T21005 was tested by XRD at The Hutton Institute in Scotland (Suvo, 2021). The results verified that the concentrates are essentially composed of kaolinite and halloysite with minor amounts of quartz and feldspar (Table 16 and Table 17, Figure 7). The halloysite content increases with depth. As expected, the -45  $\mu$ m sieved concentrates contain higher levels of impurities such as quartz and feldspar.

Table 16: T21005 key minerals determined by XRD from -45 micron fractions refined at Nagrom Laboratory

Collar	From (m)	To (m)	Kaolinite (%)	Halloysite (%)	Quartz (%)	K spar (%)	Plagioclase (%)	Smectite (%)	Goethite (%)
T21005	4	5							
T21005	5	7	76.8	16.1	2.6	1.2	0.1	0.4	2.4
T21005	7	9							
T21005	9	11	80.1	14.5	2.9	0.8	0.1	ND	1.2
T21005	11	13							
T21005	13	15	83.2	13.7	2.2	0.1	0	ND	ND
T21005	15	17							
T21005	17	19	65	30.5	2.2	1.6	0.1	ND	ND
T21005	19	21							
T21005	21	23	47.2	30.9	3.3	17.1	ND	ND	0.3

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



Table 17: T21005 key minerals determined by XRD from samples refined at Pittong Laboratory (Pittong method)

Collar	From (m)	To (m)	Kaolinite (%)	Halloysite (%)	Quartz (%)	K spar (%)	Plagioclase (%)	Smectite (%)	Goethite (%)
T21005	4	5							
T21005	5	7	79.3	16.5	1.5	0.5	ND	ND	1.6
T21005	7	9							
T21005	9	11	84.5	13.7	0.9	0.2	ND	ND	0.4
T21005	11	13							
T21005	13	15	86.6	12.2	0.8	ND	ND	ND	ND
T21005	15	17							
T21005	17	19	65.5	33.2	0.8	0.2	0	ND	ND
T21005	19	21							
T21005	21	23	54.8	38.9	1	4.6	ND	ND	ND

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

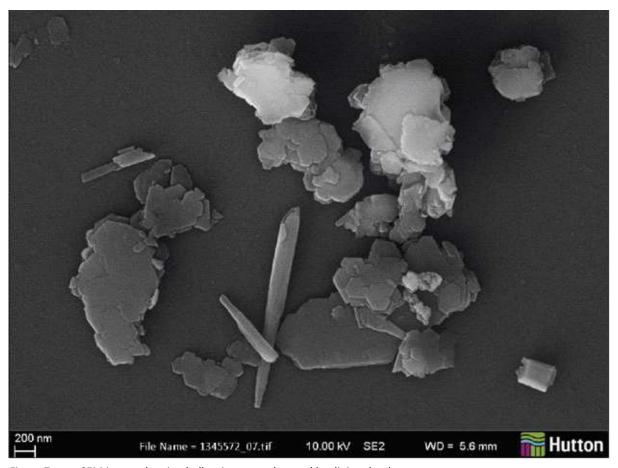


Figure 7: SEM image showing halloysite nanotubes and kaolinite platelets

#### 5.3 Conclusions

The CP notes that the twin drilling was restricted to a small part of the Trawalla deposit due to access constraints, and recommends that future drill programs should include twins east of the road.

The CP notes that the test method can have a significant effect on the quality of concentrate 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 CP, Dr Ian Wilson, concludes that the historical Trawalla 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).

# 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.



# 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 Trawalla 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 18 summarises the database.

Table 18: Summary table – database provided

Category	Historical drillholes	Recent drillholes	Total
Workings/drillholes	240	14	254
Metres driven/drilled	4,500.5	332	4,832.5
Lithology records	1,927	331	2,258
Assay intervals	1927	23	1,950
Assay intervals (in metres)	4,384.2	47	4,431.2
Including:			
Parameters:			
Brightness (isoa)	1,322	23	1,345
Brightness bleached (isob)	1,320	22	1,342
PSD <2 μm	1,316	22	1,338
Flow	1,172	6	1,178
VCPU	1,280	-	1,280
Yield	1,318	23	1,341
Other elements:			
$Al_2O_3$	599	10	609
SiO <sub>2</sub>	599	10	609
K <sub>2</sub> O	997	10	1,007
Fe <sub>2</sub> O <sub>3</sub>	599	10	609
TiO <sub>2</sub>	599	10	609
LOI	598	10	608

No data for auger drilling was including in the database and used for 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 28% (Figure 8) and slightly negatively skewed population for brightness values around a median 83% (Figure 9).

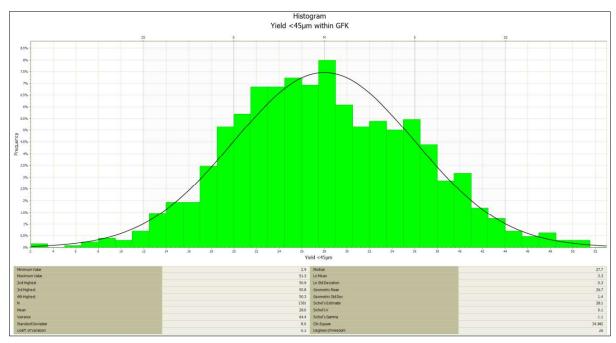


Figure 8: Histogram of Yield (<45 μm fraction) distribution within the GFK unit



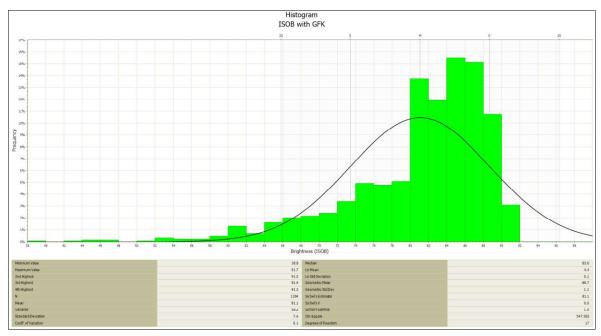


Figure 9: Histogram of Bleached Brightness distribution within the GFK unit

# 6.4 Lithology, Structure and Alteration

The mineralisation contained within the Trawalla 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 40 vertical cross-sections from southwest to northeast through the weathering profile of the deposit (Figure 10).

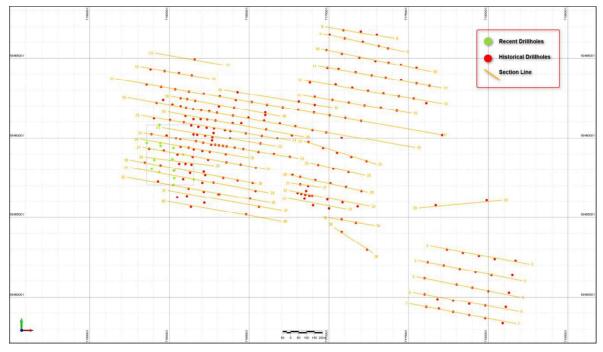


Figure 10: Exploration profiles in plan view (map grid 500 m x 500 m)



Interpretation was carried out by initially creating strings. 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 11 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.

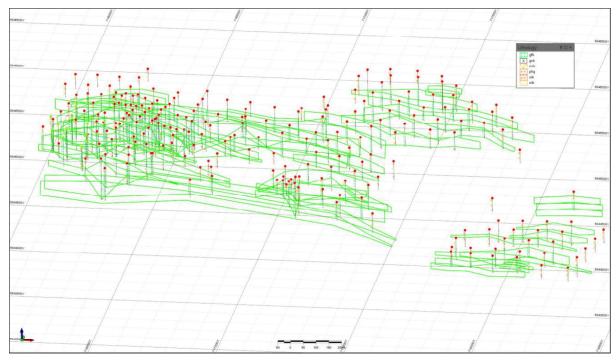


Figure 11: Example of geological interpretation of the GFK domain, looking northeast

### 6.5 Topography

A topographic surface was built for the Trawalla Kaolin Project using the drillhole collar data, and then extended horizontally where required to ensure coverage and appropriate coding of the subsequent block model.

### 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 wireframes constructed are shown in Figure 12 for GFK.



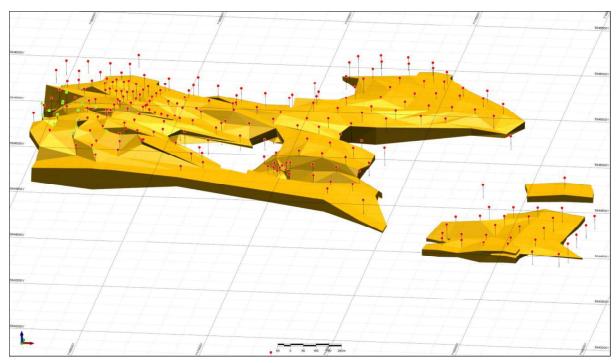


Figure 12: GFK wireframe, looking northeast

Working in a 3D environment ensured accurate modelling of the weathering zones. Table 19 shows volumes of the wireframe models.

Table 19: Volume statistics for the wireframe models of the deposit

Domain	Volume (m³)
GFK	16,124,602

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 Trawalla 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 13). A 2 m sampling interval was the most common interval for sampling. 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 20 cm occurred between samples, it was included in the sample composite. If the gap was longer than 20 cm, the composite was stopped, and another composite was started from the next sample.

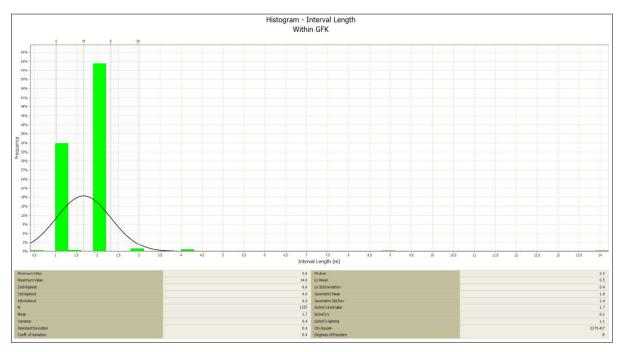


Figure 13: Histogram for interval length within GFK



## 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. Visual validation was then performed to check sample coding.

Statistical parameters for all grades (weighted over the interval length) are shown in Table 20.

Table 20: Statistical parameters of brightness and yield analytical results

Domain	Parameter	No. of samples	Minimum	Maximum	Mean	Variance	Standard deviation	Coefficient of variation	Median
Analyses	Analyses within GFK lithological domain								
	Yield	1,115	2.9%	48.7%	28.5%	57.4	7.6	0.27	27.8
GFK	Bleached brightness	1,125	44	91.7	81.1	50.2	7.1	0.09	82.7

The coefficient of variation for composited grades in the geological domain was low (between 0.09 and 0.27).

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 high-grade 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 (variography) has been attended due to insufficient number of samples.



# 8 Density

### 8.1 Introduction

Suvo mines kaolin from the nearby Pittong deposit, which has similar geology to the Trawalla deposit. Ten core samples of kaolinised granite were collected from the floor of the open pit at Suvo's Pittong mine in November 2018 (Table 21) and have been used as a proxy for Trawalla. The core samples were obtained by manually pushing a short metal tube into kaolin in the Pittong pit floor.

Table 21: 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 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 14 for examples of core being weighed.





Figure 14: 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 22 and Table 23.

Table 22: 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 23: 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<sup>3</sup> and 1.96 t/m<sup>3</sup> with an arithmetic average of 1.89 t/m<sup>3</sup>.

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/m<sup>3</sup> determined for Pittong kaolinised granite is appropriate for the Trawalla deposit, and is slightly higher than the density of 1.5 t/m<sup>3</sup> 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 Laboratory 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 Trawalla historical samples: Kaolin Recovery (Yield), XRF chemistry, 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

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 24.

Table 24: Product specifications

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  $\mu$ .

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 given by Murray (2007).

#### 9.4 Conclusions

The CP, Dr Ian Wilson, concludes that the process testing methods and product specifications are appropriate for the Trawalla 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 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 25.

Table 25: Block model dimensions and parameters

Axis Extent (m)			Block size	Maximum sub-celling		
AXIS	Minimum Maximum		(m)	(m)		
Easting	715,800	718,200	25	5		
Northing	5,843,300	5,846,750	25	5		
RL	330	390	2	1		

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. The parent cell size was chosen based on the general morphology of mineralised 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.

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

# 10.3 Interpolation Methodology

Brightness, bleached brightness, flow, viscosity, yield, Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>, K<sub>2</sub>O, Fe<sub>2</sub>O<sub>3</sub>, TiO<sub>2</sub> and LOI values were interpolated into the empty block model using the IDW 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  $100 \text{ m} \times 100 \text{ m}$  and in some localised area is reduced to  $50 \text{ m} \times 50 \text{ m}$ .

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 26: Interpolation parameters

Interpolation method	IDW					
Search radii	Equal to block size dimension (25 m x 25 m x 2 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 15 to Figure 20). The swath plots were constructed for the blocks and sample intervals that fall into the GFK zone.

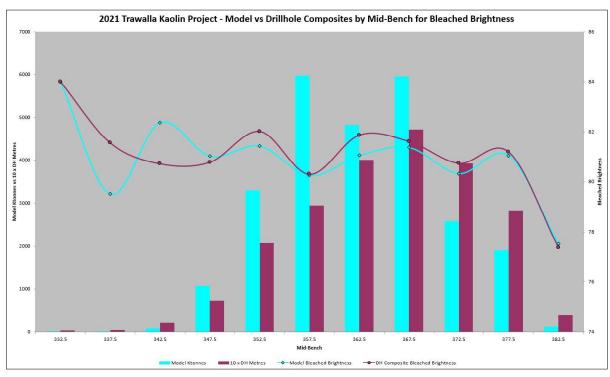


Figure 15: Swath plot by 5 m bench – Brightness (cyan = block results; burgundy = input data)



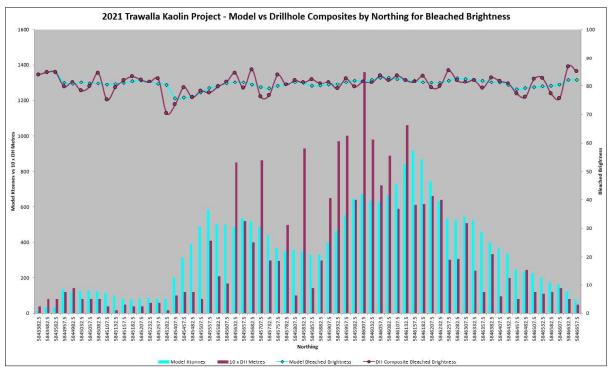


Figure 16: Swath plot by northing – Brightness (cyan = block results; burgundy = input data)

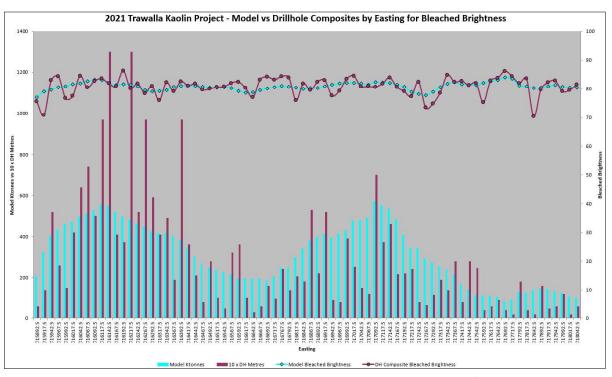


Figure 17: Swath plot by easting – Brightness (cyan = block results; burgundy = input data)



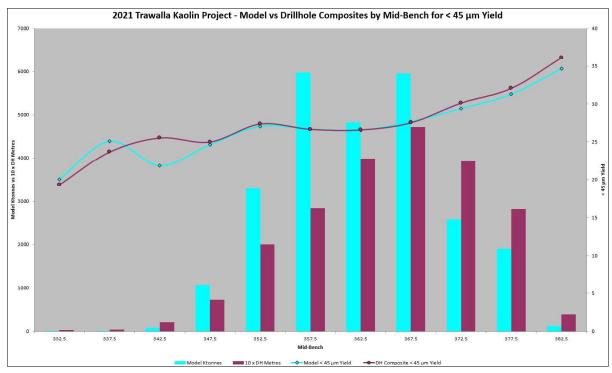


Figure 18: Swath plot by 5 m bench – Yield (cyan = block results; burgundy = input data)

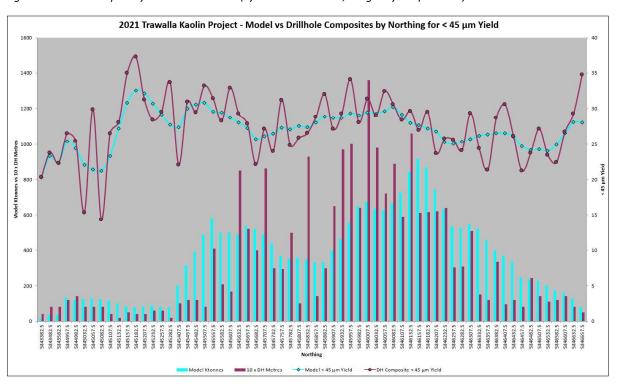


Figure 19: Swath plot by northing – Yield (cyan = block results; burgundy = input data)



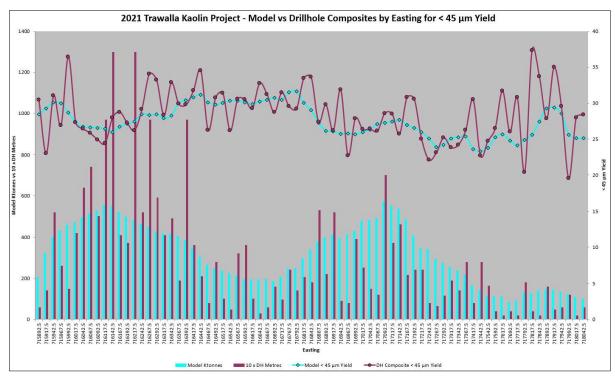


Figure 20: Swath plot by easting – Yield (cyan = block results; burgundy = input data)

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 21 and Figure 22, respectively.

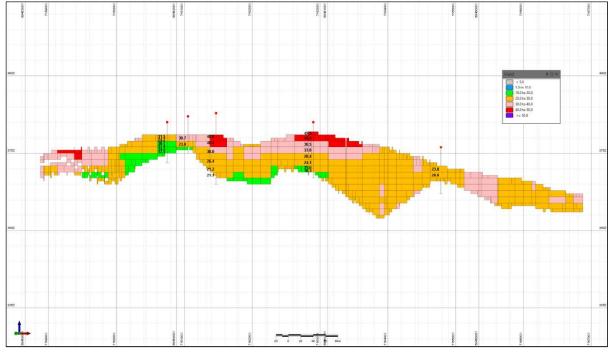


Figure 21: Visual validation of block model grades vs drillhole grades (Yield); vertical exaggeration 5



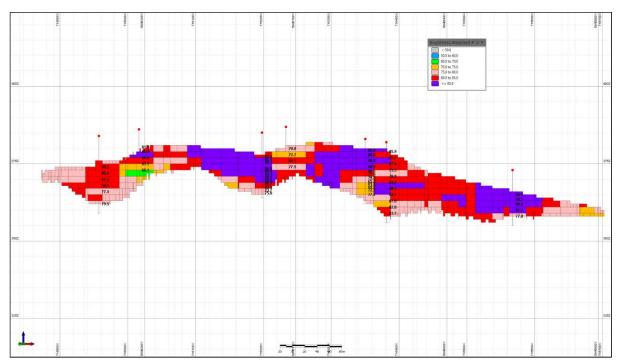


Figure 22: Visual validation of block model grades vs drillhole grades (Bleached Brightness); vertical exaggeration 5

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.

### 10.5 Comparison with Historical Block Model

Suvo provided a historical block model in Surpac format named "9.11.1\_Trawalla2005.mdl". The block model was provided without a block model handover form; therefore, some assumptions were made about the construction of the model and block model field contents. To define and select blocks for comparison the following conditions were applied:

- All blocks that are coded as "gfk" in the "material" field
- All blocks that have a value for bleached brightness (field "viob") not equal to "-1"
- Constrained to the tenement boundaries.

After that, the block model was loaded into the Micromine Vizex environment together with the current block model. Figure 23 and Figure 24 provide visual comparison of the block models both in plan and section views. It can be seen from the images below that both models have similar distribution.



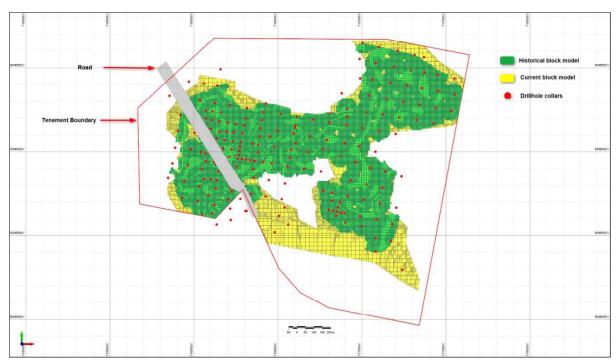


Figure 23: Visual comparison of historical block model vs current block model in plan view

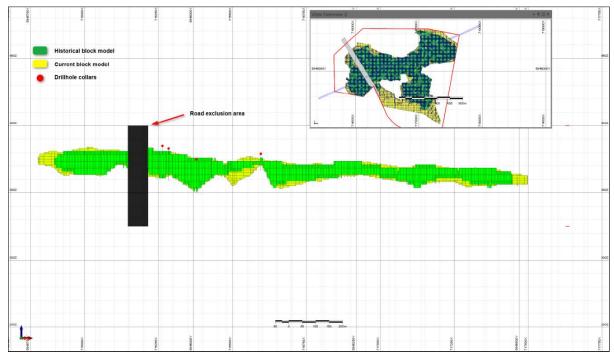


Figure 24: Visual comparison of historical block model vs current block model in section view



# 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
- Kaolin in the region has been produced historically from similar deposits

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.

Possible product specifications for the Trawalla kaolin deposit are supported by the results of process testwork program undertaken to date.

#### 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.

#### 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 indicates that likely product qualities for general kaolin markets may be assumed for eventual economic extraction from the Trawalla deposit and support the classification of the deposit as an Inferred and Indicated Mineral Resource in terms of Clause 49.

#### 11.3 JORC Classification

The Mineral Resource has been classified in accordance with guidelines contained in the JORC Code. The classification applied reflects the author'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, taking into account 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 to be 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 to be sufficiently informed by geological and sampling data to imply geological, grade and quality continuity between data points.

The following classification approach was adopted (Figure 25):

• The Mineral Resource was classed as Indicated in the areas of the drilling where the drillhole density was reduced to line spacing approximately 50–100 m and hole spacing to 50–100 m



• The Mineral Resource was classed as Inferred in the areas where the drillhole density exceeded the 100 m x 100 m grid.

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

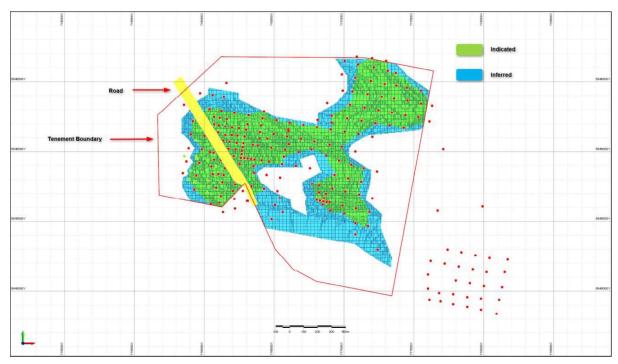


Figure 25: Mineral Resource classification

# 11.4 Mineral Resource Estimate

Mineral Resources for Trawalla (Table 27) were reported based on the product specifications that are described in Chapter 9.2.

### SUVO STRATEGIC MINERALS

TRAWALLA KAOLIN PROJECT – MINERAL RESOURCE ESTIMATE



Table 27: Trawalla MRE summary table

able 27:		E summary to												
Category	Kaolinised Granite	Yield <45μm	Kaolin Tonnes	ISO Brightness	ISO	Flow	PSD <2μm	VCPU	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	K₂0	Fe₂O₃	TiO <sub>2</sub>	LOI
	Mt	%	Mt	(Bleached)	Brightness		%		%	%	%	%	%	%
High Brightn	ess & Fluid "hbf":	ISOB ≥ 84.0, and	VC ≥ 64.0	1										
Indicated Inferred	1.8 0.1	29.2 29.7	0.5 0.0	86.6 86.5	82.2 82.2	65.3 64.8	77.0 74.4	66.3 65.8	37.18 37.21	47.31 47.22	0.32 0.39	0.66 0.66	0.52 0.59	13.75 13.80
TOTAL	1.9	29.2	0.6	86.6	82.2	65.2	76.8	66.3	37.18	47.31	0.32	0.66	0.53	13.75
Moderately	Bright & Fluid "mb	f": ISOB ≥ 80 bu	t < 84, and VC	64.0										
Indicated Inferred	1.3 0.3	30.7 31.0	0.4 0.1	82.1 81.5	77.6 76.5	64.8 66.1	79.2 76.3	66.0 65.6	36.89 35.93	47.57 47.68	0.28 0.39	0.84 1.47	0.56 0.63	13.71 13.79
TOTAL	1.6	30.7	0.5	82.0	77.4	65.0	78.6	65.9	36.70	47.59	0.31	0.97	0.57	13.73
High Brightn	ess & Non-Fluid "h	nf": ISOB ≥ 84.0	), and VC < 64.0		•									
Indicated Inferred	2.8 0.7	27.1 27.8	0.8 0.2	85.8 85.5	83.5 83.5	61.2 61.2	76.0 80.0	61.2 61.1	36.62 36.32	48.02 48.32	0.45 0.43	0.72 0.77	0.55 0.61	13.47 13.31
TOTAL	3.5	27.2	0.9	85.8	83.5	61.2	76.8	61.2	36.56	48.08	0.44	0.73	0.57	13.44
Moderately I	Bright & Non -Flui	d "mnf": ISOB ≥	80.0 but < 84.0	and VC < 64.0	•									
Indicated Inferred	4.0 1.7	26.5 27.9	1.1 0.5	82.1 81.8	79.8 78.8	60.7 60.6	75.2 75.8	60.7 60.4	35.85 35.63	48.68 49.69	0.53 0.53	0.93 1.08	0.57 0.58	13.26 13.34
TOTAL	5.7	26.9	1.5	82.0	79.5	60.7	75.4	60.6	35.79	48.97	0.53	0.97	0.57	13.28
TOTAL	TOTAL													
Indicated Inferred	9.9 2.8	27.7 28.3	2.8 0.8	84.0 82.9	81.0 79.8	62.2 61.6	76.3 76.8	62.5 61.4	36.44 35.90	48.10 49.02	0.43 0.49	0.81 1.03	0.55 0.59	13.47 13.40
TOTAL	12.7	27.8	3.5	83.7	80.8	62.0	76.4	62.3	36.33	48.30	0.45	0.86	0.56	13.45

### Notes:

- Resources are reported in accordance with the JORC Code.
- Resources are constrained to the ML 5365 tenement boundaries.
- Resources are in million metric tonnes of final product. Differences may occur due to rounding
- In situ density applied = 1.6 t/m³.

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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\SUVMRE03.



# 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 2 m to reflect the possible vertical variability of the deposit.
- The IDW method was used to interpolate values in the block model. The grades were interpolated individually in each zone.
- No bulk density measurements were available for the specific deposit, although data from Suvo's Pittong mine were used as a proxy. It is important to collect bulk density information or each lithological unit of the deposit for further mining studies. The bulk density is a key parameter in estimating tonnages of a deposit and impacts the Mineral Resource classification.
- The process testwork and results provided by the client are appropriate and are an industry standard for this style of kaolin mineralisation.
- The Trawalla deposit has high-quality kaolinite with high ISO Brightness, flowability and low iron and titania. The kaolinite when mined will be sent to the processing plant at Pittong.
- Recent XRD tests in 2021 at Trawalla confirmed the presence of up to ~39% halloysite associated with kaolinite in one of the twin holes.

#### 12.2 Recommendations

- Carry out additional drilling at Trawalla to verify the amount and quality of halloysite-kaolinite mineralisation. Test the halloysite-kaolinite mineralisation for ceramic properties, in particular levels of iron and titania (important for fired brightness and colour), casting rate and modulus of rupture (MOR) amongst other tests.
- Carry out additional twin and infill aircore drilling at Trawalla east of the Beaufort-Carngham Road.
- 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 11 remaining 2021 holes.



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# 14 Abbreviations and Units of Measurement

° degrees

°C degrees Celsius
3D three-dimensional
Al<sub>2</sub>O<sub>3</sub> 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
mm millimetres

MOR modulus of rupture

MRE Mineral Resource estimate

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

PERC Pan European Reporting Code
PSD particle size distribution
PVC pugged viscosity concentration

RC reverse circulation

 $\begin{array}{lll} \text{SEM} & \text{scanning electron microscopy} \\ \text{SiO}_2 & \text{silicon dioxide (or silica)} \\ \text{Suvo} & \text{Suvo Strategic Minerals} \\ \text{t/m}^3 & \text{tonnes per cubic metre} \end{array}$ 

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.  Include reference to measures taken to ensure	254 aircore and diamond core holes have been drilled, for a total depth of approximately 4,830 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 Trawalla was carried out by various contractors over time. Diamond drilling core samples were placed in		
	sample representivity and the appropriate calibration of any measurement tools or systems used.  Aspects of the determination of mineralisation	core boxes and taken from Trawalla to Pittong where sampling would take place. Core recovery was more than 90% recovery.  In 2021, an aircore drilling program was completed, 14 holes for 332 m with the purpose of converting the PERC		
	that are Material to the Public Report.  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 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.	resources to JORC compliance.  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 was 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.		
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.  Measures taken to maximise sample recovery and ensure representative nature of the samples.	A quantitative assessment of recovery was made by the supervising geologist/driller.  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>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 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.					
Subsampling techniques and sample preparation	If core, whether cut or sawn and whether quarter, half or all core taken.  If non-core, whether riffled, tube sampled, rotary	Each 1 m interval was collected from the drill was collect separately and bagged at the rig. Historically, core was sand bagged at Pittong.					
preparation	split, etc and whether sampled wet or dry.  For all sample types, the nature, quality, and appropriateness of the sample preparation technique	Samples from the 2021 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.					
	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					
	Whether sample sizes are appropriate to the grain size of the material being sampled.	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.					
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.	Laboratory and included:  Kaolin recovery (Yield).  Particle size distribution (Micromeritics).  Brightness (ISO B), Yellowness (ISO Y).  Flowability, Viscosity Concentrations (VC).					
	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> <li>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).</li> <li>All the borehole data has been categorised in terms of "fitness for use criteria".</li> <li>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 (-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> <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>					



Criteria	JORC Code explanation	Commentary
		<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> <li>ISOB ≤80.0.</li> </ul>
		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>
		<ul> <li>Decant sample over 0.25 mm sieve to produce a fine and coarse fraction</li> <li>Adjust refined clay to pH 3.8–4.2 using 10% H<sub>2</sub>SO<sub>4</sub></li> <li>Analysis by XRF, sizing by Malvern, ISO Brightness and</li> </ul>
		Yellowness.  Some samples also prepared and tested via Nagrom to check the veracity of the Pittong method which included
		<ul> <li>the following preparation:</li> <li>Crush approx. 2 kg sample to 10 mm</li> <li>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</li> <li>Wet screen sample at 0.18 mm and 0.045 mm</li> <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.  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, 50–100 mm in RL.

# SUVO STRATEGIC MINERALS



Criteria	JORC Code explanation	Commentary
Data spacing and distribution	Data spacing for reporting of Exploration Results.  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 procedure(s) and classifications applied.  Sample compositing.	Holes were drilled on a regular pattern of roughly 100 m spacing.  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.  Down-hole composites were prepared using weighted subsamples of the one metre intervals. Composite samples were mostly 2 m or 3 m in length.
Orientation of data in relation to geological structure	Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.  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.	All drill holes 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.
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 Trawalla.

# **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.	ML 5365 is 100% owned by Suvo Strategic Minerals and comprises 236 ha and is known as the Trawalla Project. The tenement was granted 13 June 2002 and is valid for 20 years.  There are no known impediments to mining in the area
	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.	
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	The original exploration licence was granted in 1991 some 1,220 auger, RC and diamond core holes have been drilled, for a total depth of approximately 9,800 m prior to 2021.  Some bulk samples of Trawalla material have been
		processed through the Pittong Process Plant.
Geology	Deposit type, geological setting and style of mineralisation.	The Trawalla deposit was formed from the meteoric weathering of coarse-grained granite mainly composed of quartz and feldspar with minor amounts of other constituents. Trawalla 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) <sub>4</sub> , 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 methods	In reporting Exploration Results, weighting 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 Pittong Laboratory, some at Nagrom and some in the UK.  The range of quality is determined from all the testwork and various parameters explained earlier.
	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.  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	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.
Diagrams	known').  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 Trawalla 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 from 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 Trawalla 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 deposit.	The deposit is an in-situ kaolin deposit formed by near-surface weathering of granitoids rocks.
	Nature of the data used and of any assumptions made.	The geological interpretation of the kaolin deposit at Trawalla is well understood, and the logged lithologies are coherent and traceable over numerous drillholes and drill
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	prillhole intercept logging and assay results have formed the basis for the geological interpretation.
	The use of geology in guiding and controlling Mineral Resource estimation.	The grade and lithological interpretation form the basis for modelling. Lithological envelopes defining prospective GFK
	The factors affecting continuity both of grade and geology.	zone within which the grade estimation has been completed.
		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 2,500 m in the southeast to northwest direction and for 1,500 m in the southwest to northeast direction and extends to 60 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 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 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 size of the parent block used in creating the block model was selected on the basis of the exploration grid (100 m x 100 m and 50 m x 50 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.	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
	sulphur for acid mine drainage characterisation).  In the case of block model interpolation, the block size in relation to the average sample spacing and	2 m RL parent block size, with sub-celling to 5 m E x 5 m N x 1 m RL for domain volume resolution.  Input data did not display significant outliers in their
	the search employed.  Any assumptions behind modelling of selective	distributions and so no top cuts were applied.  Grade estimation was by Inverse Distance Weighting (IDW)
Any assumptions about correlation between Kaolin mineralisation is co	to the power of 2, using Micromine 2018 software.  Kaolin mineralisation is considered to have formed as a weathering product within the regolith horizon, and	
	Description of how the geological interpretation was used to control the resource estimates.	envelopes as modelled are constrained by this lithologic horizon.
	Discussion of basis for using or not using grade cutting or capping.	The wireframe objects were used as hard boundaries for grade interpolation.
used, the	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.	It is assumed that due to the very shallow/near-surface nature of the deposit, it will be 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	Laboratory and process plant testing of these samples, plus process trials of four bulk samples of approximately 100 m³ each has been carried out at Pittong with the conclusion being that Trawalla ore could be successfully integrated into the Pittong production plant to produce kaolin which will satisfy current market requirements with only minor adjustment to the process route.



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.	Trawalla is situated under cultivated land that has been cleared of native vegetation. Under the proposed work plan mined areas would be progressively rehabilitated to reduce the area of active mining to less than 3 ha at any one time. Topsoil and overburden will be stored separately for future rehabilitation. The deposit will be 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. A dam of 150–200 ML capacity will be established at the lower end of the property.
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 and have been used as a proxy for Trawalla. 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 Trawalla 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.	The Mineral Resource was classified as Indicated and Inferred, taking into account 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 to be 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 to be sufficiently informed by geological and sampling data to imply geological, grade and quality continuity between data points.  The following classification approach was adopted:  The Mineral Resource was classed as Indicated in the areas of the drilling where the drillhole density was reduced to line spacing approximately 50–100 m and hole spacing to 50–100 m.  The Mineral Resource was classed as Inferred in the areas where the drillhole density exceeded the 100 m x 100 m grid. The classification reflects the level of data available for the estimate including input drillhole data spacing, the high level of geological continuity of the particular style of deposit.



Criteria	JORC Code explanation	Commentary
		The Mineral Resource estimate appropriately reflects the view of the Competent Person.
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.  No external audits have been undertaken.
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.  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.	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.  No mining activity has been on the deposit.



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