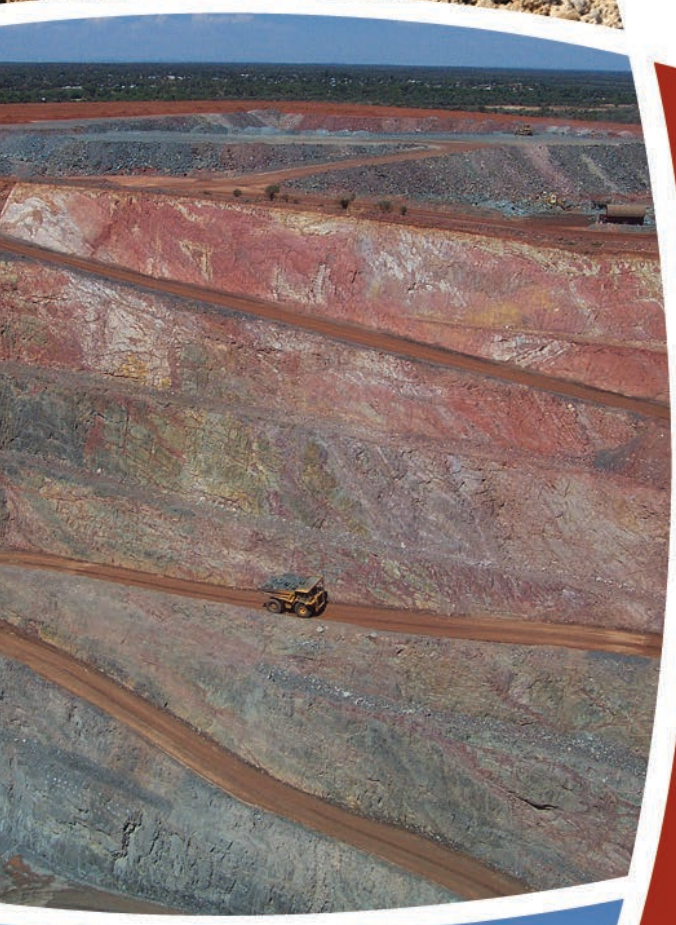
Appendix 6.

ORE RESERVE REPORT, WA KAOLIN PROJECT JUNE 2020 STATEMENT OF ORE RESERVES, CSA GLOBAL REPORT Nº R301.2020, 30 JULY 2020



CSA Global
Mining Industry Consultants

ORE RESERVE REPORT

WA Kaolin Project June 2020 Statement of Ore Reserves

CSA Global Report № R301.2020
30 July 2020

www.csaglobal.com

Report prepared for

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Report information

File name	R301.2020.WA Kaolin Wickepin Ore Reserve Statement_WAKTAR01_KvO
Last edited	30/07/2020 2:54:00 PM
Report Status	Final

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Executive Summary

WA Kaolin Holdings Pty Ltd (WAK) operate the Wickepin Project, located in Shire of Wickepin, in the south-eastern wheatbelt of Western Australia. The project is acquired from Rio Tinto in 1998. The project comprises four retention licences and a single mining lease. This Ore reserve report is based on the latest Mineral Resources report completed by CSA Global (Report Number R351.2019) on 31 July 2019.

WAK has requested CSA Global Pty Ltd (CSA Global) to provide an Ore Reserve statement as at 1st June 2020 prepared by a Competent Person in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition).

The last statement of Ore Reserves for the Wickepin operations was issued with a reporting date of 04 July 2012. This Ore Reserve estimate was for 59.4 million tonnes (Mt) of ore. Since that time, mineral resource is updated on 31 July 2019, mining depletion and changes in operating costs, process recoveries and product prices have occurred and warrant a re-statement of Ore Reserves.

The Wickepin mine is an open cut mining operation, and WAK has two processing plants at Ward Rd East Rockingham. The first processing pilot plant installed uses conventional wet processing and spray drying of finished product. This wet processing plant is still in situ under care and maintenance. While the current economic study is based only on the current dry (K99 process) production, WAK plans to restart the wet process after relocation and scale up of the K99 production plant to the Wickepin mine-site. This can potentially add finer paper grades of kaolin to the WAK product range and possibly add value and revenue to the company. Pit optimisations have been carried out using a fixed Kaolin price as advised by WAK. Whittle pit optimisation software was used to identify the preferred pit shell on which each of the pit designs were based. On the basis of the approved pit designs and with the usage of several modifying factors, a total (Proved and Probable) Ore Reserve of 30.5 Mt has been estimated. The Ore Reserve is reported in accordance with the JORC Code and is shown in Table 1.

Table 1: Ore Reserves by JORC classification (1st June 2020)

JORC classification	Tonnes (Mt)	ISO brightness (%)	Yield (%) (<45 µm in size)	In situ Kaolin (Mt)
Proved				
Probable	30.5	83.7	51.8	15.8
Total	**30.5**	**83.7**	**51.8**	**15.8**

All operating costs have been taken from site operating data. The mine design, production schedule and associated financial and other studies have demonstrated that Kaolin can be produced with a mine production life of approximately 31 years. First 20 years is reported as ore reserve and remaining as Life of Mine.

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1 Introduction

1.1 Terms of Reference

WA Kaolin Holdings Pty Ltd (WAK) commissioned CSA Global Pty Ltd (CSA Global) to prepare an Ore Reserve estimate for the Wickepin operation, located in Shire of Wickepin, in the south-eastern wheatbelt of Western Australia, and to report them in accordance with the JORC Code[1].

The deliverables under the scope of work included:

- A statement of Ore Reserves
- Accompanying JORC Table 1 Section 4.

1.2 JORC Code Compliance

The Ore Reserve estimate for the Wickepin operation is reported in accordance with the JORC Code.

1.3 Sources of Information and Reliance on other Experts

CSA Global has completed the scope of work largely based on information provided by WAK. 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.

The report authors are not qualified to comment on any legal, environmental, political, or other issues relating to the status of the tenements, or for any marketing and mining considerations related to the economic viability of the Wickepin deposits.

1.4 Prior Association and Independence

Neither CSA Global, nor the authors of this report, have or have had previously, any material interest in the Wickepin deposits or the mineral properties in which WAK has an interest. CSA Global's relationship with WAK is solely one of professional association between client and independent consultant.

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 associate or employee of CSA Global is, or is intended to be, a director, officer, or other direct employee of WAK.

1.5 Company and Author Summary

1.5.1 CSA Global

This report has been prepared by CSA Global (A member of the ERM group of companies), a privately-owned consulting company that has been operating from Perth, Western Australia for over 30 years.

CSA Global provides multi-disciplinary services to clients in the global resources industry. CSA Global's services include project generation, exploration, resource estimation, project evaluation, development studies, mining operations assistance, and corporate consulting such as valuations and independent

[1] 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).

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 author of this report is:

- Anoop Antu Kachappilly, Senior Mining Engineer for CSA Global.

This report was reviewed and authorised by Karl van Olden, Manager Mining for CSA Global.

1.6 Competent Person Statement

The information that relates to Ore Reserves is based on information compiled by Mr Anoop Antu Kachappilly and reviewed by Mr Karl van Olden, both employees of CSA Global Pty Ltd. Mr van Olden takes overall responsibility for the Report as Competent Person. Mr van Olden is a Fellow of The Australasian Institute of Mining and Metallurgy and has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration, and to the activity he is undertaking, to qualify as Competent Person in terms of the JORC (2012 Edition). The Competent Person, Karl van Olden has reviewed the Ore Reserve statement and given permission for the publication of this information in the form and context within which it appears.

2 Project Location and History

2.1 Project Location and Access

The WA Kaolin Project is situated adjacent to the Western Australian wheatbelt town of Wickepin, approximately 200 km east-southeast of the state capital, Perth. The town and the Project are well serviced by sealed road, and by rail to the industrial deep-water port of Kwinana, in the southern regions of Perth.

A regional map of Wickepin can be seen below in Figure 1.

Figure 1: WA Kaolin Project location and road access

2.2 Tenure

The WA Kaolin Project currently comprises four retention licences under renewal application, and a single mining lease. These tenements are listed in Table 2 and presented in Figure 2.

Table 2: Tenements within the WA Kaolin Project

WA Kaolin Project tenements	Area (Ha)	Expiry
R70/40	2,010.3	09/05/2022
R70/42	1,822.8	09/05/2022
R70/43	2,475.3	09/05/2022
R70/44	2,849.3	09/05/2022
M70/1143	996.3	20/05/2024

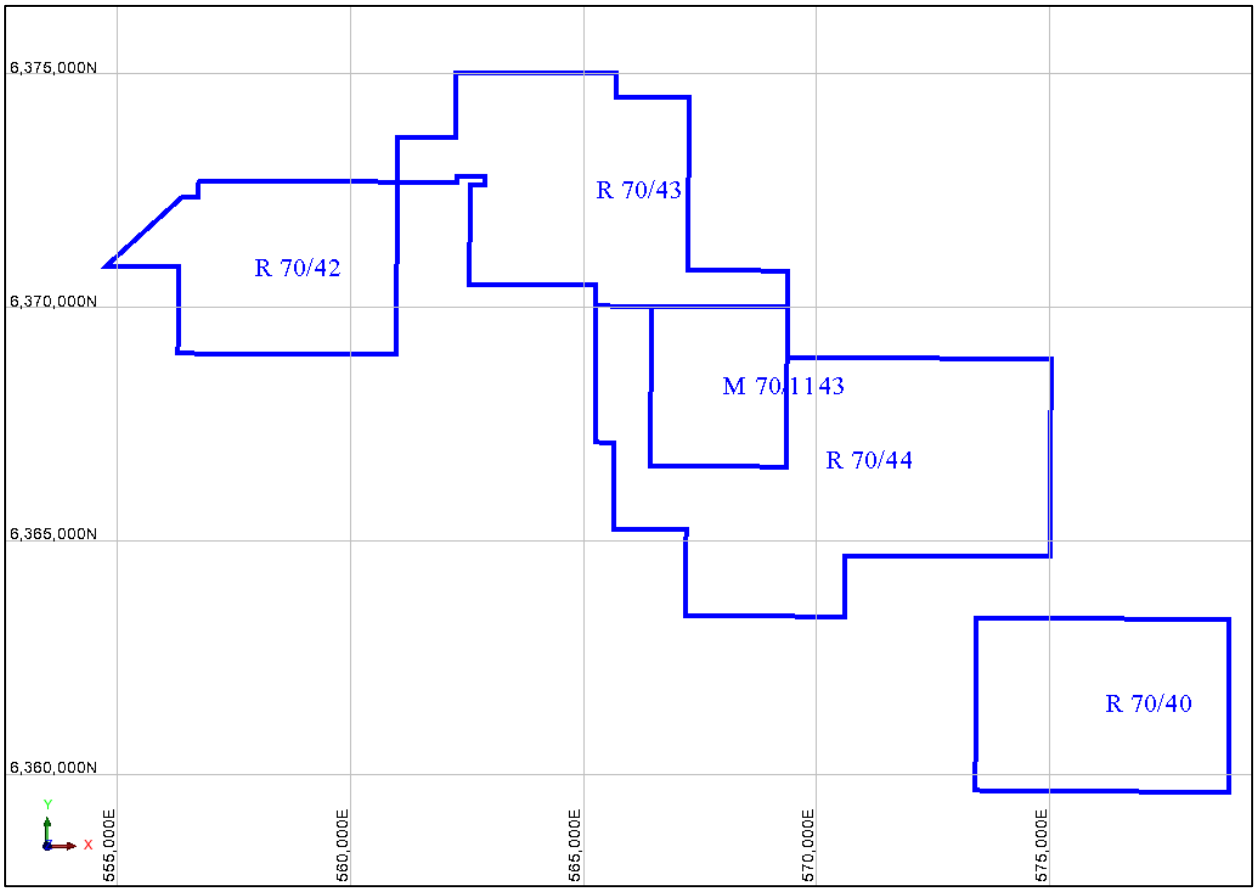


Figure 2: Tenements Wickepin Mine Site

2.3 Infrastructure

Current Project infrastructure is minimal for the WA Kaolin Project, with mining taking place intermittently on a campaign basis, with no substantial permanent infrastructure other than two shallow pits within M70/1143 (Figure 3 and Figure 4). No on-site facilities currently exist, with produced material being hauled by road to a processing facility near the Kwinana Port. ML70/1143 is connected to Wickepin via Sparks Road and Williams – Kondinin Road. As at May 2019, development applications are in place for the de-gritting and processing facility to be relocated to the Wickepin Shire.

Figure 3: Wickepin North Pit

Figure 4: Wickepin South Pit

2.4 Project History

Previously reported exploration history for the WA Kaolin Project indicates the earliest work being undertaken by CRAE (as a subsidiary of Rio Tinto) in 1994. During 1995, Rio Tinto withdrew from the kaolin business and looked to divest their kaolin assets. WAK acquired the Project during this time. WAK conducted a further round of drilling in 2003–2004, which was followed up again by further drilling in 2006. This last round of drilling was conducted as part of a due diligence process by CAEMI (a subsidiary of Vale), while looking for growth opportunities for their kaolin business. Between 2007 and 2010 WAK established and operated a mine on ML70/1143. A range of innovative kaolin processing techniques were developed and a range of kaolin products for paper, ceramics and paint were produced and supplied to customers in China, Korea, Japan and India.

2.5 Previous Ore Reserve Estimates

The previous Ore Reserve estimate for Wickepin was declared on 04 July 2012. The previous Ore Reserve estimate can be seen in Table 3.

Table 3: Wickepin Ore Reserve estimate as at 04 July 2012

Deposit	JORC classification	Tonnes (Mt)
Wickepin	Proved	15.4
	Probable	44.0
Total	**Total**	**59.4**

2.6 Mining Status

The Wickepin Mineral Resources are currently being campaign mined from two pits.

3 Resources

The information in the Mineral Resource Report has been compiled by Dr Matthew Cobb, who is a full-time employee of CSA Global in accordance with JORC 2012 guidelines.

The Mineral Resource for Wickepin Mining Lease M70/1143 has been classified as Measured, Indicated and Inferred based on the guidelines specified in JORC Code[2]. The classification level is based upon an assessment of geological understanding of the deposit, geological and grade continuity, drill hole spacing, quality control results, search and interpolation parameters, and an analysis of available density information. The deposit appears to be of sufficient grade, quantity and coherence to have reasonable prospects for eventual economic extraction.

The Mineral Resources falling within M70/1143 are reported by classification in Table 4, reported for the material fraction below 45 µm.

Table 4: Mineral Resources (<45 µm), M70/1143, May 2019)

Classification	Kaolinized granite (Mt)	ISO brightness (%)	Yield (%)	Kaolin (Mt)
Measured	38.0	82	51	21.3
Indicated	27.7	83	50	13.9
Inferred	43.3	83	49	19.3
Total	**109.1**	**82**	**50**	**54.5**

[2] 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).

4 Ore Reserve Estimation Process

The format of the following description of the Ore Reserve estimation process is based on the requirements of ASX Chapter 5, Paragraph 5.9 requirements applicable to reports of ore reserves for material mining projects, sub-paragraph 5.9.1 relating to the components of a market announcement.

4.1 Material Assumptions from the Ore Reserve Study, including Economic Assumptions

Appropriate studies of the Wickepin Mine have been undertaken by WAK and CSA Global, along with a number of suitably qualified independent consultants and contracting firms. All studies are at a minimum of a Prefeasibility Study level standard. Wickepin is an operating mine currently mining from two separate pits. Currently the mine operates intermittently, and the ore is hauled to Kwinana processing plant via road. The Kwinana processing plant operates at a nominal capacity of 39Ktpa.

Pit optimisations have been carried out using a fixed kaolin price and set of parameters agreed between WA Kaolin and CSA Global. Selling costs include WA Government royalties, Wamco Industries Royalty, plus transporting and insurance costs. The market study done by WAK and Grand View Research is shown in Figure 5 and Figure 6. The Kaolin market estimate and forecast(2014-2025) is shown in Figure 5 and Global average kaolin price prediction shown in Figure 6.

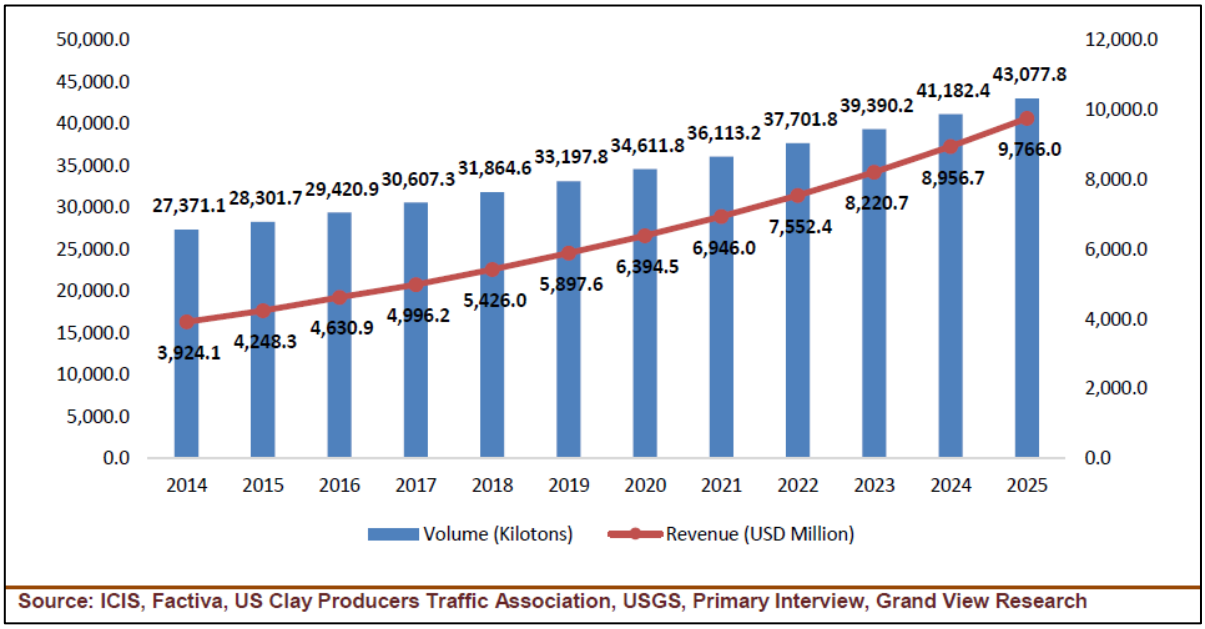


Figure 5: Global Kaolin Market Estimate and Forecast, 2014-2025(Kilotons) (USD Million)

Region	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
North America	144.0	151.0	160.0	160.0	164.8	169.7	171.4	174.0	176.8	179.8	183.0	186.5
Europe	157.5	165.4	173.8	182.5	191.8	201.5	211.9	222.7	234.1	246.0	258.6	271.9
Asia Pacific	130.6	136.5	142.7	149.2	156.0	163.1	170.6	178.4	186.6	195.1	204.1	213.4
CSA	141.1	147.5	154.1	161.1	168.5	176.2	184.2	192.6	201.5	210.7	220.4	230.5
MEA	148.4	155.1	162.1	169.5	177.2	185.3	193.8	202.6	211.9	221.7	231.8	242.5

Source: Primary Research, GVR Analysis

Figure 6: Global average Kaolin prices, by region, 2014-2025(USD/ton)

4.2 Criteria Used for Classification, including Classification of Mineral Resources on which Ore Reserves are Based and Confidence in Modifying Factors

The Mineral Resource has been classified in accordance with guidelines contained in the JORC Code. The Mineral Resource has been classified as Measured, Indicated and Inferred.

This classification is based upon assessment and understanding of the deposit style, geological and grade continuity, drill hole spacing, input data quality, interpolation parameters using ordinary kriging, an assessment of the available density data, and the acknowledgement that the material within the Project is currently being mined and sold as a product.

According to the Author, reasons for the classification are:

- Geological continuity and confidence in the geological model generally are high.
- The nominal spacing of the drilling in the Measured and Indicated areas is 25–100 m and 100–200 m respectively. The drill hole spacing and the estimation quality indicators for these areas are clearly higher than Inferred area, where drill hole spacing exceeds 200 m.

The Ore Reserves have been classified according to the classification of the Mineral Resource and the status of the Modifying Factors. The status of the Modifying Factors is generally considered sufficient to support the classification of Probable Reserves. Indicated and Measured ore is considered for the ore reserve. None of the inferred material is included in the reserve calculation, all the inferred material is reported as waste.

The Kaolin price used in the Ore Reserve estimate has been extrapolated from a five-year market projection. The Ore Reserve estimate has been estimated for the first 20-years of the mine life, which is considered a maximum period for extrapolation of the available market analysis.

Analysis on the main economic assumptions within the cash flow model indicate that the Project produces a positive discounted cash flow (DCF) in terms of all operating costs and the current kaolin price and selected modifying factors.

4.3 Mining Method Selected and Other Mining Assumptions, including Mine Recovery Factors and Mining Dilution Factors

4.3.1 Mining Method & Assumptions

Open cut mining using conventional load and haul open pit mining equipment, operating on 4 m benches and 2 m flitches to extract ore and waste is appropriate for the WA Kaolin deposits. The use of 40 t/60 t class hydraulic excavators and 40 t/50 t articulated haul trucks is appropriate for the style of deposit. The small mining fleet will allow to mine the ore very selectively to achieve the required material movement. The ore is very visible and flat lying, the proposed mining fleet can mine with negligible dilution.

There is no drill and blast expected, the entire deposit is expected to be free dig. The deposit will be mined out as small individual pits to allow for the waste management, tails disposal and rehabilitation activities.

Current knowledge indicates that in-pit road conditions will provide good trafficability and there is no presence of ground water above the proposed mining depth. Small articulated trucks were selected as this will give flexibility in the tight working conditions and steep ramps, and it also has the ability to run on extreme weather conditions. The low production rate can be met by the small mining fleet.

As the depth of mining is around 20-40 m, the deposit can be mined as small pits (Approx. size 200 m X 200 m) and progressively backfilled as the mining progress to the next pit. Mining locations are prioritised based on current mining approvals and landowner agreements.

The overburden from the initial pit stages will be stored on surface until sufficient volume is available in the mine void to start in-pit overburden dumping. A suitable location for the surface waste dump will be selected to ensure haulage distances and costs (both during initial overburden removal and then subsequent rehandle) are kept to a minimum. Initial tailings will be stored on surface until sufficient volume exists in mined pits to start in-pit tailings storage. When adequate mine void has been established, the tailings will be disposed in-pit, which will aid the long term mine rehabilitation program. The tails are the quartz that is removed from the ore, with some residual kaolin. The haul trucks bringing the ore to the plant will be used to haul the tails back to the mine. The tails will be low in moisture and will be easy for back filling, pushing and contouring.

Pit ramps have been designed with the following characteristics:

- The dual lane ramps are 16.7 m wide to allow for safe passage of the selected trucks with an allowance for a bund wall on the open side of the ramp and a drain on the inner side.
- The single lane ramps are 10.4 m wide can be used for mining last benches and good buy cuts.
- Gradient of 1:7 is practicable with the proposed mining fleet.
- Ramps exit the pit crest in the direction of both the ROM and waste rock dumps.

The deposit will be mined as several temporary pits (around 200 m X 200 m). Therefore, the ramp has only been included in the final design. The temporary ramps can be used and reclaimed as the mining progresses. Contractors must allocate enough mining width to establish the temporary ramps. A typical dual ramp design is shown in Figure 7.

Pits have been designed to have a minimum mining width of 20 m.

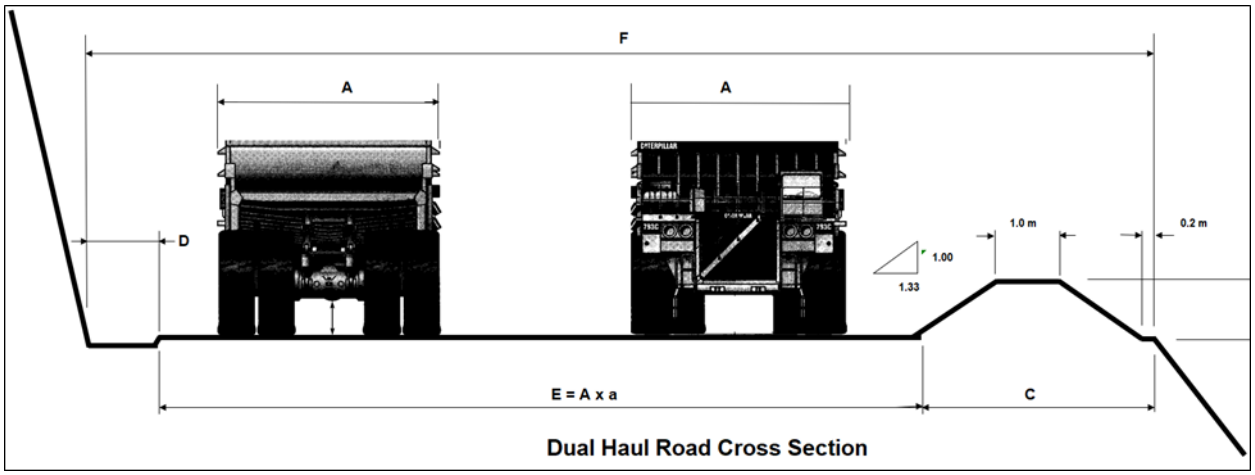


Figure 7: Dual lane ramp configuration

4.3.2 Geotechnical Parameters

Wall design terminology used in the current report is presented in Figure 8. More detailed descriptions of slope parameter terminology are explained below;

- Overall wall angle: Angle of complete slope from toe to crest;
- Berm width: horizontal width of bench (often called catch bench/berm or safety bench/berm) that remains between individual bench slopes;
- Bench slope angle: The angle from horizontal of an individual bench (often called batter slope) slope;
- Bench height: the vertical distance between individual berms; and

- Inter-ramp angle is the slope angle between haul road locations-angle between toe to toe.

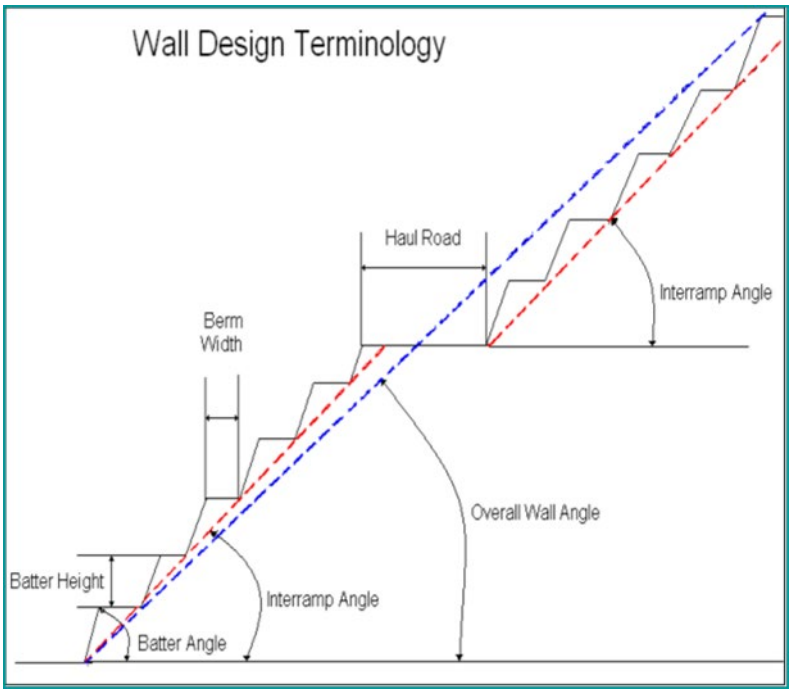


Figure 8: Wall Design Terminology

Geotechnical analysis has been carried out using actual site parameters. According to WA Kaolin, due to the small size and shallow nature of pits, no method of ground control other than regular visual examination of the batters and berms will be carried out. The weathered granite and existing batter angle in the current pit have proven over the last 13 years to be very stable as there is no signs of cracking, slumping and collapse. Some material is washed away due to the rain, and even the water ponding in the pit didn't undercut the wall. A batter angle of 45 degrees with berms of 2 m width every 4 m vertical depth is recommended. An overall slope angle was then estimated based on these parameters (34.6 degrees).

4.3.3 Mining Dilution and Recovery

Mining dilution is assumed 0% due to the clear visual ore contact and thick flat lying massive orebody. Also, selective mining is possible with the proposed mining fleet. 98% mining recovery (2% ore loss) has been based on operational findings. The recovery and dilution are considered reasonable due to the nature of the deposit and selected mining fleet.

4.4 Processing Method Selected and Other Processing Assumptions, including Recovery Factors Applied and Allowances made for Deleterious Elements

Between 2004 and 2014 WA Kaolin established and operated a mine on ML70/1143, and a Pilot Production Facility for kaolin products at Lot 3, Ward Road, East Rockingham Kwinana. A range of innovative kaolin processing techniques were developed and proven in this initial stage of the project and a range of kaolin products for paper, ceramics and paint were produced and supplied to customers in China, Korea, Japan and India. The end result of this work was a wet process to generate high grade kaolin products. WA Kaolin advise that the proposed commercial development of this process did not proceed due to commercial reasons. In 2015, after lab scale trials, WA Kaolin developed a small-scale pilot plant in Dandenong, Melbourne and processed some 500 tonnes of ore to prove the K99 concept. In 2016 the pilot was upscaled by approximately 30 times at Kwinana and the plant was officially opened in November 2016. WA Kaolin engaged BDB Process Pty Ltd to review and generate an expert opinion on the current Kwinana Plant and future scale up processing facility at Wickepin.

4.4.1 K99 Dry Process

K99 is a dry process for the beneficiation of kaolin-containing ore to a high-grade kaolin product suitable for use in processes such as paper manufacture, ceramics and paint. The process consists of the following key steps:

- Whole-of-feed drying;
- Size reduction;
- Dry attritioning;
- Beneficiation;
- Product packaging; and
- Tailing disposal (dry).

This a relatively simple process based on the physical beneficiation of ore, where the beneficiation is based almost entirely on particle size discrimination. Consequently, the process circuit is not complex and involves a limited number of unit operations. Further, there are no recirculating loads of any description in the circuit. The implications of this for design and operation of the plant are material. Being a simple plug flow design limits the potential for unforeseen process behaviour and simplifies the design process. Inherent design and operational risks are necessarily lower than for more complex processes. BDB reviewed the SCADA logs for a number of operational cycles and was able to observe that stable production was established very rapidly (generally less than 30 minutes) during start-up. Shut down was achieved in a shorter time frame. This demonstrated behaviour reinforces the view that K99 is a relatively simple and low risk process. The SCADA logs also demonstrated that K99, once operating, was relatively stable, particularly when compared to other, more complex, mineral processing circuits.

4.4.2 Existing Process Facilities

The existing process facilities are located at the same site as the earlier pilot production facilities (Lot 3, Ward Road, East Rockingham Kwinana) and K99 has been developed using those facilities as a base. K99 has been operational at the site since April 2017 and production records for the intervening period have been provided to BDB. Further improvements were reportedly made to K99 over this period such that the recent production periods (from July 2018) are more reflective of likely future performance than earlier periods.

The core of the IP and heart of the proprietary process developed by WA Kaolin is reported by the Client to be in the dry attritioning and beneficiation sections of the plant. BDB's observations of the Kwinana Plant support this claim.

The remaining sections of the plant (whole of ore drying, size reduction, product packaging, and tailings disposal) were observed to be achieved using conventional process units readily available from established equipment suppliers and well understood in terms of capital construction, operational and ongoing maintenance requirements.

Due to the apparent sensitivity and value of the IP developed by WA Kaolin and embodied in K99, WA Kaolin first enquired as to the potential to undertake a review of the operation and form a sufficiently informed opinion as to its characteristics, without the associated IP being disclosed. BDB formed the view that this could be achieved through examination of the operating performance and outcomes associated with K99 as demonstrated by the operating records of the facility.

4.4.3 WICKEPIN Project

WA Kaolin is the holder of Mining Lease M70/1143 which is located east of Wickepin in the southern wheat-belt of Western Australia. The company has operated a small-scale kaolin mine on the lease to provide test ore samples to the Kwinana Plant.

The Project will have an initial design treatment capacity of 517,200 tpa ore (dry), producing 200,000 tpa (1% moisture) of kaolin product. The initial design will allow for further expansion of the K99 facility to a throughput of at least 1,034,500 tpa ore (dry), producing 400,000 tpa (1% moisture) of kaolin products and additional provision for potential further treatment via a wet process, still under development. The product will be transported using existing transport corridors to Kwinana for direct loading onto ships for export.

The Project, as currently envisaged will be a process replica of the current Kwinana Plant, expanded by a factor of between 4 and 5. This expansion will be achieved by establishing one feed, drying and product collection system capable of 26tph (product) and two beneficiation processing modules rated for 13 tph (product). Each module represents an increase in production, compared to that achieved in the Kwinana Plant, by a factor of just over 2.

Mining will be undertaken by a suitable contractor and ore delivered to the Run of Mine (ROM) stockpile. From the ROM stockpile, ore will be delivered to each module by Front End Loader (FEL) through a static grizzly and primary crusher. Crusher product will be directed by conveyor to a rotary dryer. The dryer reduces the moisture in the ore from a design of 12% to <1% to facilitate further processing. Drier product is transferred to the modular attritioning and beneficiation circuit, where kaolin is separated from the gangue (quartz) and graded by size to the various product streams.

Final product will be directed to a vendor package bagging plant, batch sampled and packaged in 600kg and 1.2-tonne bulk bags. As required, the product will be transported to Fremantle port using existing transport corridors and contract freight specialists.

Routine breakdown and scheduled maintenance will be undertaken by a permanent maintenance workforce, but specialist tasks such as drier relines will be undertaken by specialist external teams.

Site infrastructure will incorporate an administration building, staff amenities, laboratory, store and plant maintenance workshop. Additional infrastructure will include diesel and gas storage.

Power and water for the project will be supplied from a third-party service provider (BOOM diesel-fired station on site) and scheme supplies respectively. Telecommunications will be provided by a third-party provider.

4.4.4 Scale-up Requirements

The Project involves a scale-up factor from the Kwinana Plant of between 4 and 5, this will be achieved through the construction of two beneficiation processing modules, each involving a scale-up of only just over 2. The rest of the process involves a scale-up factor of about 4. Scale-up of this magnitude could represent a significant risk to the Project, particularly if it involved a complex flow sheet or the use of equipment larger than existing contemporary experience was able to support.

In this case of this project there are several reasons why the risk associated with this scale-up are considered by BDB to be low:

- As discussed, K99 is relatively simple, involving no recirculating loads and a limited number of unit operations;
- The design ore treatment rate for each beneficiation module is 258,600 tpa or 33 tph ore (dry) and for the rest of the circuit 517,200 tpa or 65.6 tph ore (dry). The major equipment required for a treatment rate of this magnitude is well within contemporary established practice for all the

unit operations represented in the flow sheet, save for the proprietary technology inherent in K99;

- The equipment required is also well within the capacity of the domestic mineral processing services sector in terms of both design and construction; and
- Similarly, operating at this scale should involve no inherent problems that could represent particular risk to the Project, other than the normal risks associated with establishing any new operation.

Based on the above, there is risk associated with the scale-up of K99 for the Project and it is focussed on the scale up of the attritioning and separation sections of the process that are associated with the IP claimed by WA Kaolin. This risk may be mitigated by applying sound design principles during the final design phase and implementation phase of the Project.

Average metallurgical recovery of 87%(dry) has been used in all work relating to the estimation of Ore Reserves. Based on operational data, this recovery is considered reasonable. The simplified process flow chart is shown in Figure 9.

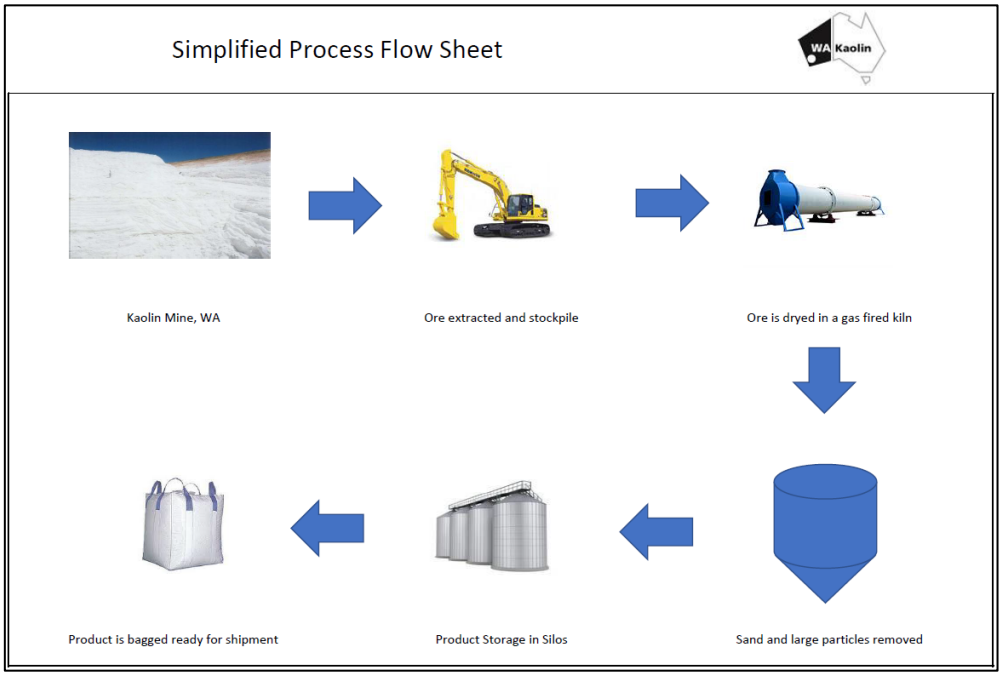


Figure 9: Simplified Process Flow Chart

4.5 Basis of Cut-Off Grade Applied

The cut-off between ore and waste has been determined by net value per block. A total block revenue is estimated for each block within the block model, accounting for total kaolin recovered to a payable product as well as the kaolin product price. Total block costs are estimated for all operating costs to the point of sale including processing, product haulage, crusher feed, general and administration, ore differential, sustaining capital, selling costs, and grade control costs. The total block revenue minus the total block costs estimate the net value per block. Any block returning a positive net value has been defined as “ore” for the purposes of pit design and production scheduling. The blocks with potential for inclusion into Ore Reserves first had to achieve a block grade greater than or equal to the marginal cut-off grade of each block as well as a resource category status of Measured or Indicated. If this material was within the approved pit design, this was defined as being “processable” and thus was permitted for

inclusion within the Ore Reserves. Minimum brightness of 75% is used to classify the ore into reserve as it is considered as the minimum brightness required for the commercial product.

4.6 Estimation Methodology – Pit Optimisation

Whittle™ software has been used to generate a series of economic pit shells for this deposit using the Mineral Resource block model and input parameters as agreed by WA Kaolin.

4.6.1 Mining Block Model

The optimisation has been conducted using the Mineral Resource model "wak_20190515.mdl", as prepared by Matthew Cobb of CSA Global. Table 5 shows the Mineral Resource block model details used in the pit optimisations.

Table 5: Mineral Resource block model details

Parameter	Minimum	Maximum
Easting (X)	553,500	573,300
Northing (Y)	6,363,700	6,375,200
RL (Z)	200.0	400.0
Block size (X)	25.00	100.00
Block size (Y)	25.00	100.00
Block size (Z)	0.50	2.00
Rotation	0.00	

Prior to optimisation, the model was modified to make it suitable for application within the Whittle™ software:

- Any absent or negative geological or physical values were resolved
- Unnecessary geological flags or attributes were removed
- Different rock type codes were created to distinguish ore from waste within the optimisation
- Mining costs were estimated for each block within the block model
- Mining recoveries, dilution and processing recoveries are coded into the mining model.
- Mining cost and other necessary attributes are coded to the model to use in Whittle, Surpac and Minesched.

Table 6 shows the material type attribute "mclass" assigned within the block model to separate the Inferred, Indicated and measured.

Table 6: Whittle Material Code Classification

Material	Class	Whittle Code
Mineralised Zone	Measured	MEHG
	Indicated	IDHG
	Inferred	IFHG
Waste	Waste	WAST

The mining block model "wak_bm_mining_20190717.mdl" was created to use for the pit optimisation. After importing the model into Whittle™ software, cross-checks were performed, and these confirmed that the mining block quantities matched those of the original Mineral Resource model.

4.6.2 Optimisation Parameters

A list of financial and physical parameters was prepared by CSA Global in conjunction with WA Kaolin. These were used for the optimisation of the Wickepin deposit. Most of the Inputs used for the pit optimisations have been based on site operating data provided by WAK. Only Indicated and Measured Mineral Resources were used for the pit optimisation.

Whittle pit optimisation software has been used to identify the preferred pit shells on which each of the pit designs were based. The optimisations were run on the block models, which was generated from the reported Mineral Resource models. The pit shells were chosen on revenue factors less than 1.0 on the basis of highest Discounted Cashflow (DCF).

Financial parameters: All monetary values are in Australian dollars (A$). Capital and operating costs were estimated in A$. Commodity reference prices were provided in United States Dollars (US$), an exchange rate of 0.71US$:1A$ has been used to convert to A$. Kaolin pricing was supplied by WAK as AU$244.63/t. Discount rate of 10% is applied. Financial parameters assumed is shown in Table 7.

Table 7: Financial Parameters

Financial Parameter Input	Unit	Value
Currency	A$	A$
Discount rate	%	10
Price Kaolin	A$/dt Kaolin	244.64
Exchange Rate		0.71

Mining Assumption: Mining dilution of 0% and mining recovery of 98% has been applied. Mining costs were estimated according to current industry standard and CSA Global data base. Average mining cost of A$4.51/bcm has applied for both waste and ore to load and haul from the in-situ location to the waste dump/backfill area and ROM pad respectively. Unit mining costs include all contractor fixed monthly/annual costs (equipment charges, staffing costs), but excludes mobilisation and demobilisation. Mobilisation and demobilisation costs are considered negligible due to the small mining fleet and the easily accessible mining location from Perth. The mining cost include equipment maintenance cost, fuel expenses, ROM management, Ore rehandling, site management, supervision, operational & administrative support, road maintenance, signage, road delineation, batter trimming, floor maintenance, pit dewatering, clearing & grubbing activities, tails management and rehabilitation. Table 8 shows the mining inputs used in the pit optimisations.

Table 8: Mining Inputs

Item	Unit	Value
Mining recovery	%	98
Mining dilution	%	0
Minimum mining width	M	20.0
Minimum cutback width	M	30.0
Mining Cost	A$/bcm	4.51

Geotechnical parameters: A batter angle of 45 degrees with berms of 2 m width every 4 m vertical depth has selected. An overall slope angle was then estimated as 34.6 degrees. Geotechnical parameters used in the optimisation are shown in Table 9.

Table 9: Geotechnical Assumptions

Geotechnical Assumptions		
Bearing 0-360		
Vertical depth	40	m
Batter angle	45	degrees
Berm width	2	m
Bench Height	4	m
Ramp allowances	0	pass
Ramp width	16.70	m
Inter ramp angle	33.69	degrees
Overall angle	34.59	degrees

Processing Assumptions: Processing cost were applied based on the recommendation from WA Kaolin and the industry expert BDB Process Pty Ltd. Processing recovery of 87% is applied based on the recovery demonstrated by K99 at Kwinana Plant which has been confirmed by BDB Process Consultants. Processing costs include WA Government royalty of 5% with 50% of Ex works delivery percentage and Wamco Industries Royalty. Wamco royalty is calculated as per the current agreement between WA Kaolin and Wamco Industries.

Table 10: Processing Assumptions

Item	Unit	Value
Govt Royalty	A$/dt	3.33
WIUT Royalty	A$/dt	1.68
Total Royalties	**A$/dt**	**5.01**
Employment	A$/dt	10.40
Power	A$/dt	4.70
Gas	A$/dt	8.68
Consumables	A$/dt	0.05
Reagents	A$/dt	0.00
Maintenance	A$/dt	0.90
Contingency	A$/dt	1.19
Processing	**A$/dt**	**25.92**
Tenement Rents	A$/dt	0.27
Employment-Indirect	A$/dt	2.47
Admin	A$/dt	3.25
Sales and Marketing	A$/dt	4.13
Others	A$/dt	0.09
General & Administration Costs	**A$/dt**	**10.21**
Lab & QA	**A$/dt**	**0.18**
R&D	**A$/dt**	**1.05**
Total Processing Cost	**A$/dt**	**42.36**
Processing Recovery	**%**	**87**

Selling Cost: Transportation, packaging, storage and ocean freight costs are estimated as A$104.28/dry tonne. A detailed description is shown in Table 11.

Table 11: Selling Cost

ITEM	Unit	Price A$
Transport product to port (A$/t)	dt	42.42
Packaging Cost (Bulk Bags) (A$/t)	dt	16.16
Storage and Transport Equipment Leases (A$/t)	dt	0.30
EDN, PRA, Docs (A$/t)	dt	2.72
Ocean Freight costs - (US$/t)	dt	42.68
Total		**104.28**

4.6.3 Optimisation Results

Using the parameters described in Section 4.6.2 of this report, a set of nested pit shells were produced by the Whittle optimisation software. The pit shells were used to determine trends in mineralisation and/or higher-grade areas which offer a best-case scenario for grade and DCF.

In calculating the DCF, the Whittle™ software considers two mine scheduling scenarios. The best case DCF assumes that shells are mined sequentially, so the highest value (lowest cash cost) material is recovered first. The worst case DCF assumes that each bench is fully mined before drop-cutting to the next bench.

Neither scenario is likely to provide a practical mining solution. Pits are usually staged, with several cutbacks which results in a DCF somewhere between the best and worst cases. The "Ideal" DCF presented in these optimisation results is a 60/40 ratio weighted average of the two DCFs, favouring the worst case.

Figure 10 and Figure 11 demonstrate the tonnages mined, the Ideal DCF, undiscounted cash flow, strip ratios, and cash costs for the various optimisation pit shells. Table 12 summarises the optimisation results.

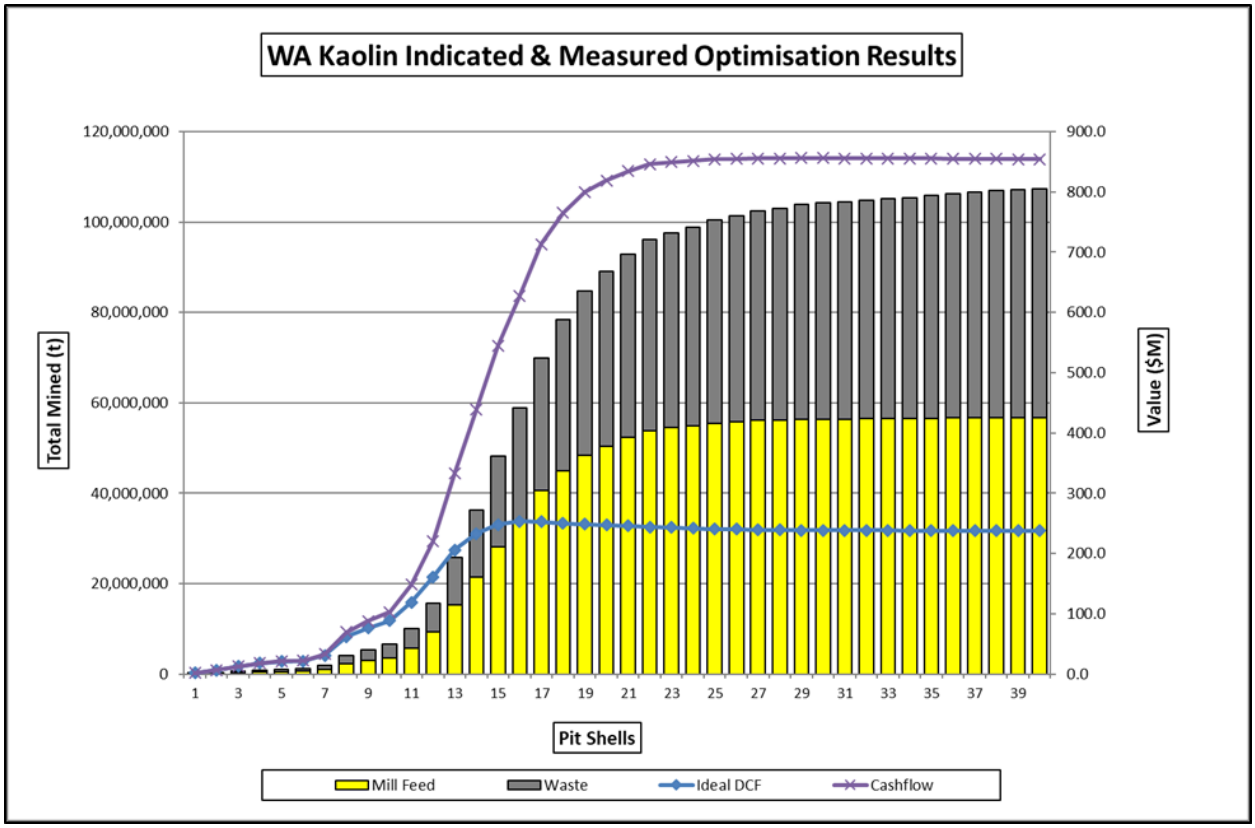


Figure 10: Indicated & Measured Optimisation Results

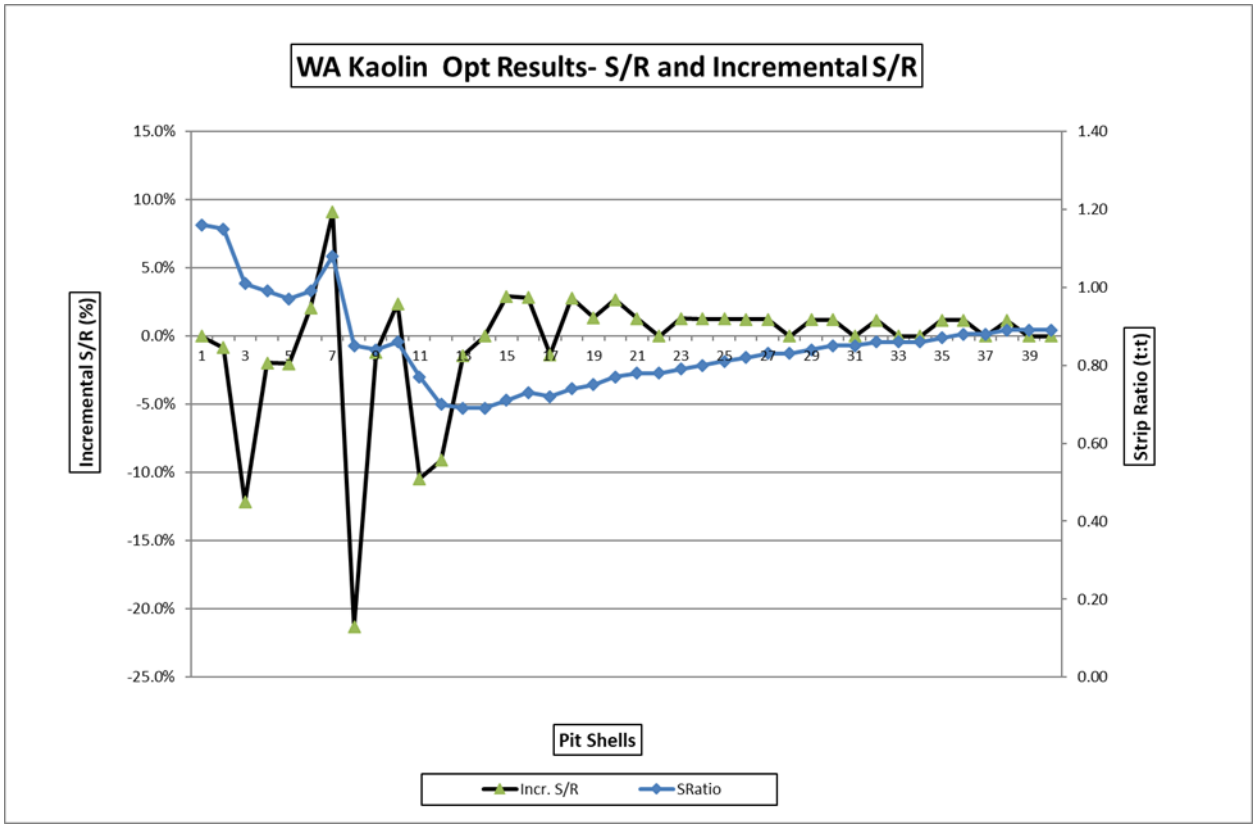


Figure 11: Optimisation shell strip ratios

Table 12: WA Kaolin optimisation results summary

Item	Unit	Outputs			
Shell	no.	16	21	22	29
Revenue Factor		0.87	0.92	0.93	1
Total Mined	Mt	58.8	92.9	96.1	103.8
Strip Ratio	t:t	0.73	0.78	0.78	0.84
ROM Feed	Mt	33.9	52.3	53.9	56.3
ROM Feed Yield	%	53.1	51.1	50.9	50.6
Plant Recovery	%	87	87	87	87
Kaolin Produced	dt	15.7	23.3	23.9	24.8
Operating Costs	A$M	3209.5	4856.4	4992.0	5211.3
Revenue	A$M	3837.0	5691.2	5838.0	6067.4
Cash Flow	A$M	627.5	834.7	845.8	856.0
Worst DCF	A$M	238.3	217.3	213.8	204.1
Best DCF	A$M	275.3	289.2	289.6	289.9
Ideal DCF	A$M	253.1	246.1	244.1	238.4
Operating Cash Cost	A$/t Kaolin	204.6	208.7	209.2	210.1
Mine Life	Years	22.6	34.9	35.9	37.6

Note: The pit optimisations and DCF analysis was completed using a flat 1.5 Mtpa throughput rate, whereas the detailed production schedule utilises a variable throughput rate. This results in a variation between the mine life outlined from the pit shells above and the mine life of the production schedule. The financial values in the optimisation results do not include capital expenditure.

Shell 16 shows the optimal pit shell based on the Ideal DCF and the strip ratio. The pit shell is at revenue factor of 0.87. However, the operating cash cost for revenue factor 0.92, 0.93 and 1.0 is close to the ideal DCF pit. Due to the high number of blocks, the block model had to blocked up 2 times on X/Y direction and 6 times on Z direction to use in the Whittle software. Due to the big blocks and shallow nature of the deposit Whittle couldn't project the recommended overall slope angle (34.59 degrees), it projected 90-degree wall instead. This resulted in an optimistic best DCF pit with low strip ratio. However, pit design took the consideration of geotechnical recommendation. This was achieved by referencing these 4 selected pit shells. The final pit design came close to revenue factor 0.92 and 0.93 pits with a mine life about 35 years. It also maximises the recovery of the currently defined Indicated and Measured Mineral Resource.

The grade tonnage graphs based on brightness is shown in Figure 12 and the graph based on yield is shown in Figure 13.

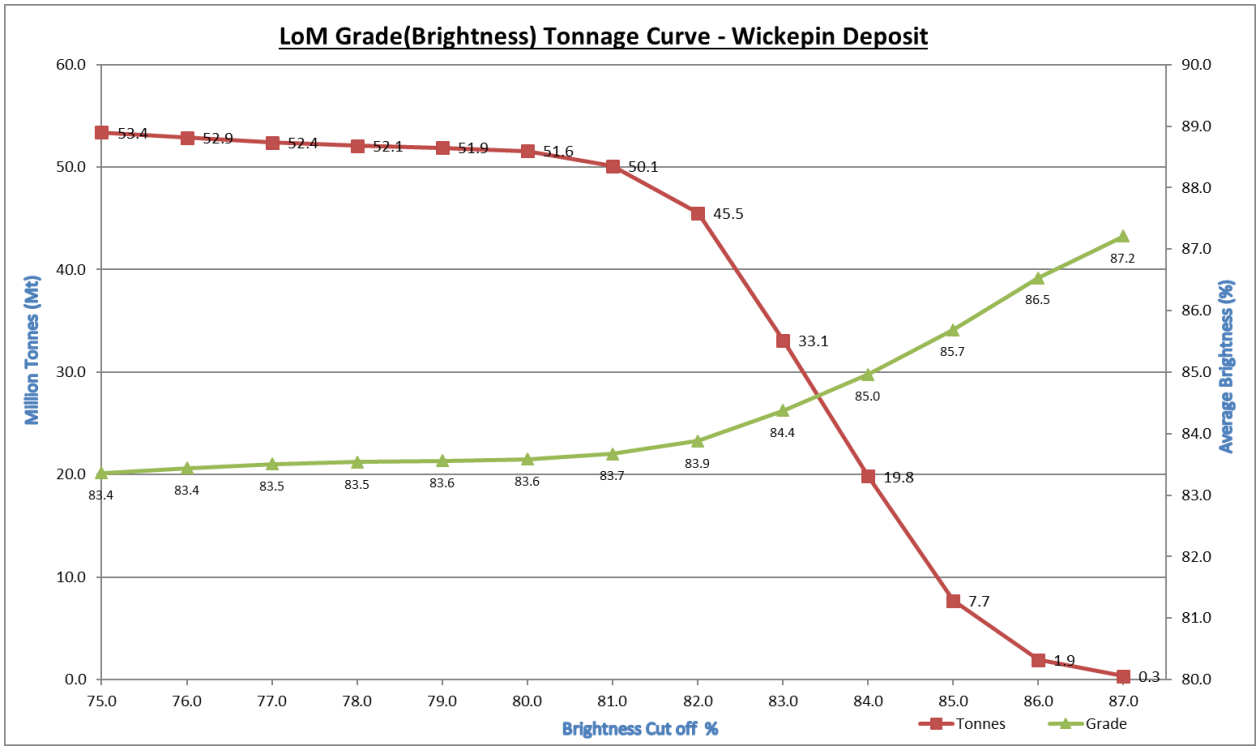


Figure 12: LoM Grade(on Brightness) Tonnage Graph

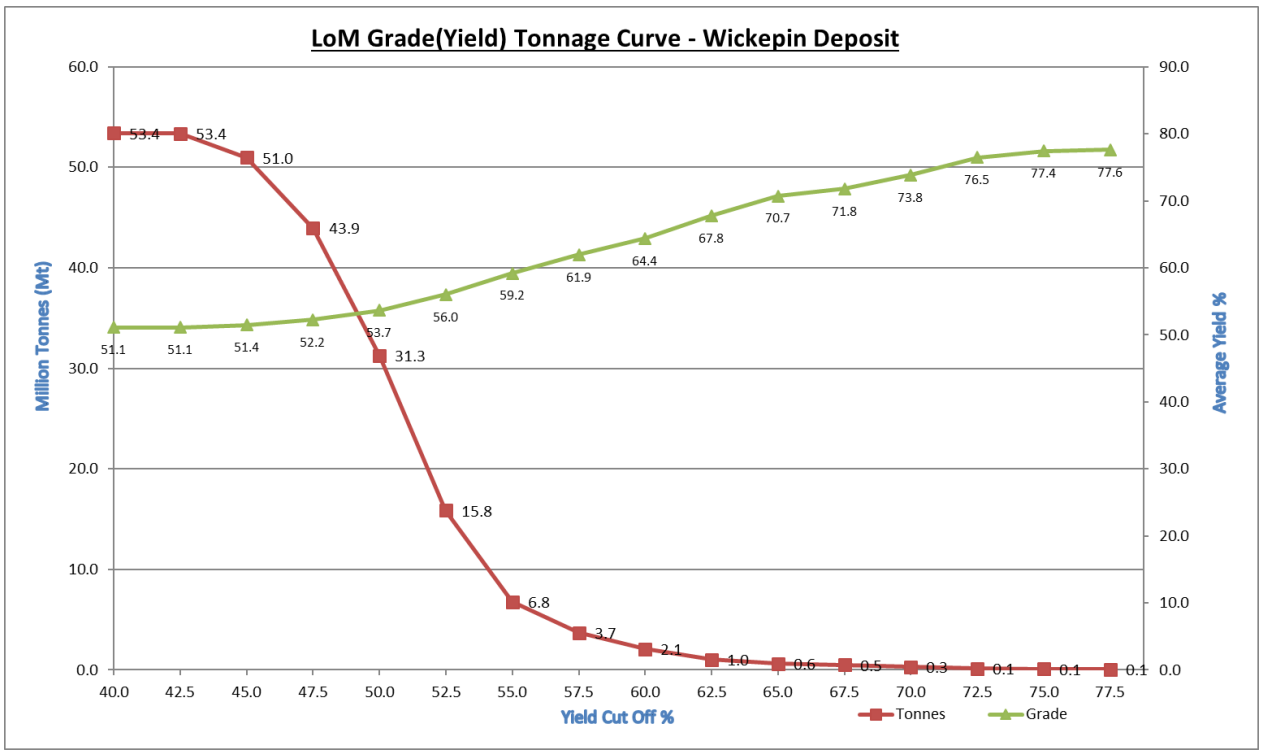


Figure 13: LoM Grade(on Yield) Tonnage Graph

4.7 Pit Design, Mining Schedule, Cost Model and Sensitivity Checks

4.7.1 Pit Design

Detailed pit designs were completed on updated mining models which form part of the Ore Reserve estimation. The pit design had to achieve a positive cash flow result in order to move into Ore Reserve status. The pit designs were completed with collaboration between WAK and CSA Global staff.

As the Whittle outputs don't project the proposed wall angle, more realistic pit design has been prepared based on the results of the optimisations and incorporating appropriate wall angles, geotechnical berms, minimum mining widths, and access ramps appropriate for the equipment selected. An attribute was created in the block model (nsr_value) to calculate the block value (revenue-selling cost-processing cost). For a block is to be considered as ore, a positive nsr_value is required. Throughout the design process, the pit was checked with the block model and selected whittle shells. The pit design volumes align with the Revenue Factor 0.92 and 0.93 pits.

The pit inventory within the pit designs has been estimated by intersecting the pit design with the topographical surface within the mining block models. A topographic surface was built for the WA Kaolin Project using the drill hole collar data, and then extended horizontally where required to ensure coverage and appropriate coding of the subsequent block model. Latest survey pickups provided by WAK were used to apply the depletion from previous mining activity. The mining dilution and ore loss factors were applied against the in-situ numbers resulting from this process.

Tenement boundaries and other infrastructure files were sourced from WA Kaolin and mining is within the tenement. Final pit design is shown in Figure 14. The Measured and Indicated ore is shown in Figure 15.

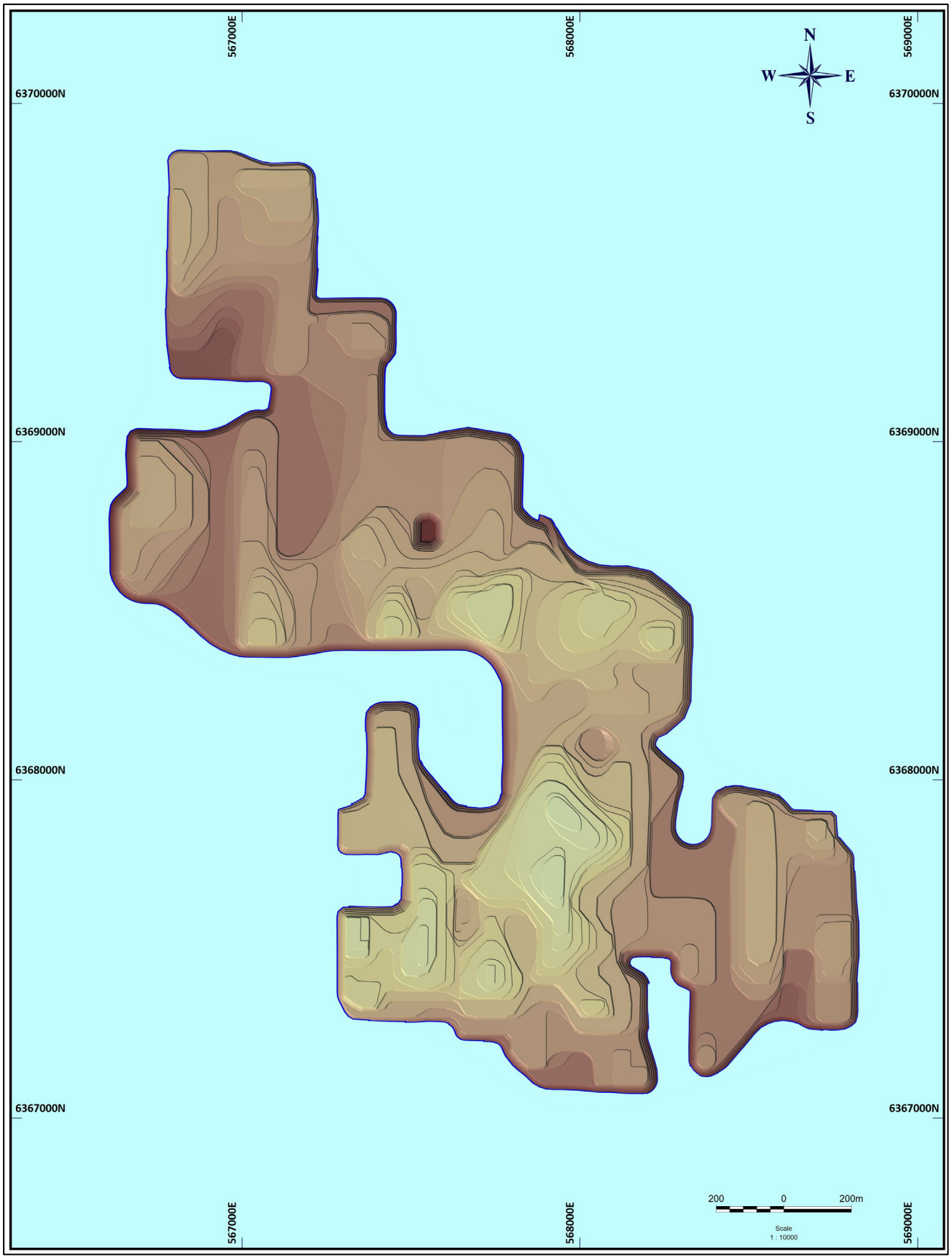


Figure 14: Final pit Design

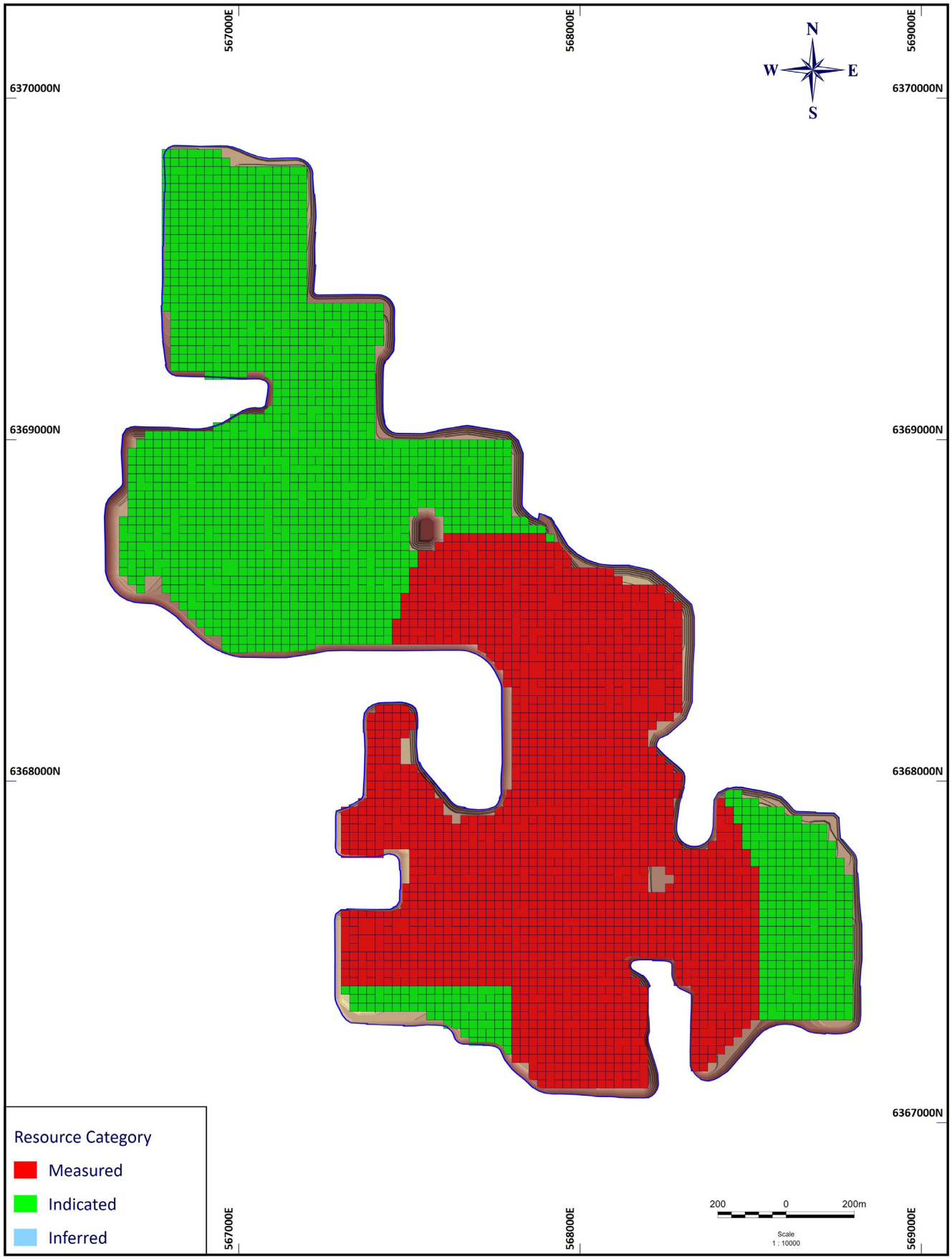


Figure 15: Measured and Indicated Ore within the Final Pit

4.7.2 Pit Design Comparison with Whittle Optimisation

Table 13 compares the pit inventories with the optimisation results. Only Measured and Indicated Mineral Resources have been compared due to the Whittle™ optimisations targeting only these resource classifications.

Table 13: Comparison of final pit design with optimisation results

	Total mined	Waste	Measured and Indicated ROM feed	Yield	Brightness
	(t)	(t)	(t)	%	%
Final pit designs	96,282,938	42,565,782	53,717,156	51.19	83
RF 0.92 optimisation	92,918,781	40,601,817	52,316,964	51.11	83
RF 0.93 optimisation	96,127,125	42,257,136	53,869,989	50.92	83
Variance with RF 0.92	**3.6%**	**4.8%**	**2.7%**	**0.2%**	**0.0%**
Variance with RF 0.93	**0.2%**	**0.7%**	**-0.3%**	**0.5%**	**0.0%**

4.7.3 LoM Schedule

MineSched™ software was used to produce the following schedules on a yearly & monthly basis. Mining rates were adjusted to suit the WA Kaolin's proposed processing schedule as in Table 14. ROM feed in the production schedule includes Measured and Indicated material only. Inferred ore has been treated as waste in the schedule (Inferred ore is approximately 0.88% of total movement).

Table 14: Processing ramp up schedule

	Unit	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8
		Kwinana Plant	Wickepin Plant	Wickepin Plant	Wickepin Plant	Wickepin Plant	Wickepin Plant	Wickepin Plant	Wickepin Plant
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 7	Year 9	Year 11
Ave Hrs/Day	Hours	16	24	24	24	24	24	24	24
Ave Days/Week	Days	5	5	7	7	7	7	7	7
Plant Utilization	%	90%	90%	95%	95%	95%	95%	95%	95%
Kaolin Production Rate	**t/h**	**5**	**25**	**25**	**43**	**50**	**75**	**100**	**130**

Plant recovery of 87%, mining recovery of 98% and mining dilution of 0% is applied in the schedule. Ideally High Grade (HG) zones must be prioritised as per the Whittle optimisation. However, due to the mining approval and landowner agreements Lot 13898 and Lot 14431 were prioritised in the schedule. The Lot numbers are shown in Figure 16. Cutbacks are not considered due to the shallow nature of the deposit and also the mining void is required for waste and tails disposal. The final pit is divided into two section

South and North. The final pit was sub-divided into strips of 200 m X 200 m wide to schedule the proposed mining locations. Each strip will be mined out with temporary ramps. Mined void will be used for waste and tails disposal when progressing to the next strip.

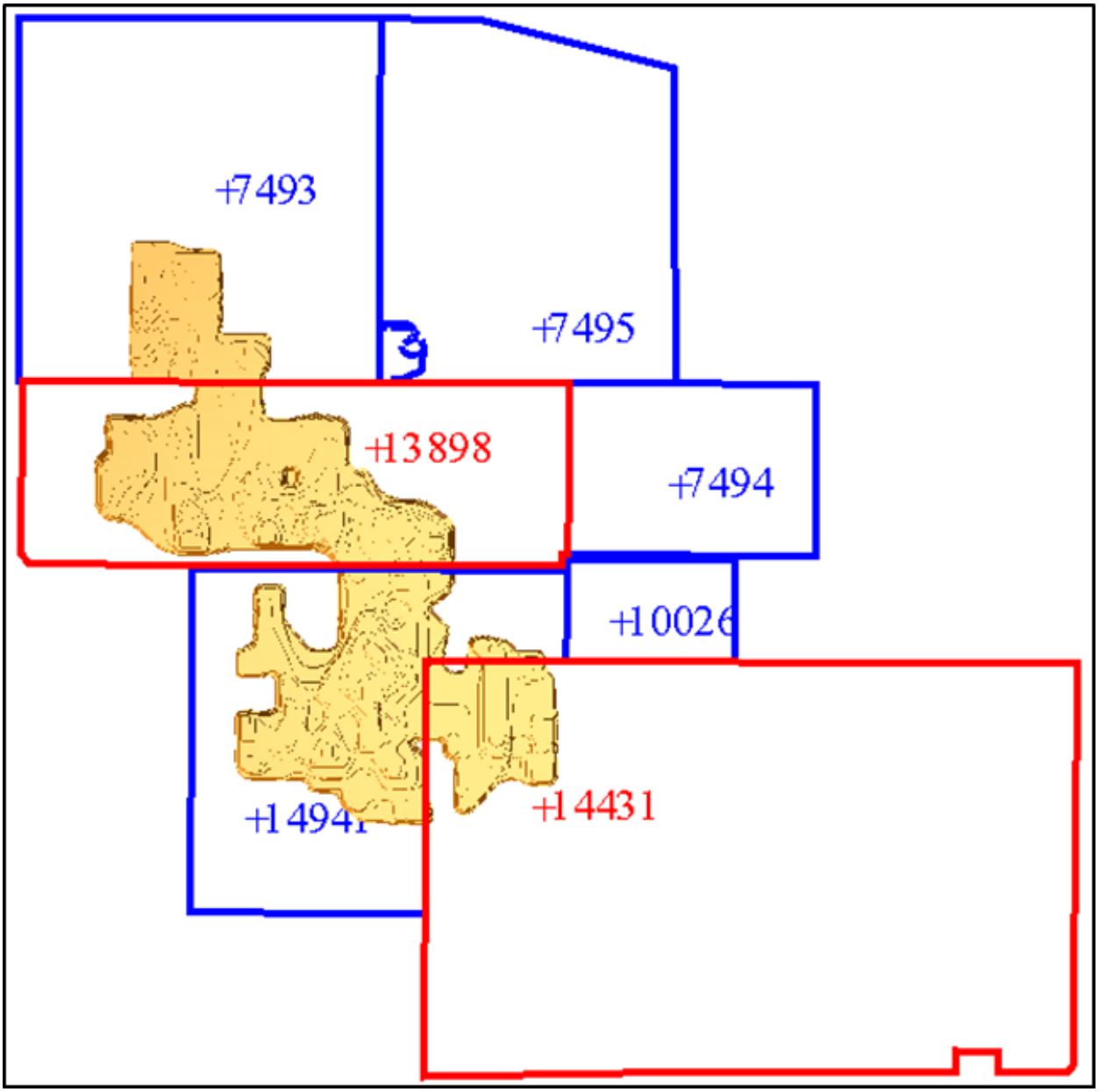


Figure 16 Lot Numbers and Final Pit Design

Mining commences in both the North Pit and South Pit. Mining in the North Pit is prioritised as it is close to the plant. A 60/40 split is used between North and South pits. Figure 17 shows the yearly individual pit movements.

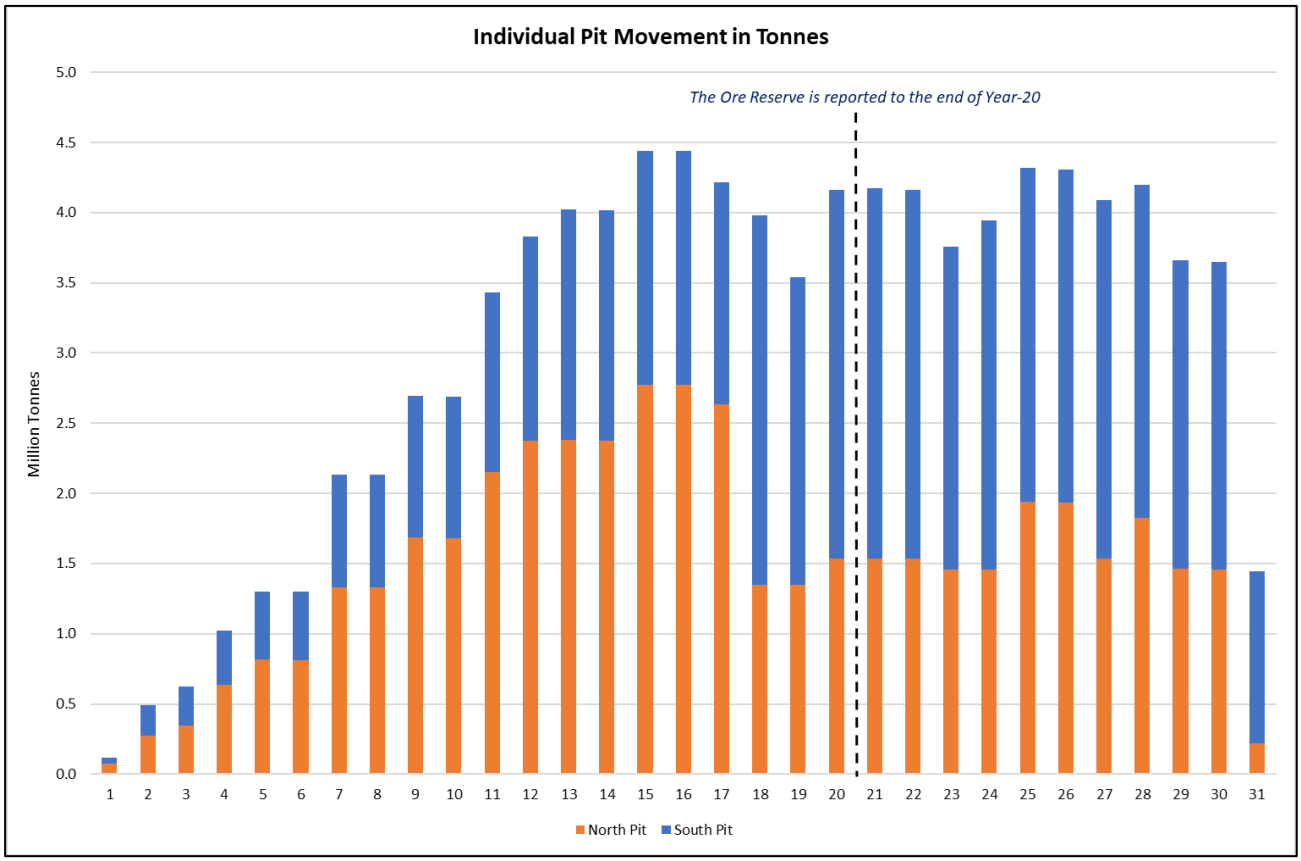


Figure 17: Individual Pit Movement in Tonnes

The waste and ore movement are shown in Figure 18. It is evident from the chart that the deposit has low strip ratio throughout the mine life. Measured and Indicated ore mined are shown in Figure 19.

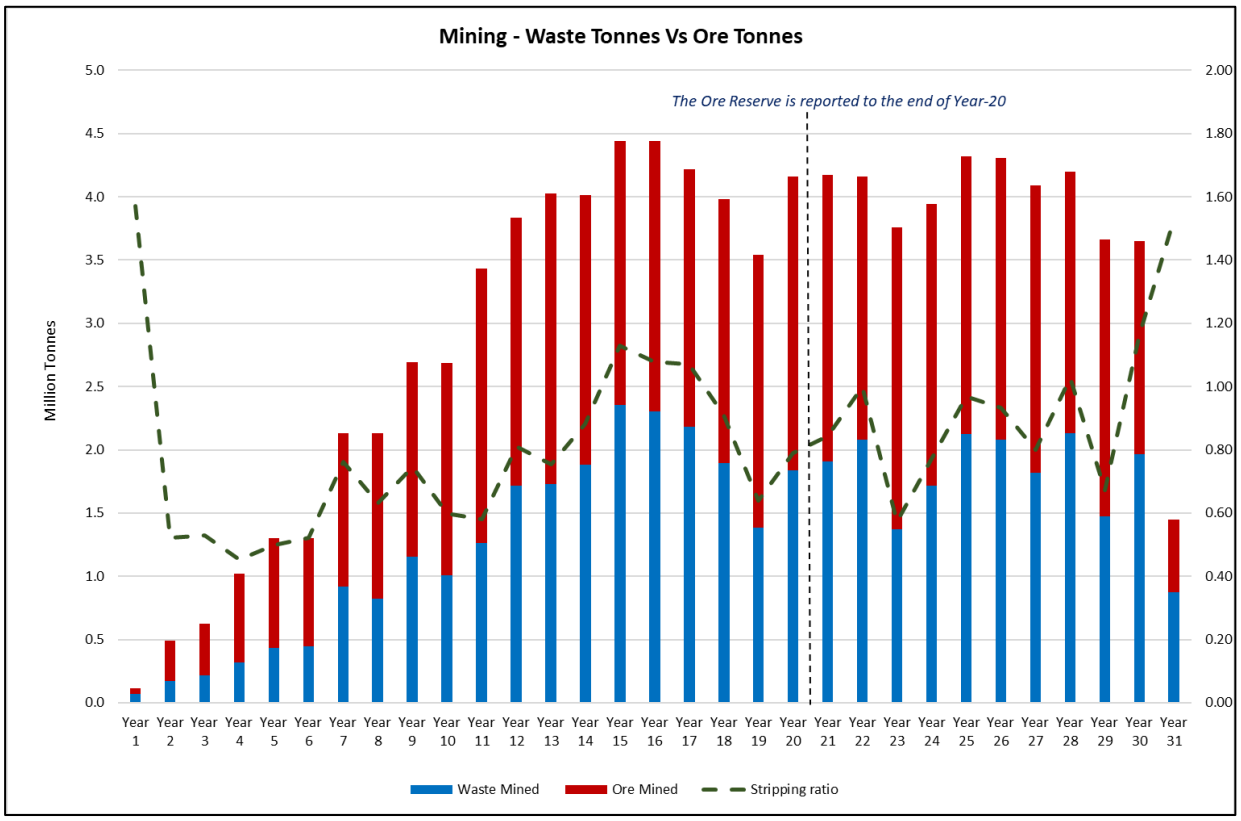
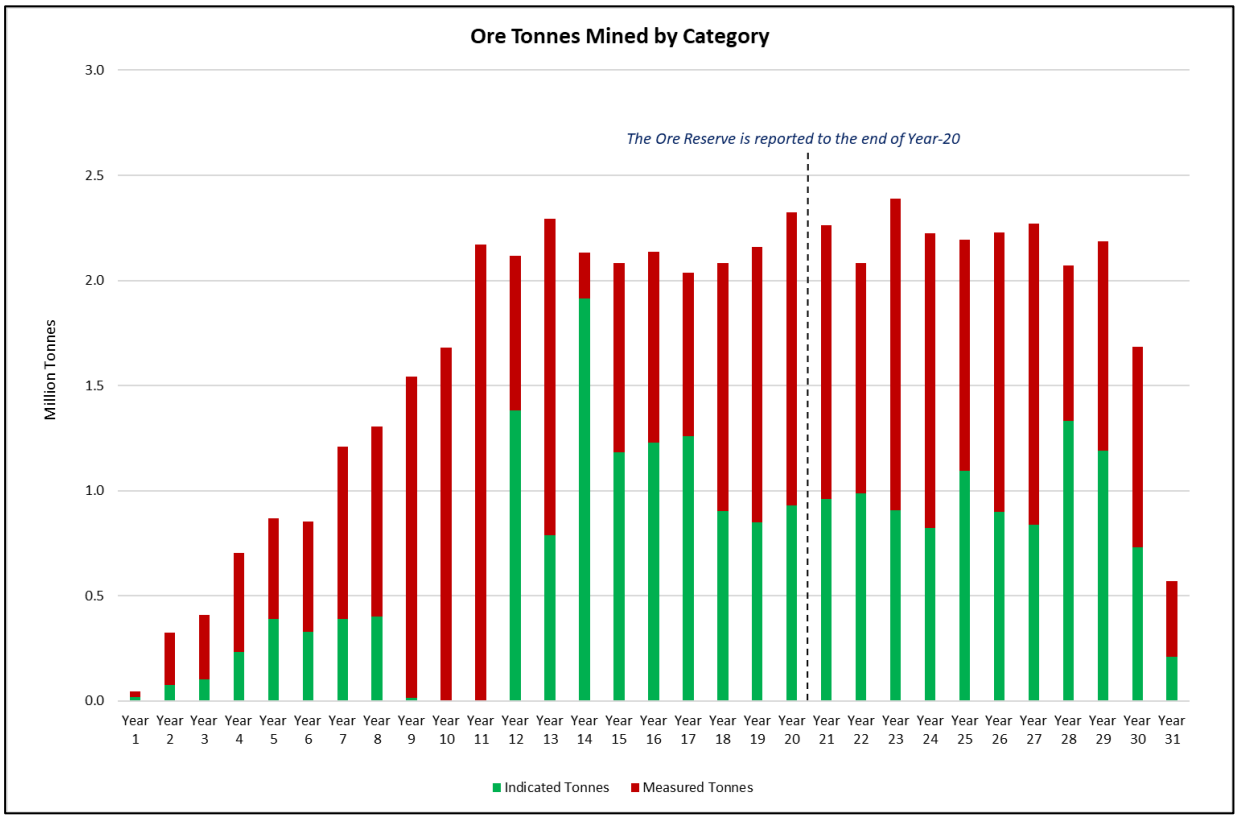


Figure 18: Waste and Ore Movement in Tonnes



The brightness and yield of the material mined is shown in Figure 20. It shows the grade is consistent throughout the mine life. Figure 21 shows the processed tonnes by resource category.

Figure 19: Ore Mined - Yield & Brightness in Percentage

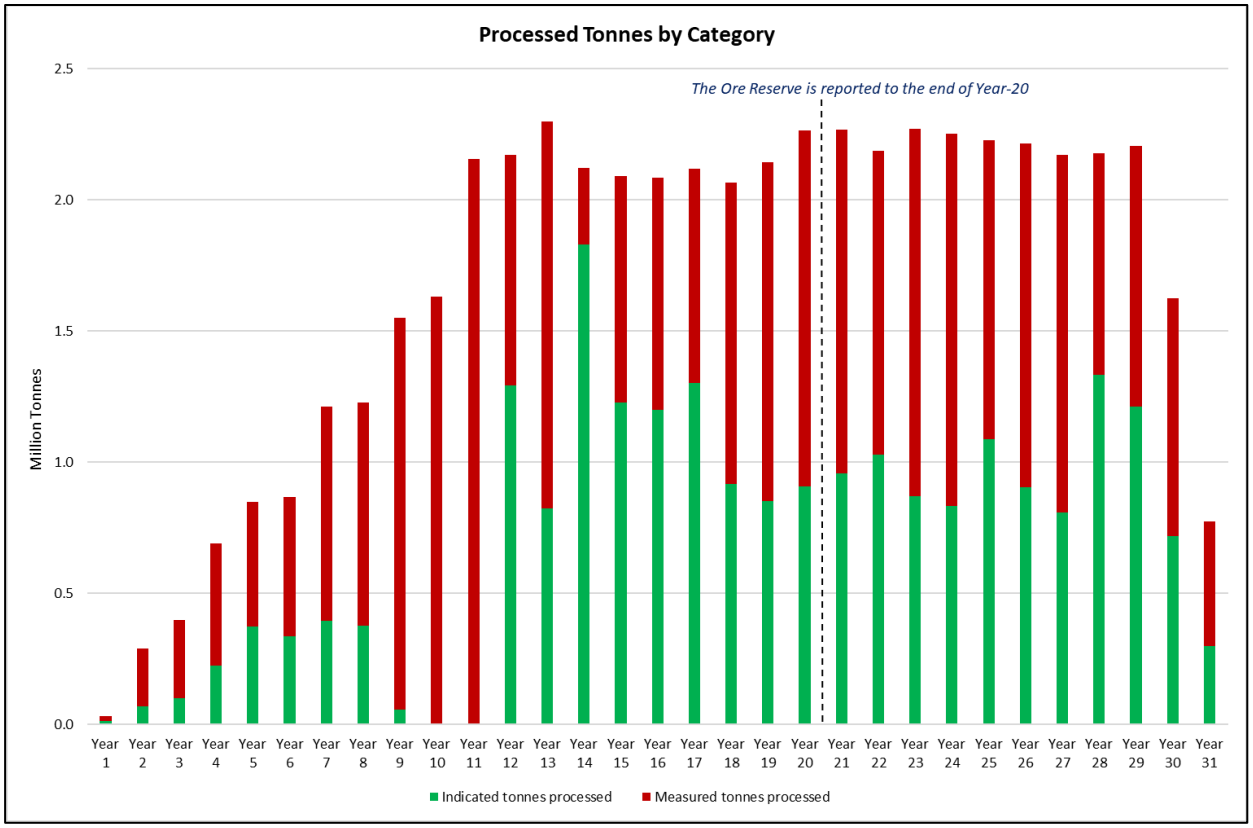


Figure 20: Processed Tonnes by Resource Category

Figure 22 shows the Final product produced from the processing facility in each production years.

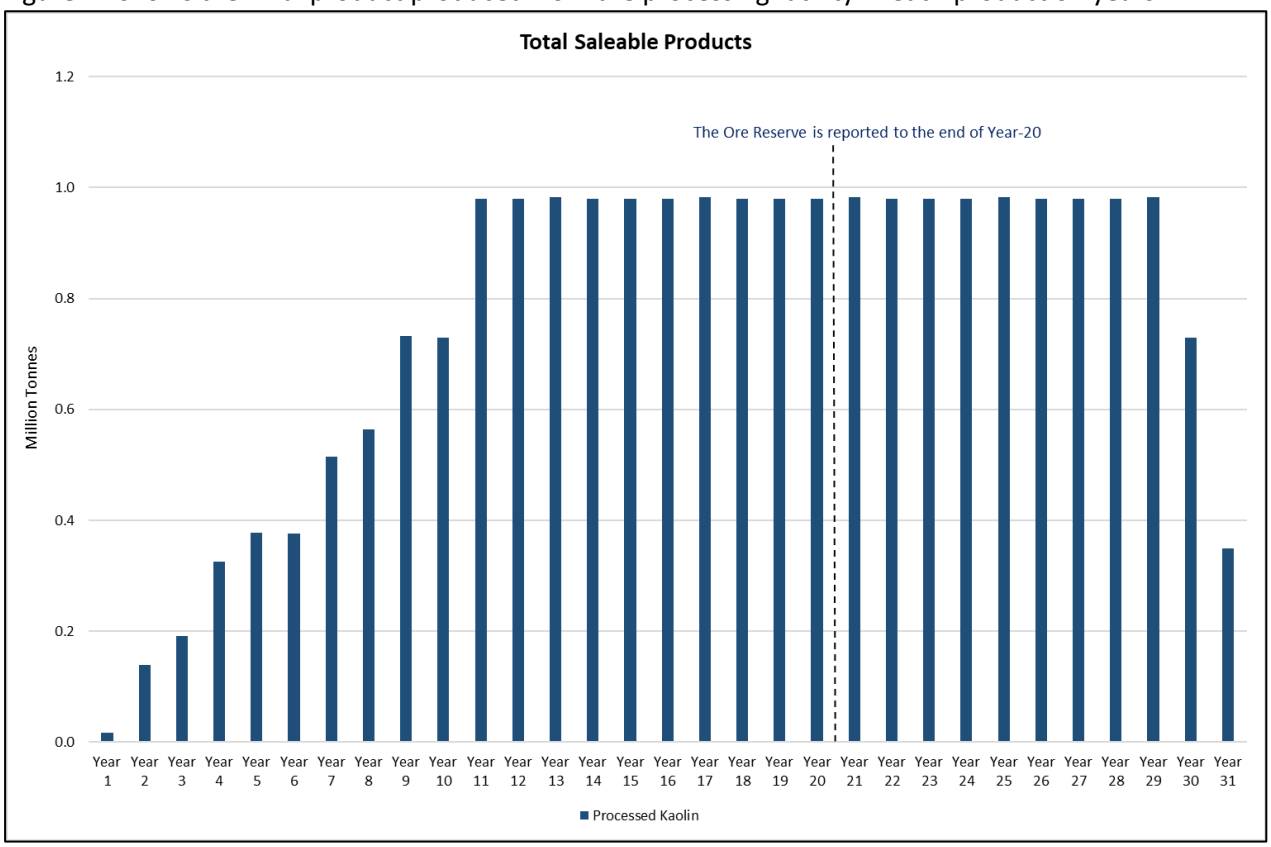


Figure 21: Final Saleable Products in Tonnes

4.7.4 Financial Model and Sensitivity Checks

Capital and operating costs estimated to a PFS level of confidence have been applied to the planned activities. The revenue assumptions are based on the market study report done by Grand View Research in conjunction with WA Kaolin. The cash flow model has been generated solely for ore reserve studies.

CSA Global has been issued with updated parameters after completion of the optimisation process, which are marginally different than the parameters discussed in the optimisation section The new parameters were tested in the cash flow model and identified that it has no material impact on the ore reserve. In addition, first 20 years of 31-year life of mine is reported as ore reserve. Hence the optimisation and pit design are maintained. The major changes are shown in Table 15.

Table 15: Optimisation and Financial Model Parameter Comparison

Items	Unit	Optimisation	Financial Model
Average Ka Sale Price	A$/dt of product	244.63	266.34
Total Ave Transportation Cost	A$/dt of product	104.23	103.68
Exchange Rate	AUD to UAD	0.71	0.68
Processing Cost	A$/dt of ore	25.92	23.35
Admin Cost	A$/dt of ore	11.44	8.33

The NPV was calculated using a 10% discount rate applied at the beginning of each year. Potential equipment leasing or alternative funding arrangements could significantly impact the reported NPV, these will be addressed by WAK during a later operational optimisation process.

The exchange rate has been modelled at a flat rate of A$1.00 = US$0.68.

Sensitivity analysis was done for the commodity price, processing recovery, operating cost, capital cost and discount rate. The sensitivity analysis indicates that the project results are most sensitive to commodity price and then to the operating cost. The project Net Present Value (NPV) remains positive for a price variance down by -23% and operating cost up by +32%. Metallurgical recovery and capital cost remain positive for the tested sensitivity between +20% and -20%. The NPV remains positive for the tested discount rate variance between 0% pa and 20% pa.

The cost inputs were applied to the project schedules to generate an annualised cashflow schedule as shown in Figure 23.

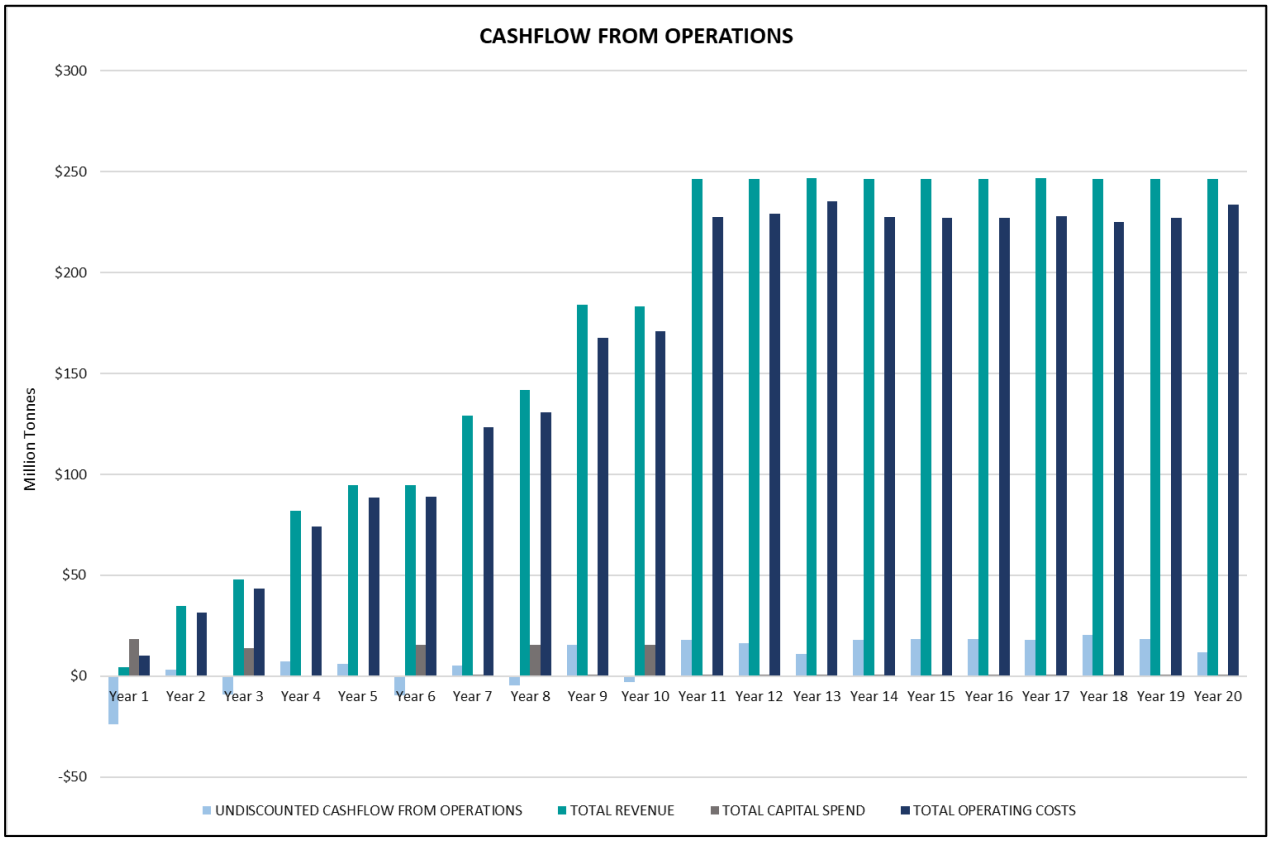


Figure 22: Cash Flow from Operations

4.8 Material Modifying Factors, including Status of Environmental Approvals, Mining Tenements and Approvals, other Government Factors and Infrastructure Requirements for Selected Mining Method and Transport to Market

The project area is sparsely populated with isolated farmhouses. The nearest house to the mine site is 1.9km to the north-east. This is owned by Wamco. The nearest residence is 2.8km away. The project will involve minimal environmental impact. The locations involved are owned by Wamco Industries Group Pty Ltd which is the majority shareholder of WA Kaolin Holdings Pty Ltd, and are currently used for grazing and cropping. The mine site will be progressively rehabilitated to these agricultural uses and the process plant will be dismantled and removed from site at the end of the project.

The mine site has been used for many years for cereal cropping and sheep grazing which is the main land use in the region. There are also small areas of disturbed woodland on the mine-site. There also is a pine plantation and an area of planted lucerne immediately to the south of the existing costean. Some of the pines and all the lucerne will be removed during mining operations.

An access road will be constructed east across Lot 14431 to connect with Helm Road. Only a small section of this road is within M70/1143 and is part of the Mining Proposal. The other longer section requires planning approval from the Shire of Wickepin. Applications for planning and development approval (inclusion of "industry extractive" as a permitted land use in the zoning) have been lodged with the Shire. A short length of this section of the road crosses an area of degraded remnant vegetation. A Native Vegetation Clearing Permit will be sought from the Department of Environmental Regulation during the detailed design phase of the project as part of the final determination of this alignment. An alternative but longer route to the south-east could be selected that would avoid the remnant vegetation if required.

There will be no permanent waste rock dumps as all waste material will be returned to the mined-out pit as part of the rehabilitation works. There is no risk of acid mine drainage due to water shed from stockpiles or from other run-off, as XRF assays of the ore and overburden have shown that SO_3 levels are typically less than 0.08 ppm with many samples half this level. Kaolin is formed by high levels of weathering and leaching of the host rock which results in inert kaolin and quartz sand. As a result, there are no soluble or reactive elements in the mined ore or overburden.

No assumptions regarding possible waste and process residue disposal options have been made. Current mining activities being undertaken by WA Kaolin Holdings over the Mineral Resource sufficiently indicate that there are no significant environmental concerns with exploitation of the deposit.

There is no surface water flow in the area of the mine and de-gritting plant as the surficial sands are highly permeable. Perimeter drains will be used to contain all flows if any from the mine and plant areas and this water will be recovered for use in the process plants. Groundwater has not been detected by exploration drilling and excavation at the mine site. Therefore; groundwater will not be intercepted by mining and there is little potential for groundwater contamination.

CSA Global have been advised that no places or objects of significance within the meaning of the Aboriginal Heritage Act 1972 or the Heritage Act of Western Australia 1990 on the locations involved in this project. The project sites are within the buffer zones of the Toolibin Reserves TEC. Provisions for managing and recovering water on the project sites and the low potential for run-off will ensure that there are no impacts on water entering the wetlands and reserves.

Herring Storer Consultants have modelled noise levels from mining equipment at the mine site. They conclude that noise levels at the closest residence to the mine will be well within acceptable limits. Noise from the processing plants has not yet been modelled but is not expected to be an issue given the separation distances involved. The plant does not include any equipment that generates high noise levels and is the same as that operated in the pilot plant at Kwinana. The nearest residence is approximately 2.8 km to the south-east and all the process plant will be enclosed in buildings and the cladding can be designed to achieve noise attenuation. The modelling will be commissioned as part of the detailed design of the process plant and if necessary, bund walls and other attenuation measures will be incorporated in the design to ensure acceptable noise levels are achieved at all times. The plant will operate on a 24/7 basis and will have to be designed to ensure compliance with night-time regulations. There also will be loading and other machines operating outside, but it would be possible to limit these to day-time operations if necessary, to achieve the regulatory standards.

The sites will be illuminated at night for process and safety requirements and are expected to be visible from the nearest residences. The separation distance will attenuate the light to some degree. The placement of individual external lights will be evaluated during detailed design of the plant and any effective means of further attenuating the light through placement, orientation and cowlings will be

implemented. Night time mining can be avoided as the proposed mining rate is easily achievable with selected mining fleet.

WA Kaolin advises that chemicals used in the process consist of a biodegradable dispersant and sodium hydroxide. The alkali is used in minor quantities to control the pH of the kaolin slurry which has to be adjusted through the process to enable the circuit to function properly. Minor quantities of a biocide are also used to prevent bacteria consuming the dispersant. These chemicals will be delivered in bulk liquid form by road tanker and will be stored on-site in accordance with the Dangerous Goods Safety Act 2004.The process largely consists of screening, pressing and drying the kaolin and there are few chemical additives and atmospheric emissions only from a stack attached to a drying plant.

Apart from exhaust emissions from machinery the only atmospheric emission will be exhaust gases from the dryer. No part of the kaolin product feed to the dryer is combusted in the drying process, so the only components of the exhaust stream should be the products of natural gas combustion, plus any water evaporated from the kaolin. The temperature of the exhaust gas will be around 90 – 105^{o}C. The material being dried is kaolin clay, and a small portion of the clay will be entrained in the airflow leaving the dryer. An off-line pulsed bag-house type dust collector will be used to remove any particulate solids from the dryer airflow before it is exhausted to atmosphere via the stack. The same process has been used at the Kwinana pilot plant in the kaolin spray drier for several years and no solids were observed in the air-stream leaving the stack.

All overburden and plant tailings are required for use as back-fill in the strip-mining operation. Therefore, any areas designated as waste dumps or topsoil stockpiles are temporary and will be completely removed as part of the rehabilitation works.

Initial tailings will be stored on surface until sufficient volume exists in mined pits to start in-pit storage. When adequate mine void has been established, the tailings will be disposed in-pit, which will aid the long term mine rehabilitation program. The tails are the quartz that is removed from the ore, with some residual kaolin. The haul trucks bringing the ore to the plant will be used to back haul the tails back to the mine. The tails will be low in moisture and will be easy for back filling, pushing and contouring.

All infrastructure requirements including power, water supply, mine, processing and administration, workshops, fuel storage and distribution, roads, communications, transport and kaolin processing are scheduled to build on site. Very minimum infrastructure is available now as the mining happens intermittently to meet the processing requirements of Kwinana plant. Power and water for the project will be supplied from a third-party service provider (BOOM diesel-fired station on site) and scheme supplies respectively. Telecommunications will be provided by third-party provider.

The company summarises list of major current, pending and proposed approvals in the Table 16.

Table 16: Approval Status

Site Approval Category	Authority	Status	Lead Time
Mine Site			
Mining Approval	DMIRS	Approval granted for 60,000tpa kaolin operation	completed
		Approval granted for 360,000tpa kaolin operation	
Works Approval (Environmental)	DER	Granted and extended to Feb 2023	completed
Environmental Licensing	DER	Application will be consistent with Works approval. Not required pre-construction but required to operate plant	10-12 weeks from submission
Development Approval	DAP & Wickepin Shire	Granted	completed
Building Permit	DMIRS	Building Licence to follow with commitment to comply with the Australian Building Code	Application Pending
Pipeline			

Tenement (Miscellaneous Licence)	DMIRS	Granted and extended to Feb 2023	completed
WRS Plant (including rail siding)			
Works Approval (Environmental)	DER	Granted	completed
Environmental Licensing	DER	Application will be consistent with Works approval. Not required pre construction but required to operate plant.	10-12 weeks from submission
Development Approval	DAP & Wickepin Shire	Granted	completed
Building Permit	DMIRS	Building Licence to follow with commitment to comply with the Australian Building Code.	
Rail siding connection	ARC Infrastructure	Negotiations on foot to ensure rail siding achieved and line operative	Within the above timeline
Kwinana			
	Rockingham Shire	All consents in place for existing plant up to 5,000tpa. Variation required to expand to 20,000t	completed

WA Kaolin has advised that the company has the following approvals;

- The Project was granted a Works Approval by Department of Environment Regulation on 20 February 2014 (WAN: W5443/2013/1), subsequently amended 15 February 2019 to extend the expiry date to 22 February 2023 and increase the scale of intended operations to 1.25 Million tonnes of ore per annum.
- "Existing Environmental" report issued for the Project by Dames and Moore 9 October 1995. (Subject to current review and revision as required as part of the current Feasibility Study program). This report covered the biophysical and social environment.
- A Mining Proposal (Dr A Tingay, Mining Proposal – Revised Version #1, 5 January 2015) for the Project was issued to the WA Department of Mines and Petroleum (DMP) (DMP Registration ID: 50959). This document also addressed environmental aspects. A Mining Approval was granted to WA Kaolin Holdings Pty Ltd by DMP on 21 January 2015, subject to certain conditions.

The company is progressing further with other required approvals to meet the latest production schedule.

5 Ore Reserves

Paragraph 29 of the JORC Code (2012 Edition) specifies:

"An 'Ore Reserve' is the economically minable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could be reasonably justified."

Ore Reserves are subdivided in order of increasing confidence into Probable Ore Reserves and Proved Ore Reserves, defined by JORC Code (2012 Edition) as:

"A 'Probable Ore Reserve' is the economically minable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Ore Reserve is lower than that applying to a Proved Ore Reserve."

"A 'Proved Ore Reserve' is the economically minable part of a Measured Mineral Resource. A Proved Ore Reserve implies a high degree of confidence in the Modifying Factors."

The Wickepin Kaolin mine is an open cut mining operation. Majority of the parameters used have been derived from operational data. The mine design, production schedule and associated financial parameters have demonstrated that the WA Kaolin's Wickepin operation have a mine production life of approximately 31 years.

An Ore Reserve of 30.5Mt has been estimated and classified as Probable Ore Reserve, reported in accordance with the JORC Code and is shown Table 17. The first 20 years of mine life is reported as Ore Reserve. All the Indicated and Measured ore is classified as Probable Ore Reserves by considering the modifying factors.

Table 17: Ore Reserve estimate (1st June 2020)

Deposit	JORC classification	Tonnes (Mt)	ISO brightness (%)	Yield (%)	In situ Kaolin (Mt)
Wickepin	Proved Probable	30.5	83.7	51.8	15.8
Total		**30.5**	**83.7**	**51.8**	**15.8**

Notes:

- *Figures above may not sum due to rounding.*
- *The Ore Reserve statement is supported by actual site operating data and subsequent pit optimisations and pit designs.*
- *Notes of particular importance are:*
  - *Resource models have been prepared by CSA Global*
  - *A fixed Kaolin price of AU$266.31/dt for the life of mine as advised by WA Kaolin*
  - *Discount rate used of 10%*
  - *Mining dilution and mining recovery estimated at 0% and 98% respectively, appropriate for the style of deposit, mining method and mining fleet*
  - *Metallurgical processing recoveries have been estimated as 87%*
  - *Mining assumptions and operating cost estimates are as advised by WA kaolin, based on a contract mining fleet and processing and selling costs from operating site data and company assumptions*
  - *A direct economic cut-off brightness and yield has been applied for each block whereby a block exceeding this cut-off grade and contained within the pit design will be deemed as processable and included within the Ore Reserve estimate*
  - *Pit optimisations have been prepared and reviewed by CSA Global*

- *Mine designs have been prepared and reviewed by CSA Global, based on the optimisation results*
- *Mining schedules have been prepared and reviewed by CSA Global*
- *Financial model for ore reserve estimate has been prepared by CSA Global and reviewed by WA Kaolin.*

5.1 Comparison with Previously Announced Ore Reserve Estimates

A previous Ore Reserve statement for Wickepin was issued by Ian Wilson as at 04 July 2012. The results are shown in Table 18.

Table 18: Ore Reserve estimate as at 04 July 2012

Deposit	Previous Reserve		Current Reserve			
	JORC classification	Tonnes (Mt)	Tonnes (Mt)	ISO brightness (%)	Yield (%)	In situ Kaolin (Mt)
Wickepin	Proved	15.4				
	Probable	44.0	34.7	83.7	51.5	17.9
Total	**Total**	**59.4**	**34.7**	**83.7**	**51.5**	**17.9**

The main differences are due to:

- The reserve is based on new resource model released on May 2019
- New Kaolin price estimation
- Depletion due to mining from 2012 to 30 June 2019 in Wickepin North and South Pit
- Updates to mining costs, processing costs and selling costs as advised by WAK.

5.2 Competent Person

The information in this section that relates to Ore Reserves is based on information compiled by Mr Anoop Antu Kachappilly and reviewed by Mr Karl van Olden, both employees of CSA Global Pty Ltd. Mr van Olden takes overall responsibility for the Report as Competent Person. Mr van Olden is a Fellow of The Australasian Institute of Mining and Metallurgy and has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration, and to the activity he is undertaking, to qualify as Competent Person in terms of the JORC (2012 Edition). The Competent Person, Karl van Olden has reviewed the Ore Reserve statement and given permission for the publication of this information in the form and context within which it appears.

6 Ore Reserve Estimation

The Ore Reserve estimates are based on the results of investigations and studies completed for the Wickepin Kaolin Project as advised and provided in various documentation from WA Kaolin.

Section 4 of the JORC Table 1 in Appendix 1 discusses the relevant Modifying Factors in accordance with the requirements of the JORC Code.

7 Competent Person Sign-Off

7.1 Ore Reserves

I, Karl Van Olden confirm that:

- I have read and understood the requirements of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ("JORC Code, 2012 Edition").
- I am a Competent Person as defined by the JORC Code (2012 Edition), having five years' experience which is relevant to the style of mineralisation and type of deposit described in this report, and to the activity for which I am accepting responsibility.
- I am a Fellow of the Australasian Institute of Mining and Metallurgy.
- I am a full-time employee of CSA Global Pty Ltd.
- I verify that the Report is based on and fairly reflects in the form and context in which it appears, the information in my supporting documentation relating to Ore Reserves.
- I have disclosed to the reporting company the full nature of the relationship between myself and the company, including any issue that could be perceived by investors as a conflict of interest.

_____
Mr Karl Van Olden (Signature)
Manager Mining – CSA Global Pty Ltd

Appendix 1: JORC Table 1 Section 4

JORC (2012) Table 1 Section 4 – Estimation and Reporting of Ore Reserves

Criteria	JORC Code explanation	Commentary
Mineral Resource estimate for conversion to Ore Reserves	*Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.* *Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.*	The Mineral Resource estimates for WA Kaolin Wickepin project have been prepared by CSA Global Resource Geologists Matthew Cobb and has been reported as at 31 July 2019.The information relates to Sampling Techniques, Data Collection and Exploration Results has been compiled by Dr Ian Wilson, who is an independent consultant to WA Kaolin Holdings Pty Ltd. Dr Wilson has over 40 years' experience in kaolin deposit exploration, definition and development The Mineral Resources reported are inclusive of the Ore Reserves.
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* *If no site visits have been undertaken indicate why this is the case.*	Mr Anoop Antu Kachappilly a full-time employee of CSA Global visited the Wickepin site on 4 July 2019. He inspected the locations of the open pit mines, waste dumps, transport corridors, mining lease areas and future process plant location. Current mining practises and infrastructure facilities were inspected as part of the visit.
Study status	*The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.* *The Code requires that a study to at least Prefeasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.*	Ore reserve is based on a life of mine plan carried out on indicated and measured ore. A brightness cut off of 75% is used as it is the minimum requirement of the saleable product. The work undertaken to date has addressed all material Modifying Factors required for the conversion of Mineral Resources to Ore Reserves and has shown that the mine plan is technically achievable and economically viable. The Ore Reserves have been based on parameters provided by WAK, from relevant technical studies and current operating parameters from mining and processing.
Cut-off parameters	*The basis of the cut-off grade(s) or quality parameters applied.*	A product brightness cut-off of 75% is applied as it is minimum required of final product. The cut-off between ore and waste also has been determined by net value per block. Total block costs are estimated for all operating costs to the point of sale including processing, product haulage, crusher feed, general and administration, ore differential, sustaining capital, selling costs, and grade control costs. The total block revenue minus the total block costs estimate the net value per block. Any block returning a positive net value has been defined as "ore" for the purposes of pit design and production scheduling. Any material that has been defined as Mineral Resource that has a negative net value has been defined as "waste".
Mining factors or assumptions	*The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).* *The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.*	Input parameters for pit optimisation have been based on supplied revenue parameters, mining costs based on operating data and mineral processing and selling costs from site. The kaolin price was advised by WAK as AUD$244.63/dt. These input parameters were reviewed by CSA Global and considered appropriate. Resource Block models were generated by CSA Global and were converted to Mining Block Models by CSA Global. Pit shells were produced from within Whittle software using agreed parameters. The pit designs completed from the

Criteria	JORC Code explanation	Commentary
	The assumptions made regarding geotechnical parameters (e.g. pit slopes, stope sizes, etc), grade control and pre-production drilling. *The major assumptions made, and Mineral Resource model used for pit and stope optimisation (if appropriate).* *The mining dilution factors used.* *The mining recovery factors used.* *Any minimum mining widths used.* *The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.* *The infrastructure requirements of the selected mining methods.*	Mining Block Models considered as suitable for Ore Reserve estimation. The Wickepin deposits utilise a conventional open cut excavator and truck mining fleet. This mining fleet is considered suitable for this type of surface mining operation. Articulated trucks were selected to run on the expected running surface conditions. This deposit is going to be mined out as multiple small pits. The maximum pit depth is around 40m. No drilling, blasting or crushing is required. The mine site will be progressively rehabilitated to use for agricultural purposes. Entire pit material is oxide and expecting to be free dig. A batter angle of 45 degree and 2 m berm every 4 m vertical advance has been applied. Existing pit walls proven over last 13 years to be stable, as there are no signs of cracking, slumping or collapse. Exploration drilling local to the pits indicates there are no standing water tables or perched aquifers in the resource area. Allowances have been made for the inclusion of haul roads, berm widths and batter angles. The pit slopes are considered likely to be stable for the current pit designs. The Mineral Resource models have been wholly provided and reviewed by CSA Global staff. The Mineral Resource Block Models were used for optimisation and mine planning after inclusion of additional attributes to become a Mining Model. The mining dilution has been set to 0% for this deposit. This has been based on reconciliation data from site and based on the site inspection and validation of the ore body. The ore body is very visible, thick and flat lying. The mining flitch is just 2m with appropriate dig fleet. Therefore 0% mining dilution is applied. The Ore Reserve is reported based on this. An ore loss factor of 2% (or 0.98) has been applied for this deposit. It is assumed, to avoid the mining dilution, ore may be left behind at the ore and waste contact. This has been based on site observations. A minimum mining width of 20 m has been applied in the pit designs. Inferred Mineral Resources have not been included in the pit optimisations. It is reported as waste in the mining schedule. There is limited current infrastructure available. However, the company is planning to construct all the infrastructure required to meet the selected mining method and schedule.
Metallurgical factors or assumptions	*The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.* *Whether the metallurgical process is well-tested technology or novel in nature.* *The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.* *Any assumptions or allowances made for deleterious elements.*	The metallurgical process developed by WA Kaolin for the exploitation of the Ore Reserve has been rigorously tested during a commercial pilot operation located in Kwinana, WA. The process has been independently audited in terms of its demonstrable efficacy by Mr Darryl Butcher, a Principal of BDB Process Pty Ltd. Mr Butcher is an expert in metallurgical process operation and design and has sufficient, suitable relevant experience to assess the WA Kaolin process as a Competent Person. The conclusions of Mr Butcher's audit were, among others, that during the final 5-months of the commercial piloting of the process, the operation: • Demonstrated the metallurgical process is fit for

Criteria	JORC Code explanation	Commentary
	The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole. *For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?*	purpose; • Demonstrated stable commercial operation on representative bulk samples of the Wickepin Mineral Resource; • Produced product that was acceptable to the anticipated market and was sold to that market on commercial terms; • Demonstrated metallurgical recoveries consistent with those used for the Ore Reserve estimate; • Demonstrated operating costs consistent with those used for the Ore Reserve Estimate, when suitably factored or adjusted for the Wickepin project location; and • Established sale price benchmarks suitable for use in the Ore Reserve determination. The metallurgical process developed by WA Kaolin for the Project is novel in nature but based on known metallurgical processes. The process has been operated in a commercial pilot operation for over 18-months (not continuous) and processed 4,462 dry tonnes of bulk sample material during that period The bulk of metallurgical testwork undertaken has been completed in the bulk commercial pilot operation. This testwork may be reasonably described as a process of continuous innovation and optimization that has resulted in the metallurgical process now used and intended for use in the future by the Company. Two distinct metallurgical domains have been identified: a relatively coarse and competent domain that upgrades to a more granular product suitable for particular markets; and a relatively finer, less competent domain that upgrades to a finer product, also suited to particular market segments. Representative samples of both domains were processed in the Kwinana treatment facility and the resulting products sold to suitable end-users. No allowances have been made for deleterious elements or contaminants, beyond those that were intrinsically represented in the products that resulted from the pilot operation.

Environmental	*The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.*	The future metallurgical processing facility planned for the Resource will be located near to the Mineral Resource. There are adequate and suitable areas available for disposal of waste material generated in both the mining and metallurgical processing operations. The Project was granted a Works Approval by Department of Environment Regulation on 20 February 2014 (WAN: W5443/2013/1), subsequently amended 15 February 2019 to extend the expiry date to 22 February 2022 and increase the scale of intended operations to 1.25 Million tonnes of ore per annum. "Existing Environmental" report issued for the Project by Dames and Moore 9 October 1995. (Subject to current review and revision as required as part of the current Feasibility Study program). This report covered the biophysical and social environment. A Mining Proposal (Dr A Tingay, Mining Proposal – Revised Version #1, 5 January 2015) for the Project was issued to the WA Department of Mines and Petroleum (**DMP**) (DMP Registration ID: 50959). This document also addressed environmental aspects. A Mining Approval was granted to WA Kaolin Holdings Pty Ltd by DMP on 21 January 2015, subject to certain conditions. The mine site has been used for many years for cereal cropping and sheep grazing which is the main land use in the region. There are also small areas of disturbed woodland on the mine-site. There also is a pine plantation and an area of planted tree lucerne immediately to the south of the existing costean. Some of the pines and all the tree lucerne will be removed during mining operations. The mining void will be progressively rehabilitated to use for agricultural purposes. There will be no permanent waste rock dumps as all waste material will be returned to the mined-out pit as part of the rehabilitation works. There is no risk of acid mine drainage due to water shed from stockpiles or from other run-off, as XRF assays of the ore and overburden have shown that SO_3 levels are typically less than 0.08 ppm with many samples half this level. Kaolin is formed by high levels of weathering and leaching of the host rock which results in inert kaolin and quartz sand. As a result, there are no soluble or reactive elements in the mined ore or overburden. No assumptions regarding possible waste and process residue disposal options have been made. Current mining activities being undertaken by WA Kaolin Holdings over the Mineral Resource sufficiently indicate that there are no significant environmental concerns with exploitation of the deposit. There is no surface water flow in the area of the mine and de-gritting plant as the surficial sands are highly permeable. Perimeter drains will be used to contain all flows if any from the mine and plant areas and this water will be recovered for use in the process plants. Groundwater has not been detected by exploration drilling and excavation at the mine site. Therefore; groundwater will not be intercepted by mining and there is little potential for groundwater contamination. There are no places or objects of significance within the meaning of the Aboriginal Heritage Act 1972 or the

Criteria	JORC Code explanation	Commentary
		Heritage Act of Western Australia 1990 on the locations involved in this project. The project sites are within the buffer zones of the Toolibin Reserves TEC. Provisions for managing and recovering water on the project sites and the low potential for run-off will ensure that there are no impacts on water entering the wetlands and reserves.
Infrastructure	*The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided or accessed.*	All infrastructure requirements including power, water supply, mine, processing and administration, workshops, fuel storage and distribution, roads, communications, transport and kaolin processing are scheduled to build on site. Very minimum infrastructure is available now as the mining happens intermittently to meet the processing requirements of Kwinana plant. Power to the mine site will be provided by connection to the existing Western Power network. The location of the connection has not yet been determined. Thermal energy for drying will be from LPG, trucked in and stored in on-ground storage tanks. The project has the DWER Works approval(W5443/2013/1), Shire of Wickepin Planning Approval and Mining Proposal Registration (ID:50959) with list of conditions attached. The company is progressing further with other required approvals to meet the latest production schedule.
Costs	*The derivation of, or assumptions made, regarding projected capital costs in the study.* *The methodology used to estimate operating costs.* *Allowances made for the content of deleterious elements.* *The derivation of assumptions made of metal or commodity price(s), for the principal minerals and co-products.* *The source of exchange rates used in the study.* *Derivation of transportation charges.* *The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.* *The allowances made for royalties payable, both Government and private.*	The operating costs have been derived from a mixture of the WAK 2019 Operating Budget, desk top studies and expert opinions. All operating costs reflect the current costs on site. No allowances have been made for any deleterious elements. The Kaolin price for WAK of AUD$244.63/t has been used for the first 20 years of production. Market predictions and trend analysis has been provided by an external independent agency (Grand View Research) organised by WAK. All operating cost estimates have been based on AUD. Exchange rates have been supplied by WAK based on specialist advice. Transportation charges are based on current operating costs supplied by WAK. Processing cost have been calculated from current plant data and also used assumptions based on new proposed plant at mine site. The input from BDB Process Pty Ltd is used in the ore reserve estimate. Operating costs and Capital costs have been reviewed by CSA Global and are considered reasonable for the intended application. Selling costs, including royalties and refining costs have been applied. Selling cost of AUD104.28 and WA Government royalties (5% and 50% Sales EXW)and the royalty to WAMCO Industries Group were also applied.
Revenue factors	*The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.*	See comments above. The Life of Mine plan that is used to derive the Ore Reserve estimate has been truncated to the first 20 years of production to reflect a limit to the reliability of extrapolated Kaolin Price estimates.

Criteria	JORC Code explanation	Commentary
	The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.	A product brightness cut-off of 75% is applied as it is minimum required of final product.
Market assessment	*The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.* *A customer and competitor analysis along with the identification of likely market windows for the product.* *Price and volume forecasts and the basis for these forecasts.* *For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.*	Kaolin market and trend analysis has been conducted by Grand View Research as independent agency organised by WAK. The company is already selling the products to the proposed specification and the achieved pricing shows a reasonable comparison with the market assumption.
Economic	*The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.* *NPV ranges and sensitivity to variations in the significant assumptions and inputs.*	Majority of the cost inputs have been derived from operating site data; however, some assumptions are made based on the studies conducted by WAK and other technical experts. CSA Global has been issued with updated parameters after completion of the optimisation process, which are marginally different than the parameters discussed in the optimisation section. The new parameters were tested in the cash flow model and identified that it has no material impact on the ore reserve. Main changes are Kaolin price(266.34/dt), selling cost(103.68/dt), exchange rate (0.68), processing cost($23.35) and admin cost($8.33).A cash flow model has been produced that shows a positive NPV and sufficient cash flow margin. The discount rate applied is 10%. The cash flow model has been based on operating and capital costs, taxes, depreciation and head office expenses. . The project remains positive for a price variance down by -23% and operating cost up by +32%. Metallurgical recovery and capital cost remain positive for the tested sensitivity between +20% and -20%. The NPV remains positive for the tested discount rate variance between 0% pa and 20% pa
Social	*The status of agreements with key stakeholders and matters leading to social licence to operate.*	The project has the DWER Works approval(W5443/2013/1), Shire of Wickepin Planning Approval and Mining Proposal Registration (ID:50959) with list of conditions attached. The company is progressing further with other required approvals to meet the latest production schedule.

Criteria	JORC Code explanation	Commentary
Other	*To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:* • *Any identified material naturally occurring risks.* • *The status of material legal agreements and marketing arrangements.* • *The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Prefeasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.*	No material naturally occurring risks have been identified. There are no apparent impediments to obtaining all government approvals required for the WA Kaolin's Wickepin Project. The Ore Reserves stated are mainly located on active mining leases.
Classification	*The basis for the classification of the Ore Reserves into varying confidence categories.* *Whether the result appropriately reflects the Competent Person's view of the deposit.* *The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).*	The Mineral Resources have been based on ISO brightness cut off of 75%. The yield has been modified by the application of suitable modifying factors and have been classified as Probable, based on the Indicated and measured classification of the Mineral Resource estimate. The level of work undertaken through pit optimisation studies and pit designing is considered sufficient for the classification of Probable Ore Reserves. Mr Karl Van Olden, the Competent Person for this Ore Reserve estimation, has reviewed the work undertaken to date and considers that it is sufficiently detailed and relevant to each of the deposits to allow those Ore Reserves derived from the Indicated Mineral Resources to be classified as Probable. All the Measured Mineral Resources are also placed into Probable Reserves.
Audits or reviews	*The results of any audits or reviews of Ore Reserve estimates.*	The Mineral Reserve estimate, mine design, scheduling, and mining cost model has been subject to internal peer review processes by CSA Global. No material flaws have been identified. Expert opinion has been obtained for current and proposed processing facility. No external audit has been conducted.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve 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 reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.* *The statement should specify whether it relates to global or local estimates, and, if*	The Competent Person considers that the methodology applied to arrive at the Ore Reserve estimate for WA Kaolin's Wickepin Deposit is appropriate. The overall accuracy of the cost estimate used in the estimation of these Ore Reserves is considered to be within ±/-25%. Most of the cost estimates have been derived from actual site operating data, so the global accuracy is considered very robust. Confidence in the application of the modifying factors is appropriate for the estimate. Ore will not be blended from other deposits before treatment in the processing plant.

Criteria	JORC Code explanation	Commentary
	local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used. *Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.* *It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	

Appendix 2: Key File and Field List

The following documentation gives details of key file names associated with the review and reporting of the Ore Reserves listed in this report.

Mining Block Models (in Surpac format)

- wak_bm_mining_20190717.dm

Topographic Surfaces (in Surpac dtm/str format)

- wak_topo_20190718.dtm

Pit Designs (in Surpac dtm/str format)

- wakaolin_pd_final_cut_20190718.dtm

Australia • Canada • Indonesia • Russia
Singapore • South Africa • United Kingdom

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Appendix 7.

INDEPENDENT EXPERT'S REPORT ON WAK COMMERCIAL PILOT OF THE K99 PROCESS (BDB REPORT NO 19-AUS-WAK-1003)

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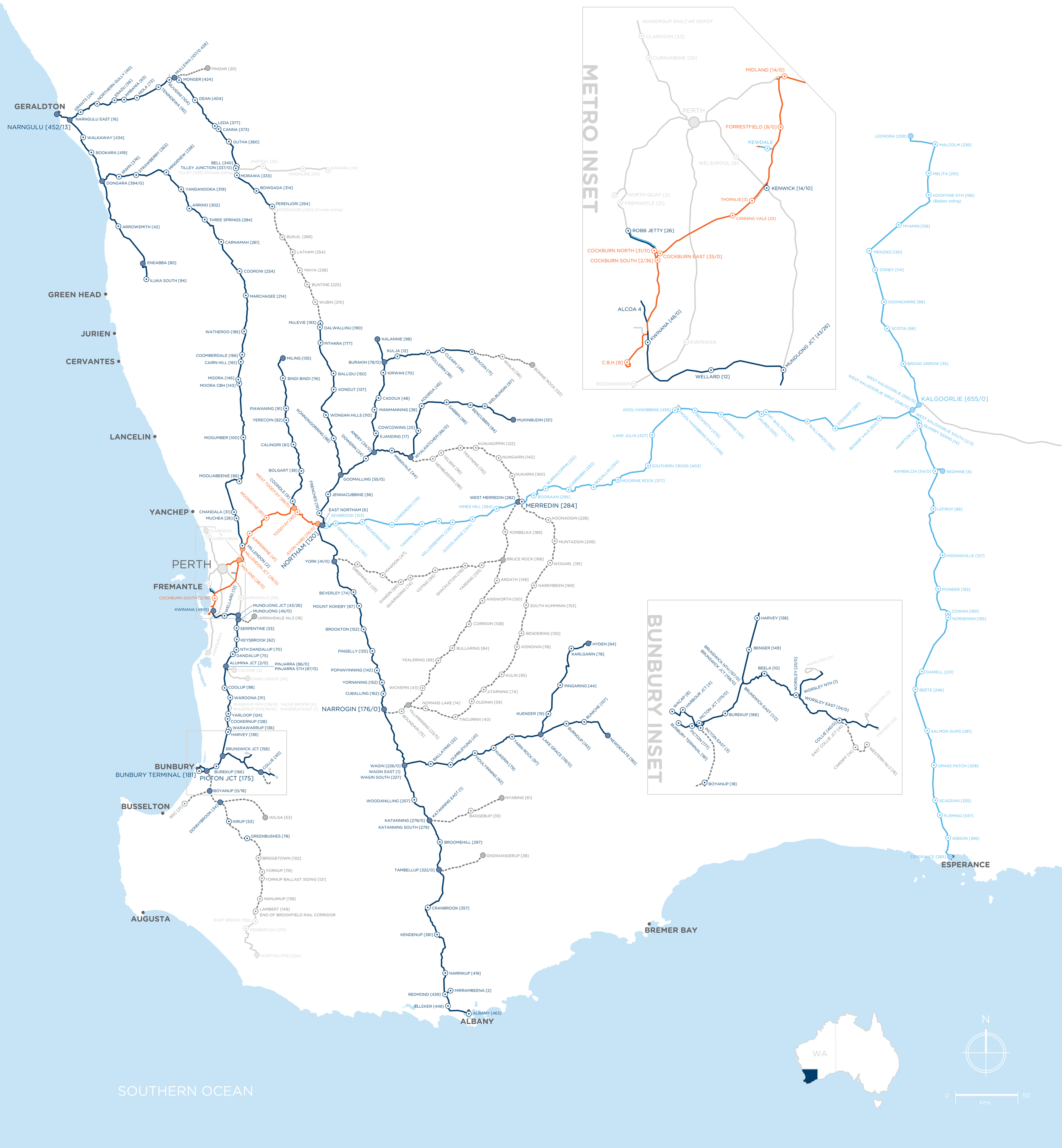
Appendix 8.

RAIL NETWORKS

Rail Freight Network Map

WESTERN AUSTRALIA



LEGEND

Narrow gauge	Start/end of section
Standard gauge	Station
Dual gauge	GUTHA [360] Distance from start of section
Third party operated	
Not in use	

arc infrastructure

WestNetRail

LEGEND

NARROW GAUGE

STANDARD GAUGE

DUAL GAUGE

THIRD PARTY OPERATED

NOT IN USE

PRIVATELY OPERATED TRAMWAY

START/END OF SECTION

STATION

INDIAN OCEAN

SOUTHERN OCEAN

No.	SECTION			km
1	EAST PERTH TERMINAL	–	KALGOORLIE	655
2	CLAISEBROOK	–	BUNBURY TERMINAL	181
3	MILLENDON JUNCTION	–	NARNGULU	452
4	TOODYAY WEST	–	MILING	135
5	WOODBRIDGE WEST	–	WOODBRIDGE SOUTH	1
6	MIDLAND	–	KWINANA	48
7	COCKBURN EAST	–	COCKBURN NORTH	1
8	COCKBURN NORTH	–	COCKBURN SOUTH	2
9	FORRESTFIELD	–	KEWDALE	5
10	FORRESTFIELD	–	KENWICK	10
11	EAST PERTH	–	COCKBURN NORTH	31
12	FREMANTLE	–	NORTH QUAY	2
13	KWINANA	–	MUNDIJONG JUNCTION	26
14	MUNDIJONG	–	JARRAHDALE No.2	18
15	PINJARRA	–	DWELLINGUP	24
16	ALUMINA JUNCTION	–	CALCINE	5
17	PINJARRA SOUTH	–	PINJARRA EAST	1
18	KWINANA	–	ALCOA	4
19	KWINANA LOOP RAILWAY			8
20	PERTH	–	MANDURAH	71
21	BECKENHAM JUNCTION	–	THORNLIE	3
25	PERTH	–	CLARKSON	33
27	WAGERUP NORTH	–	YALUP BROOK	6
28	WAGERUP SOUTH	–	WAGERUP EAST	1
31	AVON YARD	–	ALBANY	463
33	YORK	–	BRUCE ROCK	152
34	AVON YARD	–	MULLEWA	429
35	GOOMALLING	–	WEST MERREDIN	183
36	AMERY	–	KALANNIE	98
37	BURAKIN	–	BONNIE ROCK	122
38	WYALKATCHEM	–	MUKINBUDIN	121
50	WEST KALGOORLIE WEST	–	WEST KALGOORLIE STH.	2
51	WEST KALGOORLIE	–	ESPERANCE	383
52	KALGOORLIE	–	LEONORA	259
53	KAMBALDA	–	REDMINE	8
59	NARROGIN	–	WEST MERREDIN via CORRIGIN	216
60	YILLIMINNING	–	WEST MERREDIN via KONDININ	260
61	WAGIN	–	NEWDEGATE	182
62	LAKE GRACE	–	HYDEN	94
63	KATANNING	–	NYABING	61
64	TAMBELLUP	–	GNOWANGERUP	38
65	REDMOND	–	MIRRAMBEENA	2
71	BRUNSWICK JUNCTION	–	PREMIER	53
74	COLLIE	–	WESTERN No.2	16
75	PICTON JUNCTION	–	NORTHCLIFFE	205
76	DONNYBROOK	–	WILGA	53
77	BOYANUP	–	RGC	21
79	PICTON JUNCTION	– WACAP via HARBOUR JCT.		8
80	PICTON JUNCTION	–	PICTON EAST	3
81	BRUNSWICK NORTH	–	BRUNSWICK EAST	2
82	WORSLEY	–	HAMILTON	11
83	WORSLEY NORTH	–	WORSLEY EAST	1
91	GERALDTON	–	MULLEWA	107
92	MULLEWA	–	PINDAR	30
94	DONGARA	–	ENEABBA	80

PLAN No. 2010–001

February 2010

Appendix 9.

GRAND VIEW RESEARCH, 2018, “KAOLIN MARKET - BY APPLICATION (PAPER, CERAMICS, PAINT & COATINGS, FIBERGLASS, PLASTIC, RUBBER, PHARMACEUTICALS & MEDICAL, COSMETICS)”

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Appendix 10.

GRAND VIEW RESEARCH, 2018, “INDUSTRY OVERVIEW”

Industry Overview

This report describes the kaolin market, providing estimates and trend analysis using a combination of primary and secondary research. For forecasting, the following parameters were considered:

- market drivers and restraints, along with their current and expected impact;
- current and expected technological developments;
- application of industry trends and dynamics;
- trends in consumer behaviour.

This report has been commissioned by the Company from Grand View Research Inc. (**Grand View**). All information in this Section 4 is sourced from that report.

Overview

Kaolin is a platy white clay derived from the mineral kaolinite, an aluminium silicate represented as Al_2O_3-$2SiO_2$-$2H_2O$. (can also be expressed as $Al_2Si_2O_5(OH)_4$). Kaolin is formed by hydrothermal weathering of igneous rock, such as granite.

There are many types of kaolin resources formed from different geological rock types, namely granites and volcanic and sedimentary sequences. For each deposit, the market utilisation depends on the particle shape, size and morphology, combined with the physical and chemical characteristics.

Applications

Kaolin is chemically inert, nonabrasive and possesses a number of characteristics that make it desirable for use in a range of industries including paper and paperboard, ceramics, fibreglass, paints and coatings, plastics and polymers, rubber, pharmaceuticals and medical, cosmetics, concrete and agriculture, among others. Future uses may include feedstock for High Purity Alumina (HPA) production.

The global kaolin market is segmented based on applications and region. On the basis of applications, the market is segmented as follows:

Paper: Kaolin is known to be most extensively used as a coating and filler material in paper manufacturing. It improves the appearance of the paper by providing gloss, brightness, opacity as well as increasing the smoothness of the paper. Additionally, kaolin improves the printability of the paper, meaning it is preferentially used.

Ceramics: Kaolin is used in the ceramic industry owing to its resistance to heat and its high fusion point. Kaolin finds application in sanitary ware, tiles, tableware, refractories, and electro- porcelain insulators. In addition to improving the optical properties of white ware products, kaolin imparts a smooth and strong finish. Kaolin-based ceramics are used as metal substitutes in aerospace applications.

Paint and coatings: When added to paint, kaolin offers stain and scrub resistance, improved pigment suspension, increased opacity and tint strength amongst other properties. It is used as a substitute for titanium dioxide as it results in a reduced manufacturing cost of the final product.

Fibreglass: Fibreglass is drawn from a molten glass furnace similar to everyday glass and kaolin provides the alumina content in the glass formation because it helps strengthen the integrated glass fibres in the material. In fibre reinforced plastic (**FRP**) Kaolin also helps in improving the integration between the fibres and strengthens the plastic. FRP is used in sporting goods, automobiles, ships and boats, aerospace products, tanks and pipes, building and construction, and recreational goods.

Rubber: When used in rubber applications, kaolin acts as a processing aid, imparting rubber with better resistance to abrasion and tears, increased strength, and an improved curing rate. That rubber is used in tires, hoses, car door seals, gaskets, fibre reinforced cable, hydraulic and industrial hoses, and other products.

Plastic: Kaolin is used in plastics to enhance the hydrophobicity and increases the mechanical strength of the material. Kaolin works as a processing aide providing the material with increased strength and offers better resistance towards tears or abrasions.

Pharmaceutical and medical: Pharmaceutical grade kaolin is used in human and veterinary medicinal products.

Cosmetics: Kaolin is used in personal care products such as bath and skin treatment products.

Kaolin Manufacturing Process – Qualitative Analysis

Water Washed

Crude kaolin clay with 14.0% bound water and is referred to as hydrous clay. Water washed kaolin is where crude clay undergoes an intensive process called the 'levigation process' that involves the following steps to produce water washed kaolin:

- The crude clay is mixed with water to obtain a slurry.
- The slurry is then sieved, ground, centrifuged, and chemically and/or magnetically treated.
- The clay is then filtered and dried to obtain water washed kaolin.

These steps are performed to obtain the required level of purity, particle size, pH, brightness, and residue. Over 40% of the kaolin produced worldwide is water washed.

The water washed kaolin is available in different grades such as powder, granules, and lumps depending upon various applications. It is used as a filler in many applications such as rubber, plastics, inks, and coatings.

The water washed kaolin provides high reinforcement, neutral pH, and low crystalline silica and salt content, which allows it to be used in water-borne and solvent-borne adhesives and inks and coatings. It has higher brightness and better consistency compared to air floated kaolin. BASF, Burgess Pigment Company, HRD Group, and Jayesh Mineral Industries are the manufacturers of water washed kaolin.

Air Float

Air float kaolin is produced from a dry process or air floatation. It is produced from high purity clay. The high purity clay is refined by undergoing milling, air-classification, and blending for obtaining air float kaolin:

- milling, with roller crushers, large chunks of clay are converted into small size;
- air-classification, the crushed clay is put in the rotary dryer and air floating equipment (consisting of pulverizing unit and an air separator); and
- the coarse particles are sent back to the air floating equipment and fine particles are sent to collecting chambers.

Over 15% of the kaolin produced is air floated. Air float kaolin is utilised in the manufacturing of refractories, fiberglass, cement, and catalysts. It is also used as a filler for rubber, ceramics, roofing, caulks, asphalt roofing, adhesives, sealants, paints, paper, agricultural and construction industry.

Air float kaolin can be further segmented into hard and soft clay. In hard clay, the size of more than 80-90% of particles is less than 2 microns. Comparatively in soft clay, less than 60-70% of particles have a size below 2 microns. Both hard clay and soft clay are preferred according to the application requirement and their availability. For example, since the size of particles in hard clay is less than soft clay, hard clay provides greater reinforcement and abrasion resistance. Accordingly, applications that do not require higher abrasion resistance and reinforcement are better suited to soft clay. Soft clay is more prevalent in Europe due to the increased number of soft clay deposits in the region. Air-float kaolin has a smaller particle size as compared to water washed kaolin.

Calcined

Calcined kaolin is obtained by passing raw kaolin through a rotary kiln where it undergoes calcination. After calcination, 12%-14% of crystaline water is removed from raw kaolin. This results in enhancement of electrical and abrasion resistance, optical properties, brightness and inertness. The calcined clay is obtained as a non-plastic material white in colour. Approximately 20% of the kaolin produced is calcined.

Calcined kaolin has several end-use applications. It is used in refractories, thermal insulation bodies, low expansion bodies, permeable ceramic compositions and investment casting. These are very useful in slipware. Calcined Kaolin is also used in the wire and cable industry where its properties facilitate saving electricity and increasing the lifespan of the wire. In the paper industry, it is used in coating and filler pigment solutions for improving the opacity, brightness, ink receptivity, printability of the paper, and paper processing efficiency.

In the case of thermal paper, calcined kaolin is used at the pre-coat layer for creating a smooth surface and insulating the heat of the thermal print head. Calcined kaolin is also used in paints and coatings. Ansilex 93 by BASF is preferred for thermal paper applications such as receipts, lottery tickets, and labels.

Metakaolin

Metakaolin is the anhydrous calcinated form of kaolin. It is an amorphous mixture of alumina and silica. It is produced by heating kaolin between 500°C and 800°C. Kaolin is dehydroxylated to form metakaolin. Metakaolin is further heated between 1000°C and 1050°C and is transformed into mullite.

Metakaolin is used in precast concrete, cement, and other applications. Its use aids in increasing the durability and making the cement efflorescence free. It also improves the strength of lightweight concrete, releases post-tensioning, and decreases permeability.

Metakaolin was first used in the construction of dams in the 1960s in Brazil with an intention to suppress the damages caused by alkali-silica reaction. It is preferred as an alternative to silica fume and is used in concrete by replacing 5% to 20% of the weight of cement. It is used as a plastic cable filler, where it aids in improving the performance of cable sheath insulation.

Regulatory framework

Kaolin consists of hydrated aluminum silicate. The commercial products of clay (kaolin) contain varying quantities of alkalis and alkaline earth. It is a white to yellowish or grayish fine powder. There are at least three different minerals, namely kaolinite, dickite, and nacrite, classified as kaolin. Kaolinite or china clay is white, less contaminated with extraneous minerals, and less plastic in water.

Kaolin is known to be hazardous upon inhalation and can cause lung irritation. Even though it is used as a base in cosmetics for facial treatment, it is also can be slightly hazardous to skin and eyes. It is reactive when exposed to oxidizing agents, acids, and alkalis. The storage and use of kaolin are governed by various regulatory bodies, detailed as follows.

Workplace Hazardous Materials Information System (WHIMS)

According to the WHIMS regulation:

- Kaolin is classified under the very toxic (D2A) substance category.
- It is also classified as a Category 1A carcinogen and contains 0.1% of a carcinogenic substance (crystalline silica).
- Prolonged exposure to the product can cause organic toxicity.

Food and Drug Administration (FDA)

In accordance with [FDA] 186.1(b) (1), the ingredient is used as an indirect human food ingredient with no limitation other than current good manufacturing practice. The affirmation of this ingredient as generally recognized as safe (GRAS) as an indirect human food ingredient is based upon the following current good manufacturing practice conditions of use:

- the ingredient is used in the manufacturing of paper and paperboard that are not exposed to food; and
- the ingredient is used at levels not to exceed current good manufacturing practice.

Prior sanctions for this ingredient different from the uses established in this regulation no longer exist or have been waived.

Overview of Kaolin Market

In 2019 the global kaolin market was valued at US$4.76 billion and is projected to reach US$6.28 billion by 2027, which equals a compound annual growth rate (**CAGR**) of 3.5% per year from 2020 until 2027.

It is anticipated that the total market registered demand by volume will increase from 29 million tonnes in 2019 to over 37 million tonnes in 2027.

In 2019, the paper industry was the majority consumer of kaolin worldwide, accounting for nearly 39% of total market share by volume. Further, in 2019 the Asia Pacific kaolin market accounted for 40.7% of global market share by volume.

It is anticipated that cosmetics and ceramics will become the fastest growing applications for the kaolin market in the region over coming years. An increasing number of ceramic manufacturing companies in

China has contributed to the growth of the kaolin industry and this trend is expected to continue. Similarly, rising consumption of natural ingredients in manufacturing cosmetics, due to its superior properties, is anticipated to fuel its utilisation among the millennial population, thereby further supporting kaolin demand in the coming years.

Production

Imerys, Quarzwerke, Sibelco, and BASF accounted for nearly 26% of global production in 2019 and dominated the global kaolin market. Imerys alone accounted for 15.9% of the market. Other major producers include KaMin and Thiele (both based in the US).

Asian producers account for significant volumes, but at the lower end of the market.

Size of Market: Revenue

Global kaolin demand was worth circa **US$4.76 billion in 2019** and is expected to reach **US$6.28 billion by 2027**, **growth at a CAGR of 3.5%** per annum from 2020 to 2027.

Size of Market: Volume

Global kaolin demand was recorded at **29,395 kilotonnes in 2019** and is expected to reach **37,503.5 kilotonnes by 2027**, advancing at a **CAGR of 3.1%** per annum from 2020 to 2027.

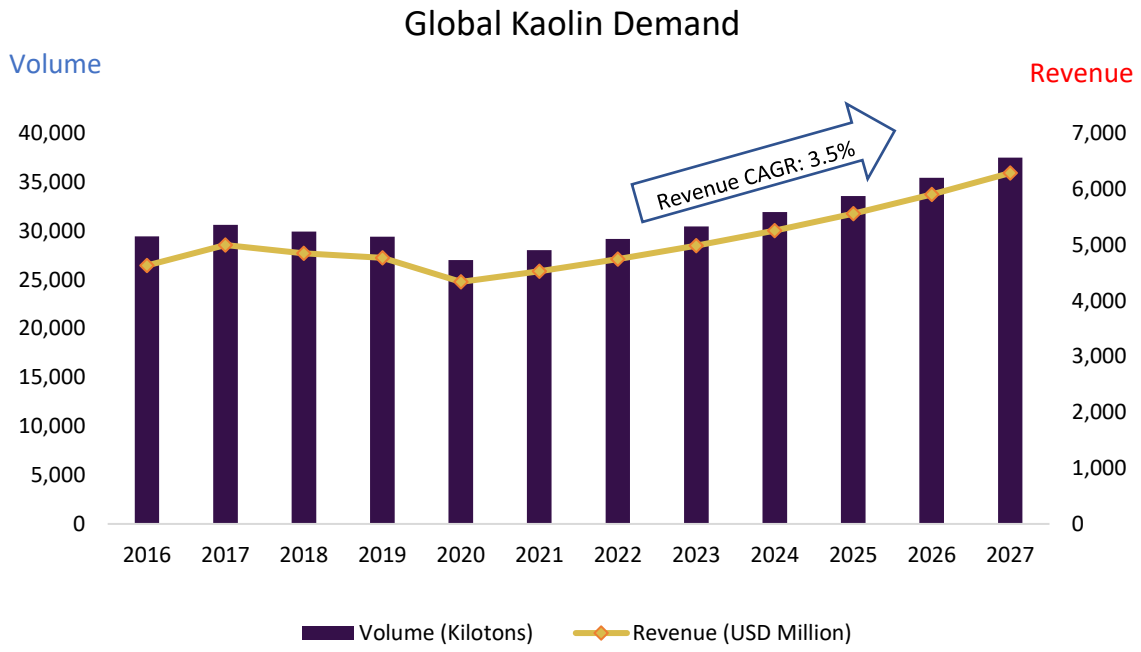


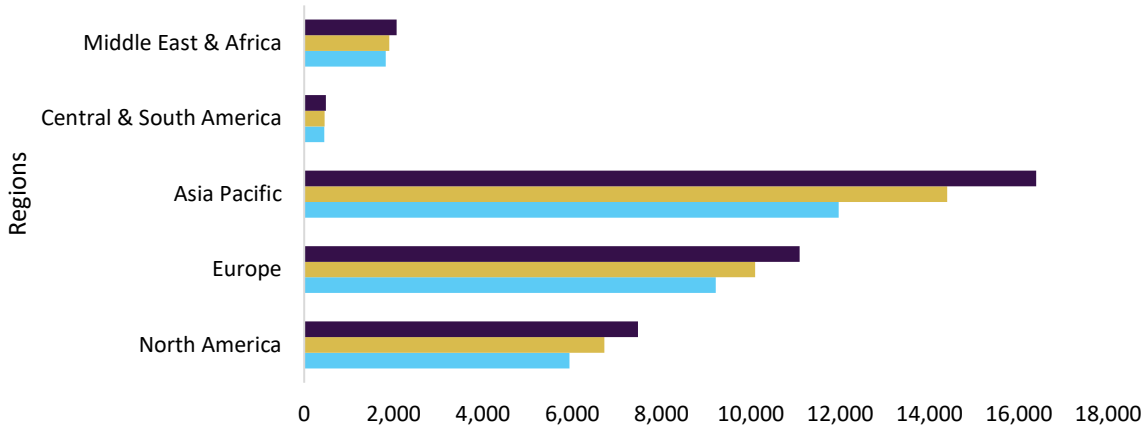
Figure 4 represents the global demand for kaolin in terms of revenue (USD Million), on the secondary axis, and volume (kilotonnes), on the primary axis, from 2016 to 2027.

Demand

The market demand by volume was 29.39 million tonnes in 2019 and is expected to reach 37.50 million tonnes by 2027, growing at a CAGR of 3.1% per annum from 2020 to 2027.

- Fibreglass is one of the major materials used for manufacturing lightweight composites for the automotive, marine, aerospace and other industries. Rising demand for fiberglass composites is likely to augment the demand for kaolin over the coming years as kaolin is often used in the production process for fiberglass.
- The ceramics segment is anticipated to witness considerable growth in the kaolin market over the coming years, owing to an increasing requirement for kaolin as a partial replacement to the base material. Kaolin increases the durability of ceramics as well as the smoothness and whiteness of the finished product.

Global Kaolin Demand by Region



	North America	Europe	Asia Pacific	Central & South America	Middle East & Africa
2027	7,470.4	11,095.6	16,387.2	481.8	2,068.5
2025	6,721.3	10,092.9	14,393.8	453.7	1,907.0
2019	5,941.3	9,214.7	11,968.8	447.2	1,823.0

Volume (Kilotonnes)

Supply

- Increasing investments from manufacturers to meet the regulatory norms coupled with rising labour, energy, and logistics costs have led to an increase in the prices of kaolin. Companies including Imerys and KaMin have announced an increase in the price of kaolin products, effective from 2018, to ensure long-term sustainability in the market. Companies also take efforts to maintain strong relations with logistics partners to optimise cost.
- Pressure from regulators in China to improve environmental and safety standards has led to the closure of kaolin producers and a tightening of supply.
- Market consolidation has occurred over the last 5 years with key players such as Imerys acquiring assets from competitors.
- From 1 June 2019 China has increased the import tariff on US kaolin imported into China.
- Globally, high quality deposits are being exhausted and the volumes being sourced from lower quality deposits require extensive processing to achieve customer quality parameters.
- Ore from secondary deposits suffer from organic contamination and generally have high levels of contamination that are not suitable for some applications, such as high-quality ceramics.

Distribution

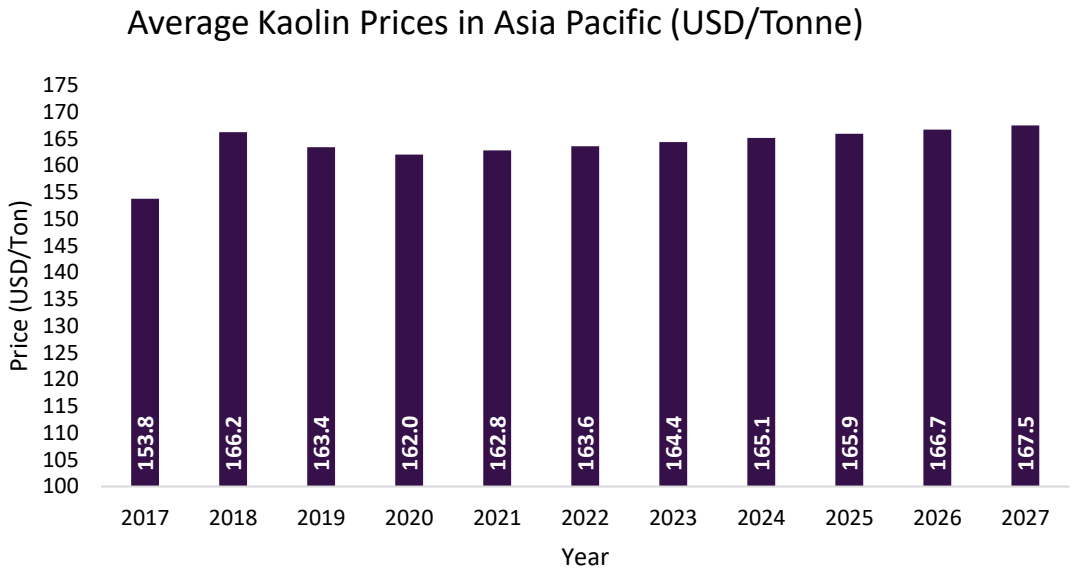
Kaolin is sold to manufacturers and end-use industries through various distribution channels including direct supply contracts and third party contracts. A few companies, including KaMin, Imerys, Thiele, and I-Minerals, are forward integrated across the mining, manufacturing, and distribution stages of the value chain. These companies conduct exploration, extraction and refining of kaolin, and directly supply the product to their customers.

Key Future Catalysts

- Increasing use of fiberglass composites in the above-mentioned applications and industries will grow the kaolin demand for fiberglass.
- Expanding population and rising consumer standards of living will grow kaolin demand for ceramic products in housing and construction.
- Several regulations that have mandated the printing of food-related information on packaging is anticipated to fuel the growth of the kaolin market with market expansion of printable packaging materials including paper-packaging materials.

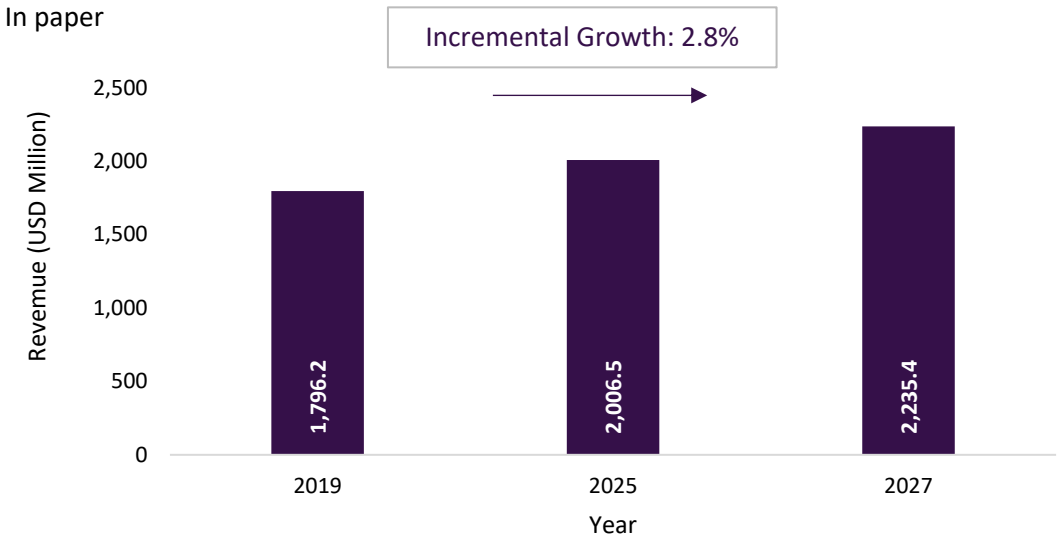
Historical and Forecast Pricing

- Existing producers such as BASF, Imerys, Thiele Kaolin Company and KaMin have announced price increases for kaolin over the past few years. KaMin attributed its price increase to ensure long-term stability. It has continued investing in order to meet regulatory requirements and increase kaolin production.
- Increases in labour, fuel, energy, freight and logistics costs is expected to impact the prices of kaolin over the coming years.
- BASF increased prices to maintain business stability due to rising labour and other costs and increasing demand of the product, especially from the paints and coatings applications.
- The reduction of capacity in China due to mine closures has placed upward pressure on prices.



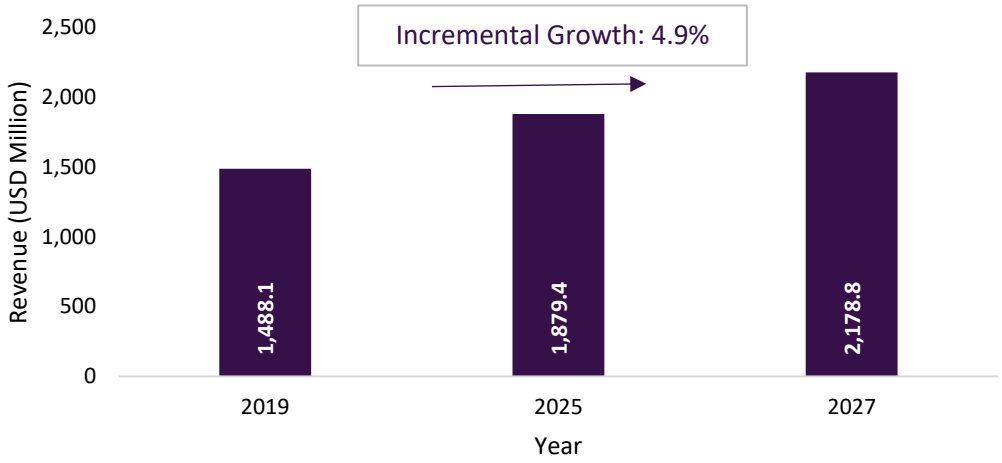
Source: Primary Research, GVR Analysis

Global kaolin market estimates and forecasts in paper, ceramics and fibreglass 2016 – 2027 (USD Million)



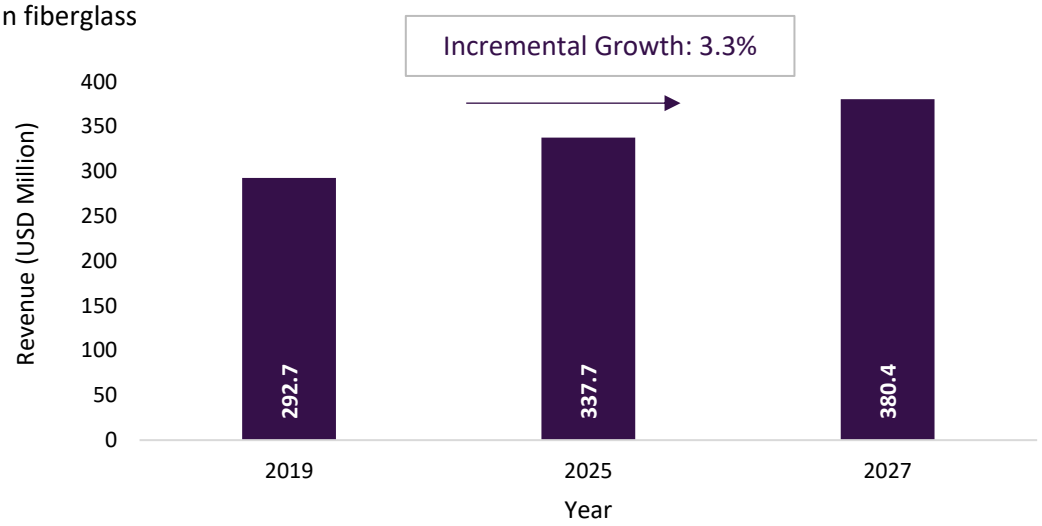
Global kaolin market estimates and forecasts in paper, ceramics and fibreglass 2016 – 2027 (USD Million)

In ceramics



Global kaolin market estimates and forecasts in paper, ceramics and fibreglass 2016 – 2027 (USD Million)

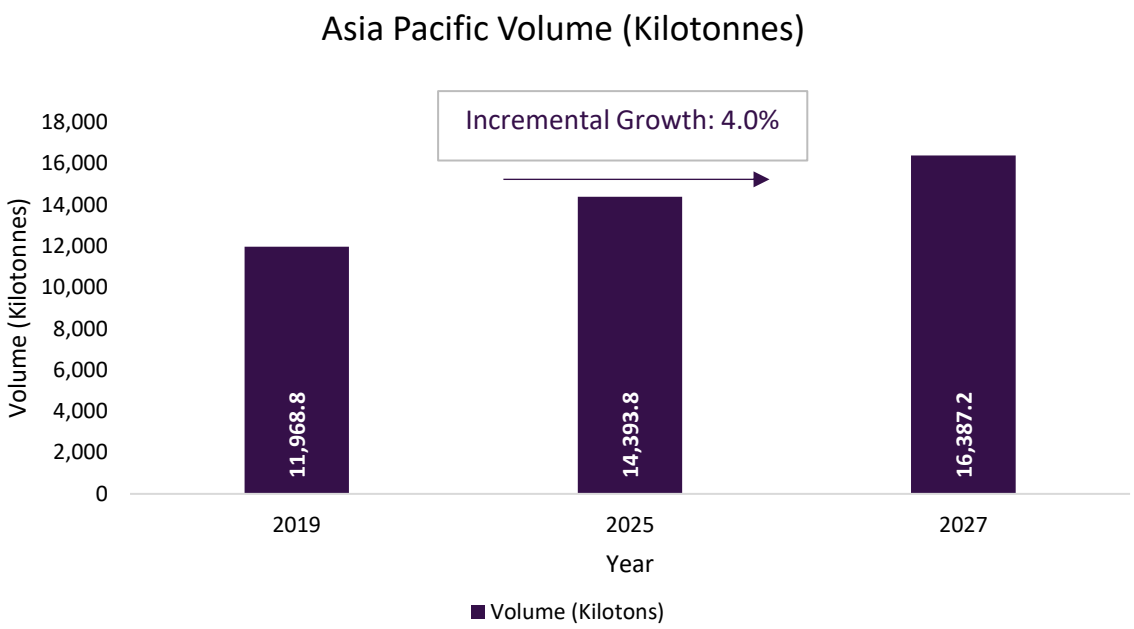
In fiberglass



Regional Movement Analysis and Market Share, 2019 and 2027

The Asia Pacific held the largest revenue share accounting for 41.1% in 2019, due to the increasing demand from paper and paint industries in the region. Additionally, increasing use of kaolin in the ceramics industry is expected to augment the future demand growth due to rapidly growing ceramic industries particularly in China. Gains in the kaolin market in the Asia Pacific is expected to be slightly restrained due to the declining paper market in Japan.

The market share of kaolin is expected to decline in North America and Europe by 2027 due to cheaper substitutes particularly in paper and coating industries. However, use of kaolin in manufacturing ceramic proppants during hydraulic fracking is expected to increase in North America owing to significant developments in shale plays in the region. The Middle East is expected to represent a strong growth prospect for the market due to the initiation of several large construction projects in the region.



The Asia Pacific is expected to witness the fastest growth in all of the previously mentioned sectors, precipitating the greatest growth of the kaolin industry. This is due to the emerging economies, such as India and China that dominate the market for paper and fibreglass, meaning the Asia Pacific is likely to witness the fastest growth compared to other regions in the kaolin market.

The primary driver that contributes to the Asian Pacific market growth is the rise in demand of packaging paper due to new and stringent government regulations. This has led to a heavy penetration as well as dominance of products manufactured from kaolin. Further, increase in the disposable income of consumers, an ever increasing need for domestic products such as rubber and paints coupled with increase in construction activities are some of the key contributing factors that augment the centrality and growth of the Asia Pacific market.

Hence the Asia Pacific is both the most dominating region and fastest growing kaolin market.

Company Target Market

The Asia Pacific region is the Company's target market and the target sector during the first three years of its operations are the ceramic, fibreglass, paint and rubber markets. Sales revenue from these three applications in 2017 was US$630 million, being 37% of the Asia Pacific kaolin market. This revenue is forecast to grow to US$1.6 billion by 2025. Paint is also a major target market for the Company.

Competitor Landscape

Imerys

Imerys S.A. (**Imerys**) specialises in the production and processing of minerals and is headquartered in Paris, France. Imerys was established in 1880 and is a subsidiary of Belgian Securities BV. It sells its products through four business segments including energy solutions and specialties, filtration and performance additives, ceramic materials, and high resistance minerals. Kaolin is manufactured under the filtration and performance additives segment. The products manufactured by the company are used in aerospace, waste recycling, agriculture and horticulture, magazines, pharmaceuticals, steel, health and beauty, specialty paper, electronics, office paper, tableware, infrastructure, food, packaging, industrial equipment, construction and renovation, automotive, catalogues and advertising, and energy industries. The company owns kaolin-processing facilities in the US, Brazil, the UK, France, and Sweden. Imerys sells its products in the form of powders, granules, suspensions, and tiles.

BASF

BASF SE (**BASF**) is an integrated chemical company with its global headquarters in Ludwigshafen, Germany. BASF was founded in 1865 and has a presence across 80 countries with over 112,000 personnel. It has 6 integrated production sites and 390 other production sites in Europe, Asia, Australia, the Americas, and Africa. The company has a broad portfolio and provides chemicals to numerous end-use industries such as

agriculture, pharmaceuticals, paints and coatings, construction, personal care and hygiene, and paper and pulp industries. It mainly deals in five business segments namely, chemicals, performance products, functional materials and solutions, agricultural solutions, and oil and gas.

Kaolin is marketed under the paper chemicals division with brand names such as Ansilex and Luminex. BASF began its kaolin operations in 1908 at McIntyre, Georgia and has expanded over the years. As of 2017, BASF had four plants and numerous mines located across Middle Georgia. BASF uses its kaolin for manufacturing thermal paper, paints and coatings, wire and cable, rubber and plastics. In addition, its product is used in agriculture and construction sectors. Moreover, BASF also manufactures and markets calcined kaolin for paper.

KaMin

KaMin LLC (**KaMin**) was established in 1926 and is engaged in exploring, mining, and processing kaolin clay. The company operates through two business segments, which are chemicals and specialty minerals. KaMin has a manufacturing facility spread across an area of 40,000 square feet with a business presence in North America, Europe, Latin America, Africa, and Asia Pacific with 350 employees.

KaMin manufactures a variety of custom-engineered grades of kaolin through various processes including water-wash process, delamination process, chemical surface treatment, and calcinations process. KaMin's product portfolio comprises kaolin, kaolinite, and hydrated aluminum silicate.

Thiele

Thiele Kaolin Company (**Thiele**) is engaged in mining, processing, blending, and delivering kaolin coating and filler pigments. Thiele was founded in 1947 and is headquartered in Georgia, US. The products manufactured by Thiele are used in various application areas including, paper and paperboard, building products, adhesives, unbleached and recycled board, inkjet, and adhesives. Thiele owns kaolin reserves in North America and has slurry facilities in Wisconsin Rapids, Wisconsin and Gavle, Sweden, and processing facilities in Wrens, Georgia and Sandersville, Georgia.

i-Mineral

I-Mineral, Inc. (**i-Mineral**) was established in 1984 and is headquartered in Vancouver, Canada. The company is involved in the exploration and production of minerals including kaolin, feldspar, halloysite, and quartz. Kaolin manufactured by i-Mineral is used in paper coating, filler, paints, plastics, fiberglass, catalysts, and other specialty applications. i-Mineral is engaged in various projects for the extraction of above-mentioned products. Kaolin is extracted under the Bovill Kaolin project.

Quarzwerke

Quarzwerke GmbH (**Quarzwerke**) was established in 1919 and is headquartered in Frechen, Germany. Quarzwerke owns majority of shares in the Kaolin AD, which was founded in 1924 and is a mineral extracting company headquartered in Senovo, Bulgaria Quarzwerkeis engaged in mining and processing of sand and non-ferrous materials. Key products of Quarzwerke include kaolin, silica sand, chamotte, feldspar, and carbonate fillers. Quarzwerke carries mining production from 18 of its processing plants that contribute to about 1% of the world's kaolin reserves. Apart from Bulgaria, key mining and manufacturing regions of the company include Serbia, Ukraine, and Albania owing to many acquisitions in the regions. Quarzwerke also owns majority of assets in AKW Ukrainian Kaolin Company since 2007.

Quarzwerke has business operations in Germany, Poland, Czech Republic, Austria, Slovakia, Ukraine, and Russia. Quarzwerke's product portfolio includes quartz, kaolin, feldspar, and high-performance fillers. The company mines kaolin and processes it in its plants in Caminau (Germany), Gluhivzi Plant (Ukraine), Hirschau-Schnaittenbach (Germany), Kemmlitz (Germany), and Nowogrodziec (Poland).

Sibelco

Sibelco N.V. (**Sibelco**) was established in 1872 and is headquartered in Antwerp, Belgium. Sibelco supplies advanced industrial minerals to a diverse range of applications including ceramics, glass, construction and engineering, casting and metallurgy, oil and gas recovery, and environmental protection. Sibelco operates in 41 countries across 5 continents with approximately 10,000 personnel. Sibelco's product portfolio includes wet sands, dry sand, cristobalite, silica flour, frac sand, filtration sand, high purity quartz, spherical silica, coated sands, ball clay, red clay, kaolin, prepared bodies, diatomite, feldspar, nepheline Semite, olivine sand, olivine flour, quicklime, hydrated lime, and lithium minerals. The kaolin manufactured by

Sibelco is used to produce fine ceramics. Sibelco's kaolin reserves are located in the UK, Czech Republic, France, Germany, Spain, Portugal, and Ukraine.

Appendix 11.

CAPITAL COST ESTIMATE

COMMERCIALLY SENSITIVE - THIS APPENDIX HAS BEEN INTENTIONALLY LEFT BLANK

Appendix 12.

19-AUS-WAK-1004 FS PROPOSAL

Feasibility Study Proposal

Wickepin Kaolin Mine

April 2019

TABLE OF CONTENTS

1 INTRODUCTION

Darryl Butcher, director of BDB Process Pty Ltd (**BDB, Consultant**), was approached by Andrew Sorensen, General Manager and Alf Baker, CEO of W.A. Kaolin Holdings Pty Ltd (**WAKaolin**, **Client**)

BDB was requested to develop and submit this proposal to draw together the information and reports concerning the Wickepin Kaolin Mine (**Project**) and generate a Feasibility Study Report (**FS**) suitable for use in converting the JORC (2012) compliant Mineral Resource Estimate (**MRE**) for the Project to a JORC (2012) compliant Ore Reserve Estimate (**ORE**).

BDB is already engaged by WAKaolin to provide an Independent Expert's Report (**IER**) concerning the K99 dry process (**K99**), which is a dry process for the upgrading of kaolin containing ore to a saleable kaolin product. K99 comprises Intellectual Property (**IP**) that Mr Sorensen claimed was owned by WAKoalin.

WAKaolin is assessing the suitability of undertaking an Initial Public Offering (**IPO**) and neither the IRE nor FS will be included within the Prospectus for the IPO, but may be referenced as a source for the MRE and ORE statements, a reference for forward looking statements that may be made in the Prosectus or as a reference for other elements of the Prospectus as may be agreed by BDB in the future.

Gilbert + Tobin (**G+T**) have been engaged by WAKaolin to provide legal advice for the IPO.

BDB is pleased to submit this proposal to WAKaolin for the FS.

2 BDB PROCESS RELEVANT EXPERIENCE

The principals of BDB are all recognised mineral process and mining project experts with many decades of combined experience. BDB propose that this work will be principally undertaken by Mr Darryl Butcher. Mr Butcher has undertaken many feasibility studies within the mining and mineral processing sector, predominantly as a member of the owner's team and has sufficient relevant experience to undertake this role and be the Competent Person where required.

3 BACKGROUND

WA Kaolin is seeking to engage BDB Process Pty Ltd as a suitably qualified feasibility study manager to provide a FS to WAKaolin for the Project.

WA Kaolin proposes to undertake an IPO in the second half of 2019 pursuant to which, in conjunction with an IPO seed round in July 2019, it proposes to raise ~A$23-30 million. The funds raised will be used to:

- Cover the costs of the raising;
- move and expand the existing K99 plant from Kwinana to the mine site at Wickepin;
- expand K99 throughput to 410,600 tpa and subsequently to 821,300 tpa ore;
- expand K99 production capacity to 192,000 tonnes per annum and subsequently 383,000 tonnes per annum of saleable kaolin product; and
- undertake research to develop a wet process plant to produce finished product suitable for premium paper and packaging markets at 250,000 tonnes per annum with capacity to double that output.

WA Kaolin is currently using a single K99 module at a Kwinana location, operating at 4 tonnes per hour. The proposal is to use the existing K99 technology and construct processing modules capable of sustaining production at 12 tonnes per hour each.

4 SCOPE

4.1 Explanation and Scope Definitions

These definitions and basis are used to establish scope.

- **Scope of FS**. The scope includes all identified material elements required in a feasibility study of this nature.
- **Scope of Work**. BDB's Scope of Work (**SoW**) consists of all things required to develop the FS to an acceptable standard.
- **Scope of Services**. BDB's Scope of Services (**Services**) comprises the activities that BDB will perform in completing the SoW.

Failure to clearly define and detail these three scopes before commencing the Services is frequently the cause of delay, misunderstanding and overruns in cost and time.

Any changes to Scope and, therefore, cost and time need to be monitored.

4.2 Scope of Report

The Scope of the Report includes:

- Review and confirmation of the suitability of available supporting documentation for the Project, particularly:
  - The statutory and regulatory status of the project and its compliance with identified requirements;
  - Project history;
  - Environmental, heritage and social issues and project impacts;
  - The MRE and ORE;
  - Metallurgical testwork and the basis of the Process Design Criteria;
  - Mineral processing facilities;
  - Tailings and waste facilities;
  - Utilities;
  - Capital cost estimates;
  - Capital implementation strategy and schedule;
  - Operating strategy;
  - Operating cost estimates;
  - Market analysis, marketing and price forecasts;
  - Required infrastructure and services;
  - Financial modelling;
  - Risk and risk mitigation; and
  - Recommendations for further work;
- Completion to a level required for public reporting, although it is not currently expected that the FS will be included in the prospectus on a standalone basis.

4.3 Scope of Work

The Scope of Work to be addressed by BDB for the FS includes:

- Review and compilation of the available information and data held by WAKaolin or made available to BDB;
- Limited authorship of required sections of the FS, as the cost estimate for the Services assumes that the executive summaries contained in available documentation will be suitable for inclusion in the FS with limited modification and that where such documents do not yet exist, authorship will predominantly be by WAKaolin or others;
- Revision of the capital cost estimate and operating cost estimates with limited upgrading of these areas required to achieve an acceptable level of accuracy for the purpose of the FS;
- Limited provision of assistance to WAKaolin with respect to the statutory and regulatory framework of the Project; and
- Compilation and creation of a FS for the Project that is suitable to inform both the conversion of the MRE to an ORE and the anticipated IPO.

4.4 Scope of Services

4.4.1 Services Included

The Scope of Services covered by BDB includes:

- Compilation of a FS for the Project from predominantly available reports and data which will, or have been, provided to BDB by WAKaolin;
- Limited authorship of particular sections of the FS; and
- Endorsement of the FS and ORE by a Competent Person (JORC (2012)) as required and where appropriate.

4.4.2 Services Excluded

The following services are excluded from the Scope of Services:

- Technical review of the technology and IP associated with K99;
- The suitability of the proposed Project site in Wickepin;
- Detailed studies into any particular aspect of the Project;
- Drafting services other than limited general drafting; and
- Liaison with community and other external relations, e.g. landowners, media, international and local non-government organisations (NGOs).

4.4.3 Key Assumptions

BDB's proposal is based on the following key assumptions:

- All documentation will be available in native format;

- Documentation covering all the specific areas referred to in section 4.2 is available, or will be made available to BDB in a timely manner and will require little additional authorship by BDB to incorporate the relevant details into the FS;
- The existing capital cost estimate and operating cost estimate are suitable for inclusion into a FS (cost estimates are ± 5% to 10% accuracy, or if in excess of this, their accuracy limitations are not able to have a material impact on Project outcomes);

5 RESOURCES, COST & TIMING

5.1 Key Persons

The following BDB Key Persons will be assigned to the services:

- Darryl Butcher – completion of the SoW
- Paul Boshoff – BDB internal peer review
- Cathy Paxton – Environmental, heritage and social aspects of the FS as well as liaison with the Department of Environment Regulation as required.

Detailed CV's of BDB's Key Persons are available on request.

5.2 Cost Estimate

The estimated cost for the Scope of Services presented in this document is summarised below.

Provision of the FS and associated SoW: A$48,850, as per attached Estimate.

5.3 Study Delivery Schedule

Subject to the provision of data and access by the client on a timely basis, the Report will be completed within 42 days of WAKaolin's acceptance of this proposal and provision of all relevant documentation to BDB by WAKaolin.

Preliminary advice of outcomes will be available progressively within 28 days of acceptance of this proposal and provision of all relevant documentation to BDB by WAKaolin to assist with the timely preparation of IPO documentation and the prospectus.

Att: Cost Estimate, 2 Pages

Client:	WA Kaolin Holdings Pty Ltd
Project:	Wickepin Kaolin
Reference:	19-AUS-WAK-1004
Detail:	Cost estimate

Cost Estimate (30/7/2019)

Activity	Review		Documentation		Sub-Total	Contingency and Peer Review (12.5%)		
Scope of Work	Units	Rate	Units	Rate		Rate	Sub-Total	Total
Statutory and regulatory	4	4	4	4	1,200	1	225	1,425
History	4	4	6	4	1,500	1	281	1,781
Environmental, heritage and social	4	4	4	4	1,200	1	225	1,425
MRE and ORE	2	1	2	1	900	2	113	1,013
Metallurgical testwork	2	1	2	1	900	2	113	1,013
Process Design Criteria	8	1	4	1	2,700	2	338	3,038
Mineral processing facilities	12	1	4	1	3,600	2	450	4,050
Tailings and waste facilities	4	1	2	1	1,350	2	169	1,519
Utilities	4	1	2	1	1,350	2	169	1,519
Capital								
Cost estimate	8	2	8	2	3,600	1	450	4,050
Implementation strategy	4	1	2	1	1,350	2	169	1,519
Schedule	4	1	2	1	1,350	2	169	1,519
Operating								
Commisioning	4	1	2	1	1,350	2	169	1,519
Strategy	2	1	2	1	900	2	113	1,013
Cost estimate	8	1	8	1	3,600	2	450	4,050
Product sales						2		
analysis	2	1	1	1	675	2	84	759
marketing	2	1	1	1	675	2	84	759
price forecasts	2	1	1	1	675	2	84	759
Infrastructure and services	4	1	4	1	1,800	2	225	2,025
Financial model	8	1	8	1	3,600	2	450	4,050
Risk and risk mitigation	10	1	8	1	4,050	2	506	4,556
Recommendations for further work	5	1	8	1	2,925	2	366	3,291
Sub-Totals					41,250	42	5,400	46,650
					Total Hours	234		
PC Items								
Drafting			Lot		2,000		200	2,200
Total								48,850

Schedule of Rates

Designation	Ref	Rate
Principal A	1	225.00
Principal B	2	225.00
Senior Engineer	3	180.00
Discipline Engineer	4	150.00
Graduate Engineer	5	100.00
Admin	6	60.00
PC	7	10%
Expense	8	10%
Contingency/Peer review		12.5%

Appendix 13.

VARIOUS DRAWINGS

COMMERCIALLY SENSITIVE - THIS APPENDIX HAS BEEN INTENTIONALLY LEFT BLANK

Appendix 14.

HERRING STORER, 9002-2-08109E, NOISE REPORT

Rochdale Holdings Pty Ltd A.B.N. 85 009 049 067 trading as:
HERRING STORER ACOUSTICS
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WA KAOLIN HOLDINGS Pty Ltd

MINING OPERATIONS (SPARKS MINE)
Environmental Noise Impact Assessment

BY

HERRING STORER ACOUSTICS

May 2008

OUR REF: 9002-2-08109

DOCUMENT CONTROL PAGE

Environmental Noise Impact Assessment

WA Kaolin Mining Operation (New Sparks Mine)

Project No: 08109

Document Reference: 9002-2-08109

FOR

WA KAOLIN HOLDINGS Pty Ltd

DOCUMENT INFORMATION			
Author:	**Tim Reynolds**	**Checked By:**	
Date of Issue :	**4 June 2008**		

REVISION HISTORY

Revision	Description	Date	Author	Checked
1	**Corrections to Report**	**4/6/08**	**TR**	

DOCUMENT DISTRIBUTION

Copy No.	Revision No.	Destination	Hard Copy	Electronic Copy
1		**WA Kaolin**		✓
1	**1**	**WA Kaolin**		✓

CONTENTS

1.0 INTRODUCTION

WA Kaolin Pty Ltd commissioned Herring Storer Acoustics (HSA) to undertake an acoustic study of the proposed new Sparks mine with respect the requirements of the *Environmental Protection (Noise) Regulations 1997* (the Regulations).

The mine is located approximately 2.4km from the closest residence, and around 21km east-southeast from the town of Wickepin.

2.0 SUMMARY

We understand that the mining operation will be a day time operation only and the assigned L_{A10} noise level is 45 dB(A).

Modelling of noise immission levels from mining operations (including load out) indicates that compliance with regulatory noise level limits is achieved. The predicted worst case level, at the closest residence to the north east is 31 dB(A). Noise received at the neighbouring residence will comply with the requirements of the Regulations.

3.0 METHODOLOGY

Computer modelling was employed to predict the resultant levels at receiver locations based on topographical, atmospheric and equipment sound power level data.

The sound power levels of all significant items of the equipment used at the mine site has been modelled. Equipment is as provided by the client, with sound power data from file data of similar equipment. The sound power levels are summarised in Table 3.1.

Table 3.1 Summary of Soundpower Levels

Item	SoundPower Level (dB(A))
Front End Loader	108
Dump Truck	106
Excavator	110

The computer program SoundPlan 6.4 was used to predict the propagation of noise from the proposed mine operation. Noise contour plots were produced to show overall noise immission levels generally in the area around the site. Single point calculations were made for individual locations to show the resultant noise level at two closest noise sensitive premises.

Input data included:

- Ground topography - terrain type and contour information;
- Equipment sound power levels in octave bands; and
- Atmospheric conditions.

Note: To be conservative, equipment was located at ground level, and without bunding.

Propagation calculations were made for the worst-case scenario of atmospheric conditions, in accordance with the EPA Draft Guidance for Assessment of Environmental Factors No. 8 - Environmental Noise (June 1998) as follows:

- Pasquil Stability Factor F(Positive temperature gradient conditions)
- Wind Speed 3 metres per second

4.0 CRITERIA

Environmental noise in Western Australia is governed by the *Environmental Protection (Noise) Regulations 1997* (the Regulations). These regulations stipulate maximum allowable external noise levels at *Noise Sensitive, Commercial* and *Industrial* premises. A full description of the assessment process used in determining the appropriate criteria is given in Appendix A.

The nearest noise sensitive premise is located approximately 2.4km to the northeast of the proposed site. The applicable criterion at this location is as shown in Table 4.1.

TABLE 4.1 - Assigned Outdoor Noise Level

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		$L_{A\ 10}$	$L_{A\ 1}$	$L_{A\ max}$
Residential	0700 - 1900 hours Monday to Saturday	45	55	65
	0900 - 1900 hours Sunday and Public Holidays	40	50	65
	1900 - 2200 hours all days	40	50	55
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	35	45	55

It is also a condition of the Regulations that there shall be no annoying characteristics in the noise immissions and that the noise must not contribute, in conjunction with other noise sources, to an exceedance of the assigned levels.

5.0 RESULTS

Resultant noise immission level predictions for worst case propagation conditions, at relevant noise sensitive locations are shown in Table 5.1.

Table 5.2 – Noise Immission Levels (dB(A))
BW I through IV

Location	Predicted Level Worst Case Conditions	Assigned Level
Residence to Northeast	**31**	**45**
Residence to Southwest	**29**	**45**

The overall noise contour plot for worst-case propagation conditions is shown in Appendix B.

6.0 **DISCUSSION**

We understand that the mining operation will be a day time operations only and the assigned noise level is 45 dB(A).

Modelling of noise immission levels from mining operations (including load out) indicates that compliance with regulatory noise level limits is achieved. The predicted worst case level, at the closest residence to the north east is 31 dB(A). Noise received at the neighbouring residence will comply with the requirements of the Regulations.

Appendix A

Environmental Noise Criterion

CRITERIA

Environmental noise in Western Australia is governed by the *Environmental Protection (Noise) Regulations 1997*. These regulations stipulate maximum allowable external noise levels, at *'Noise Sensitive, Commercial or Industrial'* premises by reference to Table 1 as shown below. The assigned or allowable level within 15 metres of any noise sensitive premise is determined by the calculation of an influencing factor (IF), which is then added to the base levels as shown in Table 1. The influencing factor is calculated for the usage of land within two circles, having a radius of 100 metre and 450 metres from the premises of concern, using factors set out in Schedule 3 of the Regulations.

TABLE 1 - BASELINE ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		$L_{A\ 10}$	$L_{A\ 1}$	$L_{A\ max}$
Noise sensitive premises at locations within 15 metres of a building directly associated with a noise sensitive use	0700 - 1900 hours Monday to Saturday	**45 + IF**	**55 + F**	**65 + IF**
	0900 - 1900 hours Sunday and Public Holidays	**40 + IF**	**50 + IF**	**65 + IF**
	1900 - 2200 hours all days	**40 + IF**	**50 + IF**	**55 + IF**
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	**35 + IF**	**45 + IF**	**55 + IF**
Noise sensitive premises at locations further than 15 metres from a building directly associated with a noise sensitive use	All Hours	**60**	**75**	**80**
Commercial premises	All Hours	**60**	**75**	**80**
Industrial and utility premises	All Hours	**65**	**80**	**90**

The above levels are conditional on no annoying characteristics existing in the noise of concern, such as tonality, amplitude modulation or impulsiveness. If such characteristics exist and cannot be practicably removed then any measured level is adjusted according to Table 2 below.

Table 2- ADJUSTMENTS TO MEASURED LEVELS

Where **tonality** is present	Where **modulation** is present	Where **impulsiveness** is present
+5 dB(A)	+5 dB(A)	+5 dB(A)

Annoying characteristics are defined as an intrusive or dominant characteristic as follows:

"impulsiveness" means a variation in the emission of a noise where the difference between L_{Apeak} and $L_{Amax\ Slow}$ is more than 15 dB when determined for a single representative event;

"modulation" means a variation in the emission of noise that –

(a) is more than 3dB $L_{A\ Fast}$ or is more than 3 dB $L_{A\ Fast}$ in any third octave band;
(b) is present for more at least 10% of the representative assessment period; and
(c) is regular, cyclic and audible;

"tonality" means the presence in the noise emission of tonal characteristics where the difference between –

(a) the A-weighted sound pressure level in any one-third octave band; and
(b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8dB at any time when the sound pressure levels are determined as $L_{A\ Slow}$ levels.

Nomenclature:

"influencing factor" in relation to noise received at noise sensitive premises, means the influencing factor determined under Schedule 3 of the Regulations;

"L_{Amax} assigned level" means an assigned level which, measured as a $L_{A\ Slow}$ value, is not to be exceeded at any time;

"L_{A1} assigned level" means an assigned level which, measured as a $L_{A\ Slow}$ value, is not to be exceeded for more than 1% of the representative assessment period;

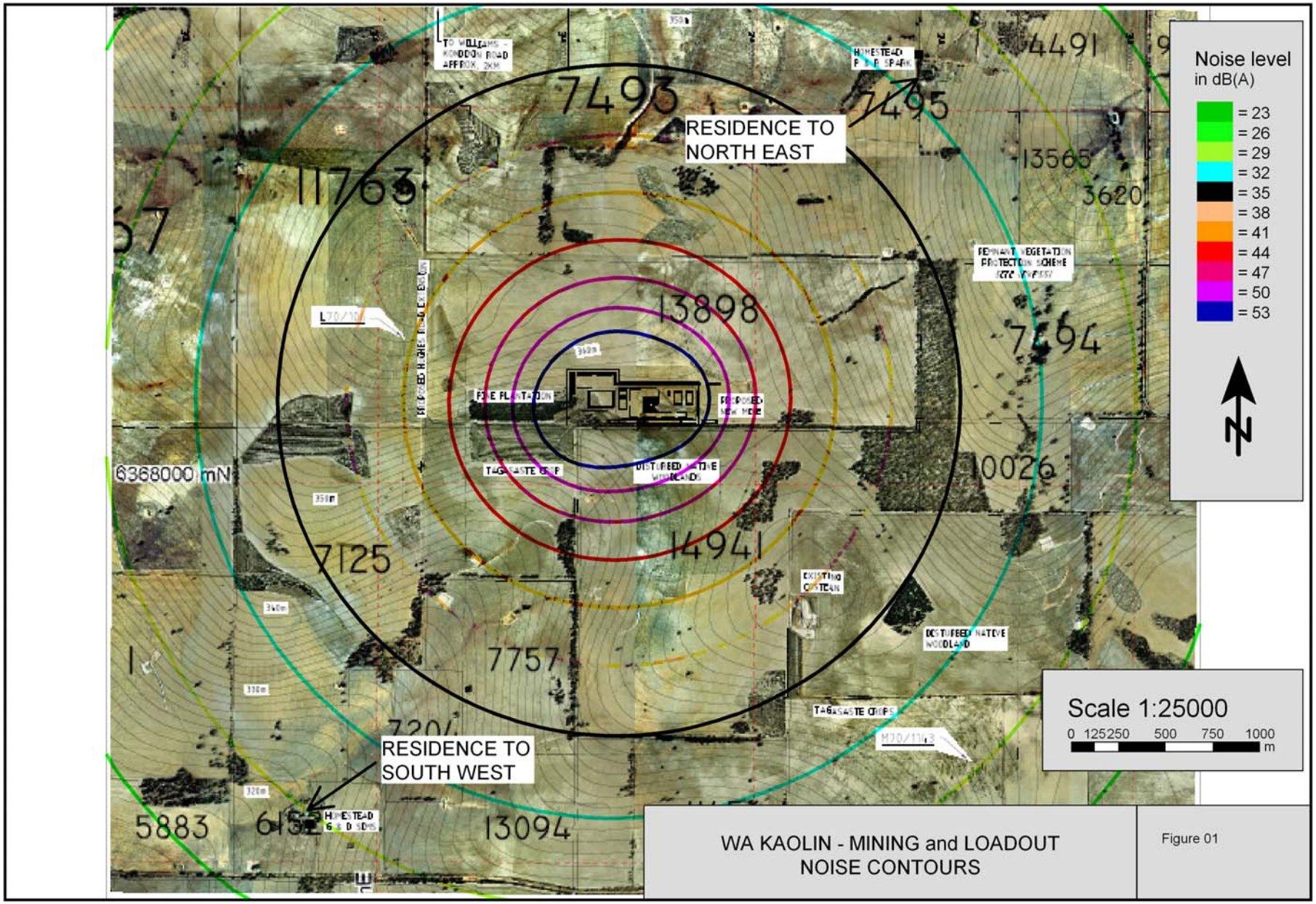
"L_{A10} assigned level" means an assigned level which, measured as an $L_{A\ Slow}$ value, is not to be exceeded for than 10% of representative assessment period.

Noise Immission indicates the level of noise ingress at any location or receiver point.

Noise Emission indicates the level of noise emitted from any premises.

Appendix B

Noise Contour Plot



WA KAOLIN - MINING and LOADOUT
NOISE CONTOURS

Figure 01