Archer Materials Limited (ACN: 123 993 233)
Ground Floor, 28 Greenhill Road, SA 5034

ASX Announcement (ASX:**AXE**) 23 March 2020

High quality halloysite at Franklyn Halloysite-Kaolin Project

Highlights

- More high quality halloysite confirmed at Franklyn Halloysite-Kaolin Project ("Franklyn Project").
- Test work by a leading kaolin minerals industry laboratory confirms the presence and morphology of long tubes of halloysite with high aspect ratio.
- Pilot plant trials are being planned with a potential customer with resultant halloysite and kaolin samples to be sent to potential down-stream customers.

Archer Materials Limited ("Archer", "Company", ASX:**AXE**) is pleased to announce that additional test work has confirmed the presence of long halloysite tubes with high aspect ratio at the Company's 100% owned Franklyn Halloysite-Kaolin Project ("Franklyn Project") located approximately 220km north of Adelaide, South Australia (Fig. 1).

Commenting on the test work, Archer Executive Chairman Greg English said, "We used the impressive expertise available to Archer to efficiently and effectively test a number of samples for halloysite from our drilling at the Franklyn Project. Accurately identifying high-quality halloysite from a small set of purposefully chosen samples from the 39 holes drilled is a credit to the skill of our team. It also opens the possibility that halloysite may be present more extensively in the remaining untested holes, and the Company may elect to test these remaining samples in the future."

"The halloysite tubes at Franklyn are long, with a high aspect ratio and other properties which should make it desirable to customers. In addition, the kaolin that is accompanied with the Halloysite is also unique in that it is mostly delaminated, with a high aspect ratio, which together expect to show enhanced product performance in many of the end use applications. Potential customers are aware of our work and are awaiting receipt of product from the pilot plant test work."

Franklyn Halloysite-Kaolin Project

The Company has previously announced the discovery of halloysite from the recent drilling at the Franklyn Halloysite-Kaolin Project (ASX Announcement 3 Mar 2020). This halloysite test work was undertaken in Adelaide and Sydney with X-ray Diffraction ("XRD") analyses confirming the presence of halloysite. These results also supported the presence of halloysite reported by the SA Government in drilling undertaken in the mid-1980s.

As a consequence of the positive test result, the Company identified five samples out of a total of 39 samples for testing by a well-respected UK based kaolin industry laboratory. Of the five samples submitted, four samples contained some halloysite with the sample from hole FRAC 19-04 (see ASX Announcement 3 Mar 2020) containing halloysite with unique properties. The

halloysite from hole FRAC 19-04 presents as long tubes with large lumen (the "lumen" is the inside of the tube just like the inside of a straw), both highly desirable characteristics by potential customers.

The shape of the tubes, being long and cylindrical/tubular, may lead to the halloysite performing well in the materials' high-value applications dependent on surface area, like catalysis, due to the likelihood of a high aspect ratio ("aspect ratio" is the ratio of the tube length to its diameter). The large lumen observed could allow for applications requiring a high loading of gases, liquids, or nanoparticles. The combination of these properties is also an advantage as high aspect ratio additives are known to improve the mechanical reinforcement of advanced composites.

The Company finds the latest test work encouraging and has sent samples from hole FRAC 19-004 to a kaolin industry processing plant in the USA for processing through a pilot plant. Archer expects the pilot plant processing to be completed by mid-April with the resultant samples to be distributed to potential down-stream customers for testing thereafter. Potential customers are already aware of the Franklyn Project and the work being done by Archer and are anticipating receipt of the samples.

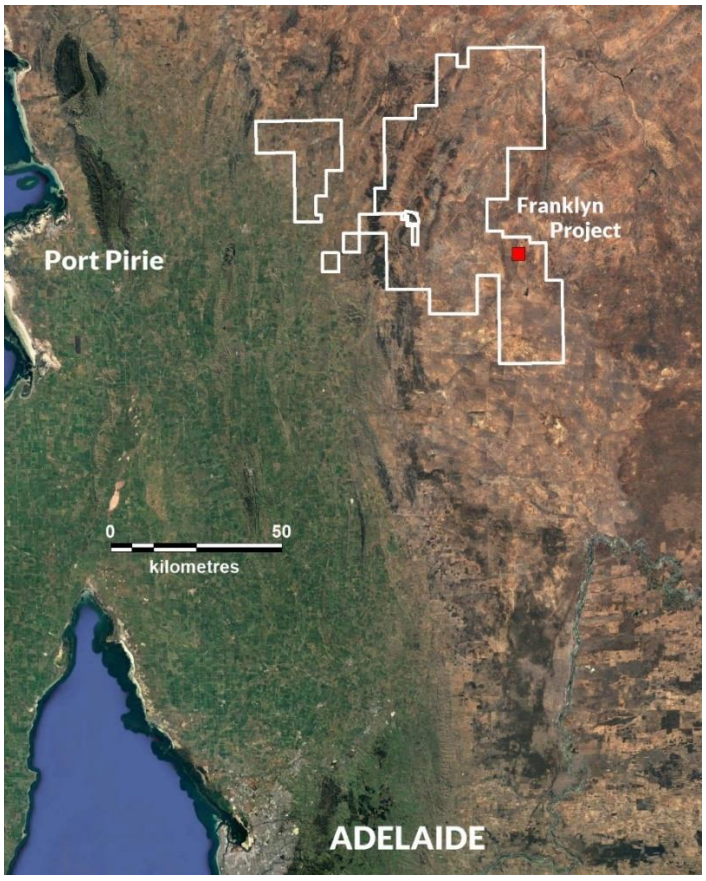
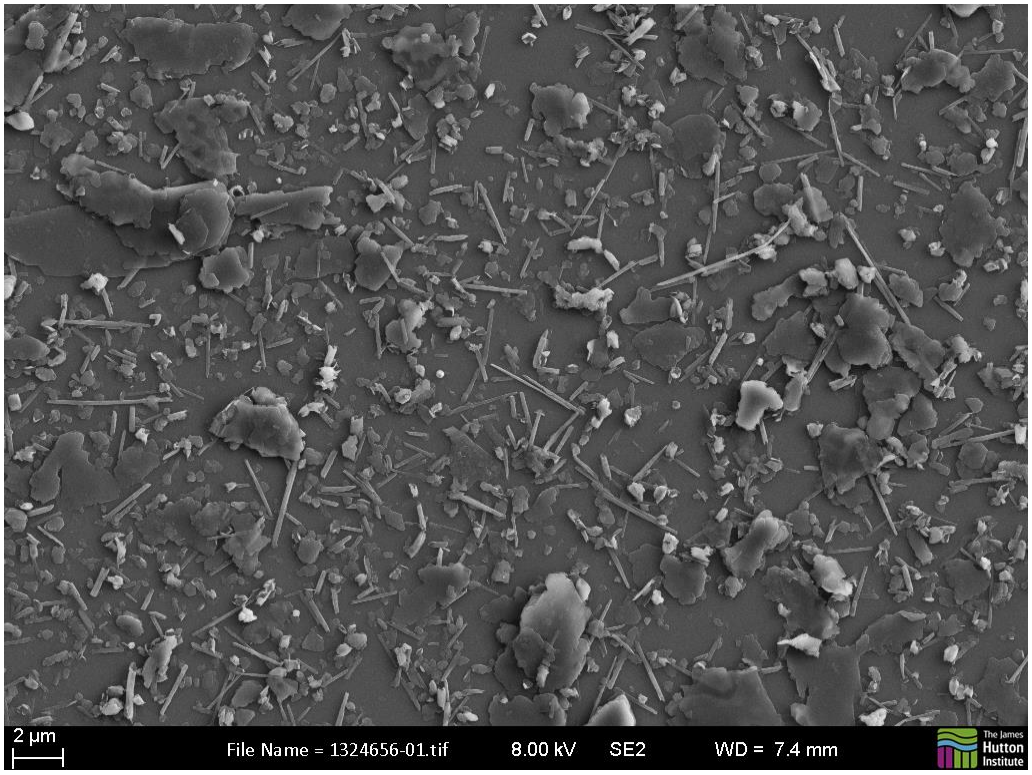


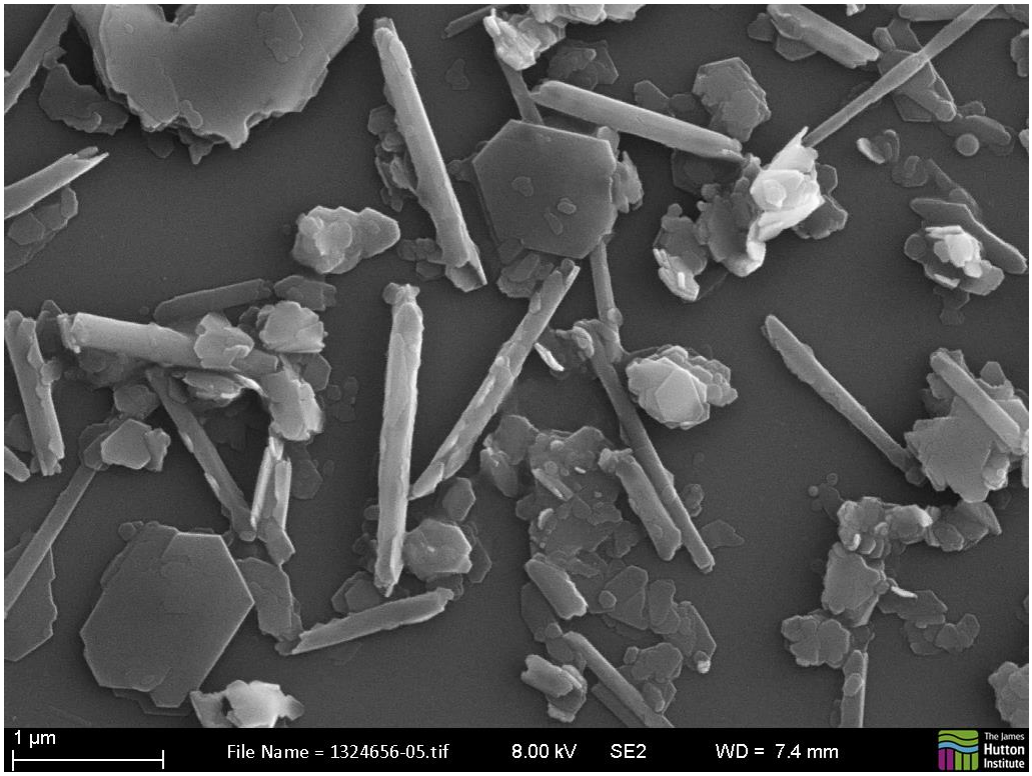
Fig. 1. Location of the Franklyn Project.

Franklyn Halloysite-Kaolin Project results

The principle form of kaolin in the five samples tested is kaolinite. Scanning Electron Microscopy ("SEM") shows that sample from FRAC 19-04 contains a notable amount of halloysite tubes, which are of the polygonal halloysite type. The halloysite concentration is estimated at 30% of the total surface area (Fig.) (the weight percentage may differ). Bulk X-ray Powder Diffraction results suggest minor halloysite in the other three samples tested with the remaining sample containing no evidence of halloysite.

The halloysite nanotubes in from FRAC 19-04 are generally long, thin and polygonal with the largest observed measuring approximately 1.7 µm by 100 nm (Fig.). Many of the tubes appear single-walled with large lumens, up to 150 nm. The kaolin plates show a wide range of sizes from less than 100 nm to greater than 10µm (i.e. a 100x plate size range) with well-formed, sharp and easily recognised faces.





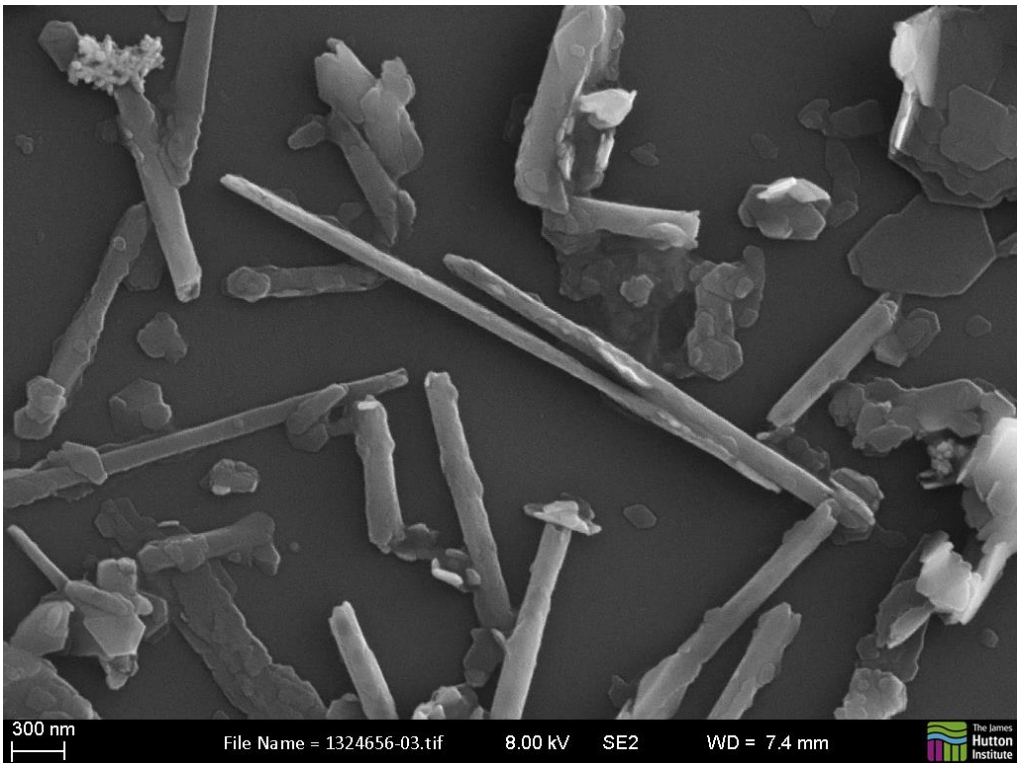


Fig. 2. SEM images of sample from FRAC 19-04, at different scales showing a mixture of platy and tubular forms, interpreted as kaolinite and halloysite respectively.

Industry Background

Kaolin and halloysite are alumina-silicate based clays, that commonly occur intermixed. These materials have recently emerged as a potential feedstock in processing high-value and hard-to-substitute high-purity alumina (HPA)[†] that could be used in deep-tech applications such as light-emitting diodes and lithium-ion batteries; with halloysite having a nanostructure that may allow its use as an efficient catalyst in the petrochemicals industry, in molecular sieves, composites, non-halogenated flame retardant synergists and cosmetics. These large and growing markets offer significant commercial development potential upon successful findings for the Company's Halloysite-Kaolin exploration programs, including those reported in this announcement.

Next Steps

Halloysite-kaolin samples from FRAC 19-04 will be sent to a pilot plant for beneficiation with a major global specialty clay producer. This work is expected to be completed by mid-April (subject to possible delays attributed to COVID 19). The resultant samples will be sent to potential down-stream customers for product testing. The Company's consideration of further drilling at the Franklyn Project to prove up a resource would require acceptance by potential customers for further commercial testing.

About Archer

A materials technology company developing materials in quantum computing, biotechnology, and lithium-ion batteries, and exploring for minerals in Australia. The Company has strong intellectual property, broad-scope mineral tenements, world-class in-house expertise, a diverse advanced materials inventory, and access to over $300 million of R&D infrastructure.

[†] https://www.qut.edu.au/news?news-id=153588

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Competent Person Statement

The information in this announcement that relates to Exploration Results is based on information compiled by Mr Wade Bollenhagen, a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy and is a full-time employee of Archer Materials Limited. Mr Bollenhagen has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr. Bollenhagen consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The Board of Archer authorised this announcement to be given to ASX.

General Enquiries
Mr Greg English
Executive Chairman

Dr Mohammad Choucair
Chief Executive Officer

Tel: +61 8 8272 3288

For more information about Archer's activities, please visit our:

Website:
https://archerx.com.au/

Twitter:
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JORC Code, 2012 Edition – Table 1 Section 1 Sampling Techniques and Data *(Criteria in this section apply to all succeeding sections.)*

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 sample representivity and the appropriate calibration of any measurement tools or systems used. • Aspects of the determination of mineralisation 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.	• All samples were collected through a cyclone into plastic bags, composite samples were created from selected 1 metre intervals, which have been sent for chemical analyses. • Intervals were determined to be kaolin dominant through visual observations, laboratory testing of this assumption is then undertaken. • Composite intervals were created based upon the geology and colour. As such the composite intervals created vary in length from 2m to 5m. Composite samples weigh roughly 0.5kg for initial test work.
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.).	• Aircore drilling was undertaken to collect the sample, rod diameter was 75mm.
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. • Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	• No measurements of recovery were undertaken, all drilling was dry, loss to fines was considered to minimal.

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Criteria	JORC Code Explanation	Commentary
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. • Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography. • The total length and percentage of the relevant intersections logged.	• All logging was qualitative, all sample intervals were recorded.
Sub-Sampling 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 split, etc. and whether sampled wet or dry. • For all sample types, the nature, quality and appropriateness of the sample preparation technique. • Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples. • 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. • Whether sample sizes are appropriate to the grain size of the material being sampled.	• From the raw sample a 500gm composite sample was created for first pass analyses. • Not all sample intervals have been submitted for analyses, composite intervals have been determined and ranked as priority 1 and 2. • Depending on the outcome of this work, additional composite samples may be submitted. • For SEM work, small (5gm) samples were taken from the screened fraction and submitted for analyses. • Subsequent samples, representing the single metre intervals may be taken and submitted for analyses if the composite samples support this.
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. • 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. • Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	• No additional assay data are being reported. • All chemical assays were reported 15th January 2020. • Image being discussed is from Hole FRAC19_004 over an interval from 27m to 30m (sample 5). • SEM work was undertaken by the James Hutton Institute.

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Criteria	JORC Code Explanation	Commentary
Verification of Sampling and Assaying	• The verification of significant intersections by either independent or alternative company personnel. • The use of twinned holes. • Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. • Discuss any adjustment to assay data.	• No assays are being reported.
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. • Specification of the grid system used. • Quality and adequacy of topographic control.	• Sample positions are shown in images and co-ordinates reported, Jan 15th 2020. • Grid system MGA94 Zone 53, a hand held Garmin GPS was used for co-ordinate recording for holes drilled. • The Franklyn deposit resides in the grid system MGA94 Zone 54.
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. • Whether sample compositing has been applied.	• The locations of the holes were determined by access and were a first pass check of historical drilling, as such they were drilled close to historical holes. • The first pass sampling was undertaken on variably composited intervals, where necessary single metre intervals may be analysed if results provide support for this.
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.	• Holes were drilled vertically. • The types of rocks that have been weathered to produce the kaolin cover very large aerial extents, far beyond the areas deemed exploration targets. • Faults and other fracture type systems can enhance local weathering, i.e. deepen the system, it is unknown what influence if any these have played in the kaolin development.

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Criteria	JORC Code Explanation	Commentary
Sample Security	• The measures taken to ensure sample security.	• All samples were transported from site to secure storage by the onsite personnel supervised by the onsite geologist.
Audits or Reviews	• The results of any audits or reviews of sampling techniques and data.	• No audits undertaken. • One review by the SA government in 1993 and summarised in Report book 93/57.

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Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code Explanation	Commentary
Mineral Tenement and Land Tenure Status	• Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings. • The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	• Tenement status confirmed on SARIG. • All work being reported is from EL 6160, SA Exploration Pty Ltd (a subsidiary of AXE) owns the tenement. • The granted tenement is in good standing with no known impositions.
Exploration Done by Other Parties	• Acknowledgment and appraisal of exploration by other parties.	• SA govt 1971 to 1973 & 1992, exploring for base metals and gold. • BHP, 1980, exploring for base metals and gold. • CRA 1985, exploring for base metals and gold.
Geology	• Deposit type, geological setting and style of mineralisation.	• Deep weathering of the Bendigo Granite has resulted in the development of kaolin. • The area in parts has granite outcropping and areas overlain with transported sediments up to 23 m thick, it is expected that these transported sediments increase in thickness to the East.

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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 drill holes: – Easting and northing of the drill hole collar – Elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole 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.	• Drill holes are not being discussed. • The image comes from a -20µm screened interval (27m to 30m, FRAC19-004) from drilling, which was reported in ASX release 15th January 2020.
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. • The assumptions used for any reporting of metal equivalent values should be clearly stated.	• No assays are being reported.
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 drill hole 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 known').	• No assays being reported. • The mineralisation being kaolin is a consequence of the weathering of other minerals *in situ*. As such the overall form of the mineralisation will be flat lying, and in parts influenced by geological structures and features (ie faults), some of which may enhance the overall depth of kaolin development. • This will need to be investigated with additional drilling to determine the overall volume of kaolin development.

Criteria	JORC Code Explanation	Commentary
Diagrams	• Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	• Refer to ASX release 15th January 2020.
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.	• The reporting is considered to be balanced.
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.	• None to report at this stage of the review. • Historical work has been reported in previous releases: • 7th November 2019, 18th November 2019, 4th December, 15th January 2020 & 3rd March 2020.
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). • Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	• Exploration work is required to advance the projects towards a more certain nature, which will hopefully lead to a confidence level where resources can be estimated.