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Definitive Feasibility Study

WA Kaolin Limited

Wickepin Kaolin Project

Complied by:

September 2020

19-AUS-WAK-1004-DFS REPORT V5.DOCX

Revision V5

Revision Status

Revision	Date	Description	Author		Approver	
			Name	Position Title	Name	Position Title
V2	200810	Draft for internal review	DB	Director	DB	Director
V3	200826	Draft for client review	DB	Director	DB	Director
V4	200901	Draft for client review	DB	Director	DB	Director
V5	200903	Final, issued to client	DB	Director	DB	Director

TABLE OF CONTENTS

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For personal use only

For personal use only

For personal use only

For personal use only

For personal use only

Diagrams

Graphs

Figures

For personal use only

Tables

For personal use only

Appendices

Appendix 1.

2015 WA KAOLIN PROJECT - MINE CLOSURE PLAN

Appendix 2.

2020 WA KAOLIN PROJECT - MINE CLOSURE PLAN

Appendix 3.

2015 WA KAOLIN PROJECT - MINING PROPOSAL and TENEMENT (Approval and Conditions)

Appendix 4.

WA KAOLIN HOLDINGS PTY LTD – 2014 WORKS APPROVAL W5443/2013/1

Appendix 5.

MINERAL RESOURCE ESTIMATE — WAK PROJECT (CSA Report Nº R351.2019)

Appendix 6.

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

Appendix 7.

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

Appendix 8.

RAIL NETWORKS

Appendix 9.

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

Appendix 10.

GRAND VIEW RESEARCH, 2018, "INDUSTRY OVERVIEW"

Appendix 11.

CAPITAL COST ESTIMATE

Appendix 12.

19-AUS-WAK-1004 FS PROPOSAL

Appendix 13.

VARIOUS DRAWINGS

Appendix 14.

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

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Table 1. Table of Acronyms and Abbreviations

Acronym / Abbreviation	Meaning / Description
˚C	Degrees Celcius
$k	Thousand dollars
$M	Million dollars
$M/y	Million Dollars per Year
$/t	Dollars per Tonne
µm	Micron
A$	Australian Dollars
AC	Air Core (drilling)
AC	Alternating Current (electrical supply)
BDB	BDB Process Pty Ltd
BSc	Batchelor of Science
CAEMI	Caemi Mineração e Metalurgia S.A.
CAGR	Compound Annual Growth Rate
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CRAE	CRA Exploration Limited
CRM	Continental Resource Management
CSA Global	CSA Global Pty Ltd
DEC	Department of Environment and Conservation
DER	Department of Environment Regulation
DFS	Definitive Feasibility Study
DIDO	Drive In Drive Out
DMP	Department of Mines and Petroleum
DoE	Department of Environment
DTM	Digital Terrain Model
DWER	Department of Water and Environmental Regulation
EBITDA	Earnings Before Interest, Tax, Depreciation and Ammortisation
EPCM	Engineering, Procurement and Construction Management
FAICD	Fellow of the Australian Institute of Company Directors
FAusIMM	Fellow of the Australian Institute of Mining and Metallurgy
FDA	Food and Drug Administration
FEL	Front-End Loader
FRP	Fibre Reinforced Plastic
GJ/h	GigaJoules per hour
GM	General Manager
GRAS	Generally Recognised As Safe
h	Hour(s)
H_2O	Water
h/d	Hours per Day
ha	Hectare(s)
HG	High Grade
HPA	High Purity Alumina
HR	Human Resources
IBC	Intermediate Bulk Container
ISO	International Standards Organisation
IPO	Initial Public Offering

Acronym / Abbreviation	Meaning / Description
IRR	Internal Rate of Return
JORC	Joint Ore Reserves Committee
K99	The ore treatment process used by the Project and developed by WAK
LNG	Liquified Natural Gas
LOM	Life of Mine (also LoM)
km	Kilometer(s)
km/h	Kilometers per hour (also kph)
kg/h	Kilograms per Hour
kL	Kilolitre (also kl)
kt	Kilotonne(s)
kPa	KiloPascals
KVA	Kilovolt Amp(s)
kWh	Kilowatt hour
LOI	Letter of Intent
LPG	Liquid Propane Gas
m^3	Cubic Meter(s)
m/s	Meters per Second
m	Meter(s)
Ma	Million years
MCP	Mine Closure Plan
mol%	Molar percentage
Mol/h	Moles per Hour
MRE	Mineral Resource Estimate (JORC, 2012)
Mt	Million tonne(s)
MWt	Molecular Weight
N_2	Nitrogen Gas
NGO	Non-Government Organisation
Nm3/h	Normal Cubic Meters per Hour
NOx	Oxides of Nitrogen
$NPV_{(7)}$	Net Present Value at a 7% discount rate
O_2	Oxygen gas
OHS	Occupational Health and Safety
ORE	Ore Reserve Estimate (JORC), 2012)
Pa	Per Annum
pH	Negative log of hydrogen iron concentration in a solution (acidity)
ppm	Parts Per Million
PM_{10}	Particulate Matter < 10 µm
PFD	Process Flow Diagram
Project	The kaolin processing facility located near Wickepin in WA
Q1	First quarter of the financial year (similar for Q2, Q3 and Q4)
QA and QC	Quality Assurance and Quality Control
RO	Reverse Osmosis
ROM	Run of Mine (ore)
Sibelco	Sibelco N.V.
SOx	Oxides of Sulfur
SO_3	Sulfur Trioxide
t	Tonnes
t/t	Tonnes per Tonne
tph	Tonnes Per Hour

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Acronym / Abbreviation	Meaning / Description
tpa	Tonnes per annum (dry unless stated otherwise)
TDS	Total Dissolved Salts
TSF	Tailings Storage Facility
US$	United States Dollars (also USD)
w/w	Weight by Weight
WA	Western Australia
WAK	WA Kaolin Limited
WHIMS	Workplace Hazardous Materials Information System
WIUT	Wamco Industries Unit Trust
WRD	Waste Rock Dump
TEC	Threatened Ecologic Community
XRF	X-Ray Fluorescence (Spectrometry)

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1. EXECUTIVE SUMMARY

Background

This Definitive Feasibility Study (**DFS**) report has been developed by BDB Process Pty Ltd (**BDB**) based on information provided to BDB by WA Kaolin Limited (**WAK**). WAK have advised BDB that the information so provided is a combination of internally generated information and information generated by external experts engaged by WAK for specific tasks. The DFS examines the feasibility of establishing a kaolin processing facility on mining leases held by WAK near Wickepin (**Project**) in the Western Australian wheatbelt.

All contributors are disclosed in section 2.6 and all have consented to their work being included in this DFS, which DFS focusses on the initial development of a kaolin processing facility at the Project site. The company intends duplicating that facility two years after commissioning the initial facility. Financial analysis of the Project considers both the initial facility as a stand-alone development without the expansion and also, the Project assuming the expansion is undertaken as planned.

The Works Approval that underpins the Project is for a project involving both wet and dry processing facilities, with the dry facility located at the site chosen for the initial development considered in this DFS and the wet facility located at the nearby Wedin rail siding. The development considered by this DFS is for the dry processing facility and an expansion of that facility. The Company intends to complete the wet processing facility at some time in the future, when process development work has been successfully completed and market conditions allow.

The scope of services provided by BDB are as follows:

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

Specifically excluded from the services are the following:

- 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).

Overview and History

In 1999 WAK acquired the project tenements. The area had previously been explored by CRA Exploration, who closed the project around 1995. After a period of initial exploration and evaluation, WAK (between 2004 and 2014) established and operated a mine at the Project area and operated a pilot production facility in Kwinana, WA. A range of innovative kaolin processing techniques were developed and proved 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.

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Development of a wet and dry processing facility was examined between 2010 and 2013, however the project envisaged was unable to attract suitable investor interest and was shelved. Subsequently, further pilot testing and marketing were undertaken, culminating in this DFS for the current development proposal.

Location and Ownership

The mine site is located within Mining Lease (ML) (M70/1143) which is located in the Western Australian Central Wheatbelt Region approximately 20km east of Wickepin, which is itself located approximately 200km east-southeast of the state capital, Perth. The tenements are held 100% by WAK, but subject to an ongoing sales royalty of $2.75/t (sales).

Approvals

A Works Approval (W5443/2013/1) was received for the project from the Department of Environment Regulation (**DER**) in 2014 and has subsequently been amended and extended. The Works Approval remains valid for the Project.

Environmental and Social Aspects

The project area is located within the Darling Plateau, which is gently undulating with isolated hills rising to around 50m above the surrounding country. The landform represents a deeply weathered and lateritised soil profile which has been eroded into a rolling landscape interrupted by drainage divides that are capped with lateritic soils. The Project area has for many years been used for agricultural production (cropping and grazing). Virtually all native vegetation has been removed from the areas that will be disturbed by the Project and consequently they do not support any significant flora or fauna habitat.

The project area is sparsely populated with isolated farmhouses. The nearest house to the mine site is 1.9km to the north-east, which is owned by WAK. The nearest residence is 2.8km away.

The project will provide a significant boost to local economies and is expected to employ between 60 and 80 people most of who are expected to live either in the Shire of Wickepin or the Shire of Narrogin.

Rehabilitation and Closure

A Mine Closure Plan (MCP) was prepared in 2015 and submitted to and approved by the DMP (WAK, 2015: see Appendix 1). The MCP has been revised and resubmitted as part of the tenement approval conditions. The Draft 2020 MCP (WAK, 2020) is provided as Appendix 2.

The primary objective of closure of the mine and processing activities is to return the land profile consistent with the surrounding topography and establish either productive agricultural land or native vegetation, depending on the outcome of consultation with stakeholders and considering past land uses.

Geology

Within the Project, the lithologies are dominated by granitic basement of the Yilgarn terrane, into which dioritic and/doleritic dykes of Paleoproterozoic age (c. 2400 Ma) have intruded. These dykes strike east-northeast through the Project area and are associated with the Widgiemooltha large igneous province. Both the granitic basement and dykes are overlain to varying depths, by a regolith profile which includes (in order of decreasing depth) transitional and saprolitic horizons, a mottled clay zone, and a lateritic/colluvial horizon.

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Mineral Resources

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 by CSA Global Pty Ltd (**CSA** or **CSA Global**). 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 kaolin Mineral Resource for the WAK Project is detailed below.

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**

Ore Reserves

An Ore Reserve of 30.5 Mt has been estimated and classified as Probable in accordance with the JORC Code, also by CSA and is shown below.

JORC Classification	Tonnes (Mt)	ISO Brightness (%)	Yield (%)	In Situ Kaolin (Mt)
Proved				
Probable	30.5	83.7	51.8	15.8
Total	**30.5**	**83.7**	**51.8**	**15.8**

Mining

Open cut mining is assumed, 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 WAK 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.

Mining will be undertaken by contractor under the direct supervision of WAK geological and mining staff.

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.

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Metallurgy and Process

The process for the Project is based on the K99 Process which WAK have developed at the Kwinana pilot plant. This plant (in its K99 configuration) has been operational at the Kwinana site since April 2017 and further process improvements were made over the intervening period.

K99 consists of:

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

The core of the IP and heart of the proprietary process developed by WAK is in the dry attritioning and beneficiation sections of the plant.

BDB undertook a review of the K99 Process 2019/20 and provided an Independent Expert Opinion concerning the process and Project. The findings of that opinion were that:

- a process recovery of 88% to kaolin product is reasonable for the assessment of the commercial potential of the Project and determination of Mineral Resource estimates;
- the Project is based on a Resource and process that have been successfully tested through the Kwinana Plant at commercial scale; and
- the Project is technically feasible.

Process Description

Processing will follow the Kwinana small scale proof of concept plant (still operating) and will include a combination of conventional ore preparation plant including loading, feeding, crushing and conveying, followed by a conventional rotary dryer and product elevation system. Dry ore is then fed into a purpose build cyclonic dry separation plant. The kaolin fraction is then separated from the airstream via conventional baghouse filter and transferred to silos for bagging. The waste product is sand with some residual kaolin adhering to it.

WAK has an established and proven QA and QC program for the process.

Stages of Development

It is envisaged that the project will be developed in many stages. The initial project development is based on the development of a project capable of producing approximately 200,000 tpa of kaolin product (in various grades) for sale from the Project Ore Reserves. This operation will consist of dry processing facilities (K99) only. This operation will consist of 2 modules of equal design capacity.

The intention is to then expand that operation such that it is able to treat sufficient Ore to generate approximately 400,000 tpa of kaolin product through the construction of a further 2 identical modules.

This DFS only considers development to this stage; however, the Company intends further expansions of capacity with further dry processing modules and the incorporation of a wet

processing module when further design work into this is completed and the market conditions are considered favourable.

It is important to note that the existing Works Approval allows for the development of the first two dry modules and a wet processing module. Additional approvals will be required for the expansions planned for the dry processing modules. Given that the Company displays reasonable compliance to the conditions imposed by the existing Works Approval, it is believed reasonable to assume that the further approvals required will be received in the normal course of business.

Tailings and Waste Facilities

Waste and overburden removed during the mining process will be returned to mined-out pit areas as part of the ongoing rehabilitation works during operation. Consequently, there will be no permanent waste rock dumps associated with the Project.

Tailings from the beneficiation plant will also be permanently stored in mined out pit areas and subsequently no separate Tailings Storage Facility (TSF) will be required.

Utilities

Electrical Power will be supplied by a site-based power station incorporating 3x 550kVA diesel fuelled generator sets (2 duty, 1 standby arrangement) to generate 415v AC, 3 phase power.

As the process is dry, the only water required is for amenities and fire. Water for these services will be collected from rainwater to storage tanks and augmented via the Wickepin Shire town water supply and is the subject of an application to the Water Corporation.

Gas to fire the process drying equipment will be trucked to the site in standard iso-containers.

Infrastructure and Services

Existing transport infrastructure available to the Project is limited to road and rail corridors and these will be sufficient for the construction and operational needs of the Project. Internal project roads for light road vehicles, heavy road vehicles and mining equipment will be developed as part of the initial capital and as required during the life of the Project.

WAK will use road transport to deliver product to port. There is sufficient road transport capacity available to transport the permitted 380,000 tpa, but WAK will work diligently with authorities and stakeholders to re-open the tier 3 rail line from Wedin to Narrogin and negotiate suitable rolling stock with the rail operator, so the majority of product movement can be on rail.

Communication will be provided to the Project by existing telecommunication providers and no additional provisions have been allowed for, or are deemed necessary.

Operating Strategy

The operating strategy for the Wickepin mine and processing plant is modelled on an expanded case of the existing pilot plant operations in Kwinana. Mining will be semi-continuous initially, until volumes justify continuous operation.

The ore processing plant will operate 24 hours per day, 7 days per week with the ore picked from the stockpiles and transferred to the continuous process feeder using a Front-End Loader (FEL).

The design processing plant production rate is 25 tph, yielding 200,000 tpa on a continuous 24 hr/day basis with a utilisation of 95%.

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Maintenance

Maintenance will be undertaken by a small maintenance team employed by the operation and this team will be augmented as required by contractors.

Capital Development

Capital for the initial production stage and expansion is estimated at $18.07M and $13.57M respectively. Contingency included in this estimate has been calculated based on an estimate of accuracy for each line item in the capital estimate.

Construction is scheduled to be completed over a 37-week period and subsequent commissioning and production ramp-up is scheduled over 26 weeks.

Sustaining capital for the Project is estimated at 1.2% of prior capital expenditure per year of operation. Given the relatively simple nature of the process plant and high proportion (37%) of structural and civil costs in the direct capital cost estimate, this figure is considered reasonable.

Operating Estimate

This operating cost estimate is presented in Australian dollars (A$) and uses prices obtained in the third quarter of 2019 (Q1 2019). The estimate is considered to have an accuracy of ±10%. In broad terms, the estimate includes all site-related operating costs associated with the production of the K99 kaolin. Contingency of 5% has been allowed in the operating cost estimate. The table below details the average operating cost estimate for the first 12 years of operation.

Cost Centre	A$ Per Tonne Produced	Annual (/1000)	Percentage of Total Costs
Direct (Site Based)			
Mining (Incl. Royalties)	**32.57**	**4,021.8**	**15%**
Processing			
Employment	18.34	2,264.9	8%
Power	8.89	1,098.1	4%
Gas	20.73	2,559.5	9%
Consumables	0.11	13.7	0%
Reagents	-	-	0%
Packaging (Bags)	16.17	1,997.3	7%
Transport and Handling	53.28	6,579.7	24%
Maintenance	1.77	218.4	1%
Contingency	2.41	297.2	1%
Lab and QA	0.42	51.4	0%
Sub-Total	**122.11**	**15,080.20**	**55%**
Direct (Non-Site Based)			
Freight	47.31	5,842.3	21%
Total Direct Costs	**201.98**	**24,944.26**	**91%**
Indirect (Overheads)			
Tenement Rents	0.59	73.3	0%
Employment - Indirect	8.74	1,079.5	4%
Administration	2.09	257.5	1%
Corporate	5.59	689.9	3%
Sales and Marketing	-	-	0%
Staff Incentives	2.01	247.7	1%
Total Indirect Costs	**19.01**	**2,348.0**	**9%**
Total Operating Cost	**220.99**	**27,292.31**	**100%**

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Market Analysis

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.

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

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.

Financial Modelling

The financial modelling considers the first 12 years of Project operations in detail but determines NPV and IRR based upon the Life of Mine (**LOM**), where LOM assumes complete depletion of the 2020 Ore Reserves.

Revenue assumptions were developed by overlaying WAK's sales history onto market research data provided by an independent third party, to cross check the projected market share. The same market research data was used to establish price escalation.

Costs have largely been based on the operating experience of WAK at Kwinana, but include an assumed 25% improvement in energy efficiency for the process drier as a consequence of the increased scale.

Modelling has been conducted on both the initial (25 tph of kaolin product) and expanded operation (50 tph of kaolin product). There remains significant scope to further increase the production from the Project due to the very large Resource inventory which contains 54.5Mt of Kaolin and remains open laterally, and the potential to attract additional market share.

Importantly, both phases that have been modelled demonstrate very robust economic parameters based on the assumptions made. The initial phase of the Project generates positive EBITDA in the second year and becomes cashflow positive during the fourth year. Project $NPV_{(7)}$ LOM is calculated to be $119M, with an IRR of 39% as summarised below.

KEY FINANCIAL PARAMETERS (Initial Project)	Value	Average
Kaolin Sold		
t	2,073	173
$k	655,914	54,660
Average $/t	316	
Cost of Sales		
$k (incl freight to Port)	(337,201)	(28,100)
$/t	(163)	
Gross Margin		
$k	318,714	26,559
% of Sales Revenue	49%	
Total Operating Expenses		
$k	(150,004)	(12,500)
$/t	(72)	
EBITDA		
$k	166,510	13,876
Profit Before Tax		
$k	163,529	13,627
% of Sales Revenue	25%	
Profit After Tax		
$k	136,206	11,350
% of Sales Revenue	21%	
Cashflow from Operations	125,801	10,483
$NPV_{(7)}$ LOM*	119,170	
IRR*	39%	

Note: The average figures given above are for the first 12 years of the Project life that have been modelled in detail in the financial model.

With both the initial and expansion phases developed as planned, the Project still generates positive EBITDA in the second year and becomes cashflow positive during the fourth year. Project $NPV_{(7)}$ LOM is calculated to be $257M, with an IRR of 47%. This is summarised below.

KEY FINANCIAL PARAMETERS (Initial Project plus Expansion)	Value	Average
Kaolin Sold		
t	3,760	313
$k	1,208,159	100,680
Average $/t	321	
Cost of Sales		
$k (incl freight to Port)	(601,737)	(50,145)
$/t	(160)	
Gross Margin		
$k	606,421	50,535
% of Sales Revenue	50%	
Total Operating Expenses		
$k	(253,628)	(21,136)
$/t	(67)	
EBITDA		
$k	350,594	29,216
Profit Before Tax		
$k	342,200	28,517
% of Sales Revenue	28%	
Profit After Tax		
$k	261,276	21,773
% of Sales Revenue	22%	
Cashflow from Operations	250,423	20,869
$NPV_{(7)}$ LOM*	256,709	
IRR*	47%	

Note: The average figures given above are for the first 12 years of the Project life that have been modelled in detail in the financial model.

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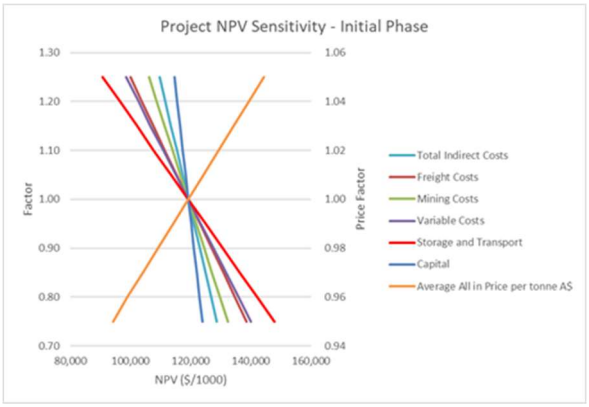
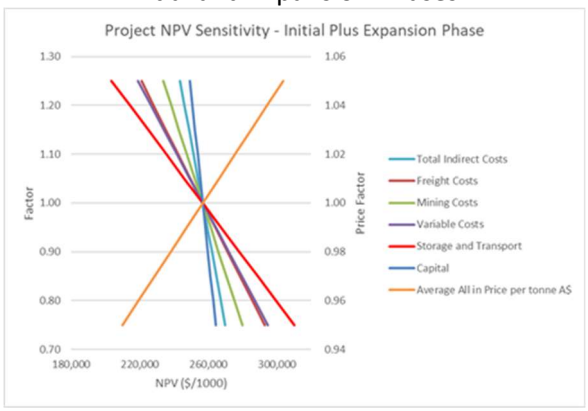
The sensitivity of the project to a range of key elements has also been tested in terms of both NPV and IRR. The Project is shown to be most sensitive to commodity price, moderately sensitive to capital cost, storage and transport and relatively insensitive to the other cost areas assessed. The two graphs below depict the Project's IRR sensitivity to change in core assumptions or estimates.

Initial Phase



Initial and Expansion Phases



Risk and Risk Mitigation

Key areas of risk have been assessed for the Project at it's current state of development and will be re-assessed and monitored regularly during the life of the Project, with changes made to control and/or mitigation measures as required or deemed appropriate.

No risks were assessed as "Very High" and only three risks were assessed as being "High". All other risks assessed were assessed as "Moderate".

Of the risks assessed as "High", all are expected to moderate soon after the establishment of operations.

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2. INTRODUCTION

This feasibility study report has been developed by BDB based on information provided to BDB by WAK. WAK have advised BDB that the information so provided is a combination of internally generated information and information generated by external experts engaged by WAK for specific tasks. All contributors are disclosed in section 2.6 and all have consented to their work being included in this Feasibility Study.

With the exception of an Independent Expert's Report (see Appendix 7), BDB have provided no original information for inclusion in this feasibility study report. A copy of the proposal by BDB to WAK is included as Appendix 12.

This study focusses on the initial development of a kaolin processing facility at the Project site. The company intends duplicating that facility two years after commissioning the initial facility. Financial analysis of the Project considers both the initial facility as a stand-alone development without the expansion and also, the Project assuming the expansion is undertaken as planned. The initial phase will be funded entirely with equity, whereas the Company assumes that both debt and equity will be used in order to fund the second (expansion) phase and that any statutory approvals required for the expansion will be available in the normal course of business.

The Works Approval that underpins the Project is for a project involving both wet and dry processing facilities, with the dry facility located at the site chosen for the initial development considered in this DFS and the wet facility located at the nearby Wedin rail siding. The Company intends to complete the wet processing facility at some time in the future, when process development work has been successfully completed and market conditions allow. Consequently, the initial development is the first stage of completing the development envisaged by the Works Approval.

2.1 Sources of Information and Reliance on Other Experts

BDB has completed the scope of work (see section 2.4) largely based on information provided by WAK (see *Table 2* for a list of key contributors).

BDB are not qualified to comment on any legal, 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.

BDB have made all reasonable endeavours to confirm the authenticity and completeness of the technical data on which this feasibility study report is based, however, BDB cannot guarantee the authenticity or completeness of the information provided to it by WAK directly or indirectly.

2.2 Prior Association and Independence

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

BDB is an independent mineral processing and project development consultancy. This feasibility study report has been prepared in return for professional fees based upon agreed

commercial rates and the payment of these fees is not contingent on the results or content of this feasibility study report.

No associate or employee of BDB is, or is intended to be, a director, officer, or other direct employee of WAK.

2.3 Scope of Feasibility Study 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 not for inclusion in a Prospectus or similar document on a standalone basis.

2.4 Scope of Work

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

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

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2.5 Scope of Services

2.5.1 Services Included

The Scope of Services covered by BDB includes:

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

2.5.2 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).

2.6 Contributors

The following people and organisations (see *Table 2*) have contributed to this feasibility study report. The description of each contributors' expertise and contribution has been provided to BDB by WAK and does not constitute an opinion or finding of BDB.

Table 2. Table of Key Contributors

Contributor	Expertise and Contribution
WAK Limited	WAK are an experienced kaolin processor and have developed processing technology to facilitate the commercial exploitation of the Project. They have provided the majority of information used in this report. In particular: • Historic data for the Project, including statutory approvals and associated documents; • Metallurgical data; • Ore processing information and design; • Information and data concerning utilities, infrastructure, services and operating strategy as required by the Project; • The capital and operating cost estimate; and • Financial modelling.
BDB Process Pty Ltd	The principals of BDB are all recognised mineral process and mining project experts and BDB has generated this feasibility study report (see this section 2 for details).
CSA Global Pty Ltd	CSA Global provides multi-disciplinary services to clients in the global resources industry. CSA Global's services include project generation,

Contributor	Expertise and Contribution
	exploration, resource estimation, project evaluation, development studies, mining operations assistance, and corporate consulting such as valuations and independent technical reports. CSA Global have developed the Mineral Resource Estimate (Appendix 5) and Ore reserve Estimate (Appendix 6), which are summarised in sections 9, 10 and 11.
SF Design	SF Design's team consists of over twenty Perth based employees ranging from Principal Engineers, Project Engineers, Design Engineers in each engineering discipline, Lead Designers, Piping / Structural / Mechanical Designers, and draftsman. The engineering team has a wide range of experience including: • FE skills in the oil and gas industry as subsea pipeline specialists, solving problems in advanced analysis fields of lateral buckling, pipeline walking, structural analysis and fracture mechanics (ECA). • FEA, mechanical design and pressure vessel verification expertise. • 14 years working across structural, mechanical, piping design and construction projects for the mining and resources industry in WA. • Exposure to a variety of disciplines such as mechanical assembly, fabrication and site construction.
Grandview Research	Grand View Research is an India & U.S. based market research and consulting company, registered in the State of California and headquartered in San Francisco. The company provides syndicated research reports, customized research reports, and consulting services. Grand View Research database is used by the world's renowned academic institutions and Fortune 500 companies to understand the global and regional business environment. Their database features thousands of statistics and in-depth analysis on 46 industries in 25 major countries worldwide.

2.7 BDB Process Relevant Experience

The principals of BDB are all recognised mineral process and mining project experts with many decades of combined experience. This review has been principally undertaken by Mr Darryl Butcher (BSc, FAusIMM, FAICD). Mr Butcher has operated as an independent mineral processing and project development consultant from Perth, Western Australia for the last 30 years and over that period has undertaken many feasibility studies within the mining and mineral processing sector, predominantly as the lead member of the owner's team. Mr Butcher has also provided independent forensic metallurgical accounting and metallurgic audit services to clients that have included operating mineral processing companies, mineral process service providers and merchant banks.

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3. OVERVIEW AND HISTORY

A great deal of time and money was spent by CRAE on exploration for kaolin in the area but following an executive decision by Rio Tinto in 1995 to withdraw from the kaolin business. They decided, at the time, to offer their Comalco Weipa kaolin operations for sale but when nobody decided to buy it, they closed down the operation. At the time Weipa was producing a fine-particle size coating clay mainly for the Japanese market. Up to this time Rio Tinto were carrying out extensive kaolin exploration in the world including Brazil.

The evaluation of the deposit continued once W.A. Kaolin Holdings Pty Ltd obtained the Mining rights to the areas previously examined by CRAE/Rio Tinto in 1999.

At this time WAK appointed Continental Resource Management based in Perth to carry out more detailed exploration and evaluation of the Sparks and other deposits in the area. The work was conducted by Dr. J. M. Chisholm and J.J.G. Doepel of Continental Resource Management (CRM) – with Ian Wilson, acting as a Consultant to WAK worked closely with CRM in deciding which areas to drill and evaluate.

WAK submitted samples of ore and product to most of the global kaolin producers for evaluation and without exception, the quality and suitability of WAK products was endorsed. Further detailed exploration was carried out in the area in 2005/2006 by CAEMI – at the time this was a Brazilian Company involved in development of kaolin operations in Brazil at Rio Jari and Rio Capim areas. This was part of the CVRD Company in Brazil who subsequently changed their name to VALE (a major iron ore and other metal producer). VALE were keen to expand their kaolin resources at the time and saw Western Australia as an ideal place to have a presence outside of Brazil and the USA as major growth markets in Asia (particularly China) could be sourced from Western Australia. CAEMI carried out a detailed drilling and evaluation programme, and concluded that WAK products were suitable for all markets especially the paper market. However, just as the evaluation concluded and agreements were being drafted, VALE decided to withdraw from the kaolin business and sold their PPSA (Para Pigmentos SA) operation in Brazil to IMERYS and then later sold their CADAM Rio Jari operation to KaMin (formerly Huber Kaolin from Georgia, USA).

Between 2007 and 2010 WAK 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 proved 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.

On the basis of this pilot operation a development was planned and development approvals established for a wet and dry kaolin processing facility, however this project was unable to attract suitable investor support and was shelved.

Further pilot work was undertaken, first in Victoria and later at the Kwinana facility culminating in a new and innovative dry beneficiation process for the Wickepin Kaolin resource. Trial marketing using the products of this work was also undertaken, as was engineering design and pre-development work for a re-configured project. This DFS is the culmination of those efforts.

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4. LOCATION AND OWNERSHIP

4.1 Location

The Project is located about 20km east of the Western Australian wheatbelt town of Wickepin, which is located approximately 200km 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. See below.

Figure 1. Project Location (Source: CSA Report R351_2019)

4.2 Tenements and Permits

The Project currently comprises four retention licences and a single mining lease. These tenements are listed in *Table 3* and presented in *Figure 2*.

Table 3. Tenements Within the 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

A royalty of $2.75/t is payable to Wamco Industries Unit Trust (**WIUT**) for all product produced and sold from the Project tenements.

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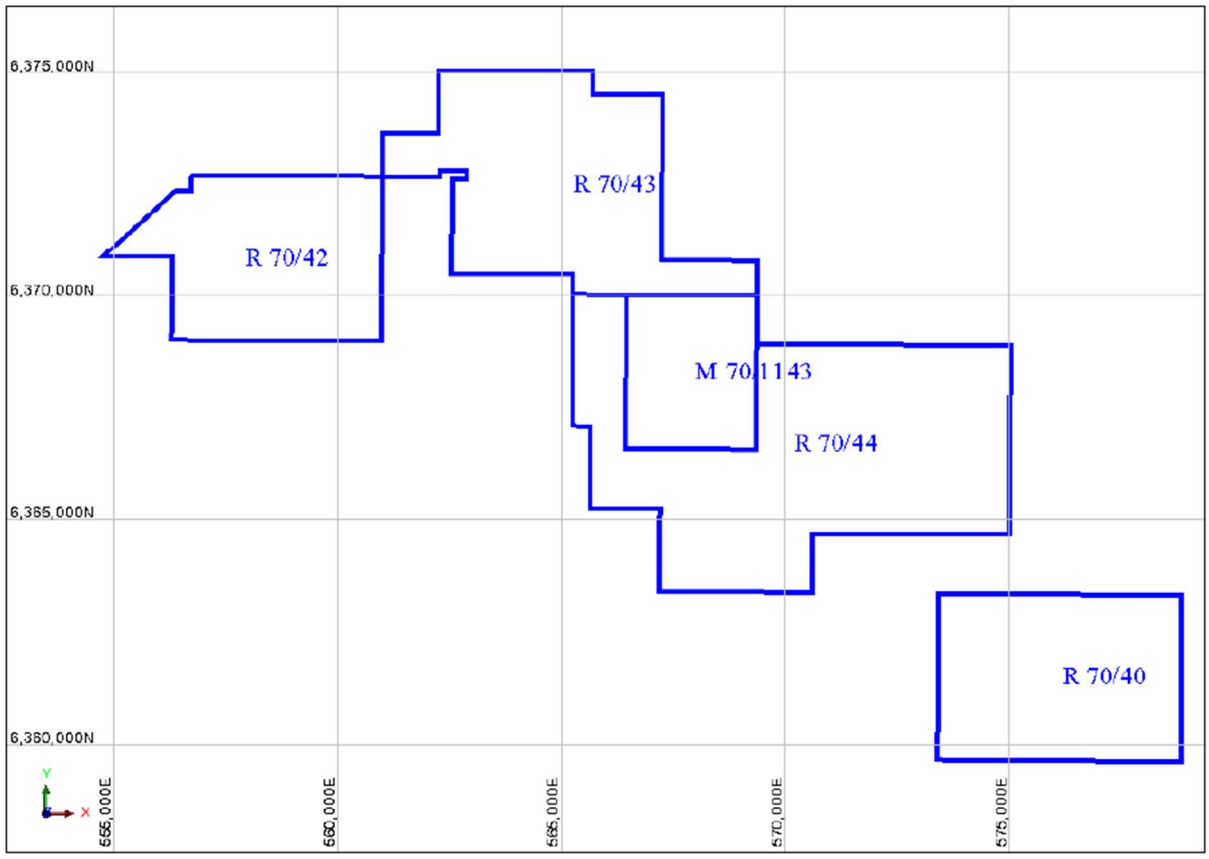

Figure 2. Tenements comprising the WAK Project (grid is MGA94, Zone 50) (Source: CSA Report R301_2020)

4.3 Climate and Physiography

Regional climatic conditions for Wickepin are those typical of the Western Australian wheatbelt region, with maximum and minimum temperatures ranging from approximately 30-15°C, and 15-5°C respectively. The area experiences defined seasons, with January the historically hottest month and July the coldest. Average annual rainfall is historically more than 490 mm, with January the driest month, averaging only 13.2 mm; and July the wettest, averaging 85.8 mm.

The Project area is overwhelmingly dominated by farmland, upon which the predominant livestock and crops are sheep and wheat. The native vegetation system of the area is Wandoo and York-gum woodland. The area forms part of the Avon River catchment and drains to the north.

The locations of the mine and Wedin process plant within these tenements are also shown on Drawing 000-GD-015_C (Appendix 13). The Wedin site is adjacent to Line Road and to an existing railway that connects to Kwinana.

A site plan of the mine-site and associated de-gritting plant is shown in Drawing 200-GD-013_B (Appendix 13) and of the Wedin process plant in Drawing 400-GD-002_F (Appendix 13).

The project is in an area that mostly has been cleared of natural vegetation and converted to agricultural uses for many years. There are no environmental constraints such as populations of rare plants and significant fauna, or aboriginal sites in the areas that will be disturbed by the

project operations. There is a small drainage line on the Wedin site. There should not be any requirement to modify this drainage line.

4.4 Exploration History

Previously reported exploration history for the 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. No further drilling has been conducted over the Project since 2006.

4.5 Previous Mineral Resource Estimates

Several historical estimates of kaolin resources have been produced for the Project since 2003, with the most recent being reported with a cut-off date of July 2012.

This resource reports an endowment of kaolinized granite of 1.2 billion tonnes; however, the area over which mineralisation was considered, the paradigm by which ore and waste were identified, and the estimation methodologies employed were fundamentally different to those utilised in the current MRE. Historical resources were defined within larger exploration licences (subsets of which comprise the current retention licences) and the ore/waste contact was defined based on subjective visual logging of cream/white kaolinized granite as the ore horizon within individual drillholes. The top and base of the identified ore horizon were contoured to generate digital terrain model (DTM) surfaces within the Project, and then polygons were defined in plan to encapsulate regions where the logged cream/white kaolinized granite thickness was estimated to exceed 8 m. Using a density value of 1.9, tonnages of kaolinized granite were subsequently calculated from these encapsulated volumes. No quantitative measure of yield nor brightness were produced. Given the disparities in area considered, and estimation and reporting methodologies, these historical resources are not directly comparable to the current estimate.

4.6 Mining Status

The Company has mined from within M70/1143 on a campaign basis over the last 15 years. Only very small quantities (less than 50,000t in aggregate) have been extracted in total over that time.

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5. PROJECT HISTORY

Between 2004 and 2014 WAK 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. WAK advise that the proposed commercial development of this process did not proceed due to commercial reasons.

In 2015, after lab scale trials, WAK 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 approx. 30 times at Kwinana and the plant was officially opened in November 2016. This K99 Process is the processing basis for the proposed development.

Three small mining campaigns to extract 4-5,000 t of kaolinite ore were conducted for a two-week period in December 2016, July 2017 and June 2019 during where ore was extracted and stockpiled on site and then transferred to the Kwinana Pilot Plant facility for processing. In July 2020, a further three-week campaign commenced with the intent to extract 15,000t kaolinite ore to be stockpiled on site.

5.1 Approvals

5.1.1 Historic

WAK has previously sought various approvals associated with operating a kaolin mine at the Wickepin site and a processing plant in the Kwinana Industrial zone to provide product for testing and evaluation. These are detailed in *Table 4*.

Table 4. Summary of Approvals

Regulator	Type	Premise Location	Number	Issue Date	Expiry Date
Department of Environment (DoE)	Works Approval	Pilot Plant East Rockingham	W4147/2005/1	2/8/2005	
Department of Environment and Conservation (DEC)	Plant Site Registration	Pilot Plant East Rockingham	R1/2008/1	29/5/2008	
DEC	Mining Proposal	Sparks Mine M70/1143 Wickepin	10.1	30/5/2008	
Department of Environment Regulation (DER)	Works Approval	Kaolin Mine and Process Plan Wickepin	W5443/2013/1	20/2/2014	23/2/2019
Department of Water Environment Regulation (DWER)	Works Approval Amendment Notice 1 – Expiry Date	Kaolin Mine and Process Plan Wickepin	W5443/2013/1	15/2/2019	15/2/2023
Department of Mines and Petroleum (DMP)	Mining Proposal with MCP	Kaolin Project G70/251 L70/156 M70/1143	ID 50959	21/1/2015	
	Project Management Plan	Sparks Mine	PM-851-265611		
Shire of Wickepin	Mining Proposal Endorsement	Sparks Mine Site M 70/1143	200-XR-001 File 801	22/5/2008	
Shire of Wickepin	Planning Approval	Mineral Extraction Loc 13898	File 10.23	19/4/2007	

Regulator	Type	Premise Location	Number	Issue Date	Expiry Date
		Loc 14941			
Shire of Wickepin	Planning Approval	Williams Location 7495	200-GR-993 Ref 700	29/4/2010	29/4/2012
Shire of Wickepin	Extension to Planning Approval	WAK Lot 14431 Sparks Road Narrogin	DAP/14/000685	15/1/2019	15/1/2021
Darryl Helms	Land Use and Rehabilitation Plan Agreement	Initial Mining Proposal Area	Doc- 200-XR-001	16/6/2008	
Robyn Sparks	Land Access Agreement	Initial Mining Proposal Area		30/6/2008	

Works Approval (W4147/2005/1) was granted by the Department of Environmental Regulation (DER) and the (Kwinana) plant site was registered under Registration R1/2008/1).

There are currently two small scale existing kaolin mine pits that are below licensing thresholds on Lot 137898 as shown in *Figure 3* below.

Figure 3. Image showing existing mining areas

5.1.2 Approved Project

WAK is proposing to construct and operate a kaolin mine and processing plant located in the Shire of Wickepin in the southern wheat-belt of WA (*Figure 1*). The mine site is located within Mining Lease M70/1143. The initial processing of the ore will be conducted at the mine site with further processing conducted at a location adjacent to the Wedin railway siding, approximately 18km south of the mine-site (*Figure 2*). The process plant site is located on General Purpose Licence 70/251.

Around 100,000 tonnes per annum (tpa) of the ore will be beneficiated at the mine site to produce 90% kaolin (K90) and packaged in bulka-bags and trucked either directly to Kwinana for shipping or to the rail siding at Wedin for rail transport to Kwinana. The remaining 260,000

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tpa would be partially processed at the mine site to produce a kaolin slurry which will be piped through a pipeline located on Miscellaneous Licence 70/156 to the plant at Wedin for processing, packaging and loading onto rail to Kwinana. The process plants will produce up to 360,000 tpa of kaolin product.

5.1.3 Current Stage

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 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.

5.1.4 Current and Future

WAK previously sought various approvals to operate a mine and a process plant with a capacity to produce 360,000t of kaolin each year. Approval for the Mining Proposals submitted in 2008 and 2009 (WAK, 2008;2009) was initially granted in 2009 by the Department of Mines and Petroleum (DMP) Additional approval was granted following the submission of a revised Mining Proposal to the DMP in January 2015 (WAK, 2015). A series of Works Approvals have been obtained from the DER/DWER for the Kwinana and Wickepin sites. The Works Approval for the kaolin mine and process plant at Wickepin was most recently issued in February 2019 (DWER,2019). These approvals are still current however it is possible that they will require amendments to adapt for the current proposal. Various additional approvals and permits will be required prior to development and operation. A summary of the Works Approval and Mining Approval conditions is provided below.

5.1.4.1 Works Approval

WAK submitted a Works Approval Application in 2013 for a kaolin mine and process plant in the Shire of Wickepin (WAK, 2013) to produce up to 360,000 t of kaolin per annum. The mine and process plant project was granted Works Approval (W5443/2013/1) by the DER as a Category 5 (Processing or beneficiation of metallic or non-metallic ore) prescribed premise under Part V of the *Environmental Protection Act 1986,* originally in February 2014 and most recently amended in February 2019. A copy of the 2014 Works Approval is provided as Appendix 4.

The key Works Approval conditions are summarised as follows:

- The project shall be constructed in accordance with the documents provided with the application for Works Approval
- Environmentally hazardous materials shall be stored in accordance with the code of practice for the storage and handling of dangerous goods
- A Commissioning Plan shall be submitted to the Director of DER for approval three months before commissioning commences. This shall include:
    - The commissioning stages and expected time scales;
    - Expected emissions and discharges during commissioning and the environmental implications of the emissions;
    - How emissions and discharges will be managed during commissioning;

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  - Monitoring that will be undertaken during the commissioning period;
  - How accidents or malfunctions will be managed;
  - Start up and shut down procedures, and
  - Reporting proposals including accidents, malfunctions and reporting against the commissioning plan.
- Commissioning shall be in accordance with the Commissioning Plan
- The kaolin mine and process shall be commissioned for a period not exceeding 3 months
- A noise assessment shall be undertaken during commissioning and a report on that assessment shall be prepared in accordance with Part 3 of the Environmental protection (Noise) Regulations 1997 (Noise Regulations). The report shall include:
  - Methods used for monitoring and modelling of noise;
  - An assessment of whether noise emissions from the premises comply with the assigned noise levels in the Noise Regulations, and
  - Where they are not met, proposed measures to reduce noise emissions to assigned levels together with time scales for implementing the proposed measures.
- An ambient water quality monitoring program shall be established at the mine site and the Wedin site to determine pH, total dissolved solids, total suspended solids and depth to groundwater in accordance with the relevant part of Australian Standard AS 5667
- A drainage plan for the mine site and the Wedin plant site shall be submitted to the Director (DER) before commissioning
- A sampling port shall be installed in the exhaust chimney of the drying plant at Wedin in accordance with Australian Standard 4323.1 to verify air emissions including NOx, SOx, CO_2, CO and PM_{10} in accordance with the relevant parts of Australian Standard AS 3580. The results shall be compared to relevant air quality standards and submitted to the Director (DER).
- A Compliance document shall be submitted to the Director (DER) following the construction of the works and prior to commissioning of the same. The document shall:
  - Certify that the works were constructed in accordance with the conditions of the works approval;
  - be signed by a person authorised to represent the Works Approval Holder and contain the printed name and position of that person within the company.
- A Commissioning Report shall be submitted to the Director (DER) for approval within two months of the completion of commissioning. The Report shall include:
  - summary of the monitoring results;
  - list of any monitoring reports from third parties
  - summary of environmental performance of the mine and process plant against the design specifications as set out in the works approval application
  - review of performance against the works approval conditions; and

- further measures proposed to meet design specification and works approval conditions, including timescales.

Notifications shall be sent to the Director seven days prior to the start of commissioning, and seven days after the completion of commissioning.

An application to amend Works Approval W5443/2013/1 was submitted in 2019. This resulted in the following amendments to the Works Approval conditions (DWER, 2019):

- The design capacity maximum tonnage of ore to be processed on site is 1.25 Mtpa – input, (360,000 tpa of kaolin product- output)
- Department name changes from DER to DWER
- Changes from Director to Chief Executive Officer (CEO)
- Upon completion of the works submit a report/engineering/building certification from a suitably qualified professional confirming each item of infrastructure (as listed in the works approval) has been constructed with no material defects and to design specifications.
- A description and explanation of any departure from the required design and/or construction shall be provided to the CEO.

5.1.4.2 Mining Proposal Approval

WAK received approval for Mining Proposals submitted in 2008 and 2009 (WAK, 2008;2009). WAK also received approval for the Mining Proposal and Mine Closure Plan submitted to the DMP in January 2015. The Mining Proposal included mining and associated activities on Mining Lease (M) 70/1143, Miscellaneous Licence (L) 70/156 and General Purpose Lease (G) 70/251. The documents submitted satisfied the original approval conditions for the M70/1143, L70/156 and G70/251. The General Purpose Tenement G70/251 related to the adjacent properties and the railway at the Wedin site. The Miscellaneous Licence L 70/156 relates to the pipeline corridor on adjacent properties to the Wedin site. The current proposed project does not require the establishment of a plant at the Wedin site or a pipeline linking the mine site to the Wedin site Further conditions were imposed on M70/1143, L70/156 and G70/251 following the review of the 2015 Mining Proposal and Mine Closure Plan.

A copy of the Tenement approval conditions is provided in Appendix 3.

5.2 Existing Environment

5.2.1 Previous Study

Prior to WAK owning the project, CRAE had been identifying kaolin clay resources in the area and found the most appropriate deposit for development was the area known as the Sparks Prospect which is the project area for the current project. CRAE commenced investigations at the site for the potential for development. One study commissioned in 1995 was to describe the existing environment of the site with the potential to be impacted by the project (D&M, 1995). The report summarised the existing environment information available at that time. The following sections have drawn on the information contained in the 1995 existing environment report supplemented with more recent information where possible.

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5.2.2 Regional Setting

The mine site is located within Mining Lease (ML) (M70/1143) which is located in the Western Australian Central Wheatbelt Region approximately 20km east of Wickepin. The Wedin site (G70/251) is 18km south of the ML and also around 20km east of Wickepin and 7km west of the town of Tincurrin. The Wedin site is adjacent to Line Road and to an existing railway that links to Kwinana.

The project area is located within the Darling Plateau, which is gently undulating with isolated hills rising to around 50m above the surrounding country. The landform represents a deeply weathered and lateritised soil profile which has been eroded into a rolling landscape interrupted by drainage divides that are capped with lateritic soils.

5.2.3 Geology

The kaolin deposits of south west Western Australia are classified as primary deposits formed by in-situ weathering of the felsic igneous and metamorphic rocks of the Archaen Yilgarn Shield. The rock types are variable and include coarse porphyritic granite, adamellite, and leucocratic granofels of granitic adamellitic composition.

Much of the region is covered by a lateritic duricrust, which forms a relict peneplain thought to be of Eocene age. The rocks have been deeply weathered, forming an intensely leached, kaolinised zone locate beneath the laterite. Kaolin exposures are common in breakaways around the edges of lateritic uplands and in farm dams. Drilling shows the kaolin zone to vary from Absent to 40 m thick with overburden varying from nil to up to 10 m thick.

The mineral kaolinite is derived from the alteration of the potash and soda feldspars, and occurs as a matrix between quartz crystals. Textures of the parent rocks are preserved in the kaolin outcrops, showing clearly that the deposits are formed by in situ weathering rather than sedimentation. The depth to granite varies from 15 to 44 m.

Information on the geology of the mine site has been collected during extensive drilling programs to determine the extent and quality of the kaolin deposits and to provide the necessary data for mine planning. Intensive drilling of the deposits on Location 14431 will occur in the early stage of project implementation and drilling of other deposits will occur in the longer term as the project proceeds. This will provide substantial information on the geology, soil profile and groundwater of ML70/1143.

5.2.4 Soils

A typical soil profile at the mine site comprises soil and laterite overburden to a depth of 1m then mottled iron stained clays to a depth of 3 m. The kaolin deposit extends from 3m to 20m depth and in places to at least 40 m. The clay deposits are underlain by saprolite. Further site-specific data on the surface soils will be collected during drilling programs for mine planning purposes.

These data will provide input to the development of alternative soil profiles for trial plots that will be established to examine and improve crop productivity following rehabilitation. A consultant agronomist will be employed to design, implement and report on these trials and to assess the actual crop production on rehabilitated areas.

5.2.5 Hydrogeology

Groundwater in the region occurs within the weathered granite profile in fractured rock and Tertiary paleochannel. Depth to water in the region varies from near ground level to a maximum of around 30 m with flow directions generally towards major valleys. Groundwater

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flow is expected to broadly coincide with the surface water flow divide which is towards the north west in the north of the project area, and to the south west and Lake Tooliban in the south. Groundwater quality is highly variable in the weathered and fractured granite but is generally brackish to saline, and is not considered to be a significant groundwater aquifer source (D&M, 1995).

Groundwater has not been detected during the exploration drilling programme or test excavation at the mine site. No drilling has occurred at the Wedin site so it is therefore not known whether any groundwater is present.

5.2.6 Surface Hydrology

The terrain of the mining area is relatively flat which is drained by a network of intermittent streams. There is no surface water flow in the area of the mine as the surficial sands are highly permeable. A natural drainage channel is present on the Wedin site which contains intermittent surface flows. This will be retained and pre-existing flow rates into and from the site will be maintained.

5.2.7 Climate

Climatic data are collected at regional locations at Wickepin and Narrogin, with Wickepin being the nearest. Typical monthly temperature and rainfall averages for the Wickepin are shown on *Figure 4* and *Figure 5* below.

Figure 4. Wickepin Temperature Trends

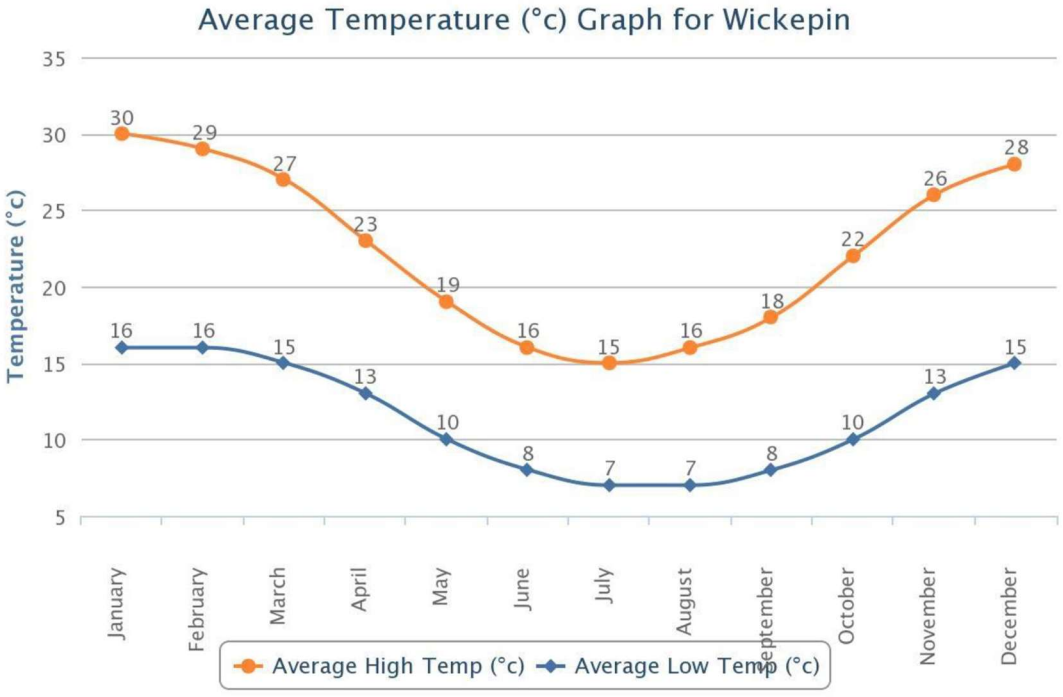

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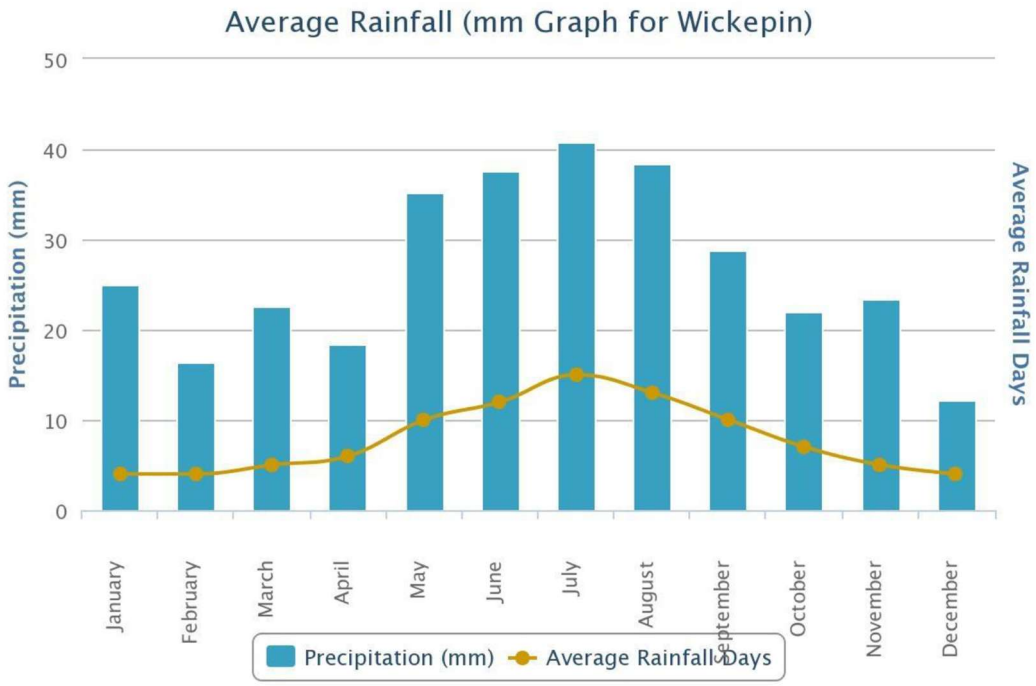
Figure 5. Wickepin Average Rainfall Trends



5.2.8 Vegetation and Flora

5.2.8.1 Vegetation

The project area is within the southern portion of the Corrigin Vegetation Systems of the Avon Botanical District within the South West Botanical Province. The Corrigin System has a typical wheatbelt landscape and lies between the Pingelly and Narrogin systems to the west, the Pikaring System to the north, the Hyden and Muntadgin Systems to the east and the Dumbleyung System to the south (D&M, 1995).

The Project areas (mine-site and Wedin) have for many years been used for agricultural production (cropping and grazing). Virtually all native vegetation has been removed from the areas that will be disturbed by the Project and consequently they do not support any significant flora or fauna habitat.

The mine site and the Wedin site have been used for many years for cereal cropping and sheep grazing. There is a small area of disturbed woodland on the mine-site and there also is a Remnant Vegetation Protection Area adjacent to Lot 1443 where the mine site is located. These areas of vegetation will not be affected by the mining operations.

The Wedin site (Lot 8798) includes about 40ha of remnant vegetation that is contiguous with a larger area of vegetation on adjacent locations that include Reserve E11286 for Camping and Water Reserve E19839. The proposed facilities on Lot 8798 will not require clearance of any of the remnant vegetation on the property. This vegetation will be enclosed with a fence to minimize the potential for accidental damage.

An access road will be constructed south across Lot 14431 to connect with Wogolin Sth Road. A short length of this section of the road crosses an area of degraded remnant vegetation.

The remnant vegetation is the only significant fauna habitat at the site.

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5.2.8.2 Nature Reserves

The mine site and the Wedin site are within the buffer zones of the Toolibin Reserves Threatened Ecologic Community (TEC). These TECs include Toolibin Lake which is a wetland of international significance under the RAMSAR Convention.

The Lake Toolibin Nature Reserve is located 17km southwest of Wickepin. Toolibin Lake is the largest in a series of seasonal freshwater lakes in the upper part of the Arthur River wetland system.

There is no natural surface run-off from the location of the mine-site and drainage management will be undertaken to ensure that there is no operational run-off. None of the proposed operations will affect groundwater, therefore there is no material risk that the proposal will affect the TEC.

5.2.9 Social Environment

The project area is sparsely populated with isolated farmhouses. The nearest house to the mine site is 1.9km to the north-east, which is owned by WAK. The nearest residence is 2.8km away.

The project will provide a significant boost to local economies and is expected to employ between 60 and 80 people most of who are expected to live either in the Shire of Wickepin or the Shire of Narrogin.

5.2.10 Cultural Heritage

There are no places or objects of significance within the meaning of the Aboriginal Heritage Act 1972 or the Heritage Act of Western Australia 1990 in the project area.

5.3 Project Description

5.3.1 Overview

As described earlier (see section 5.1.4.1), a Works Approval has been granted to the Company for the development of an operation at the Project site. The project considered in this study is the second stage of development for the project (The first stage involved trial mining and commercial scale pilot treatment of Ore at the Company's Kwinana site) and is, in effect, the first stage of the approved activities. Specifically, (without any change to the project scope), the 260,000 tonnes of wet process refinement at the Wedin site will follow some time after the initial construction, commissioning and operation of the K99 Process (dry, de-gritting) at the mine site. It is intended that this first stage of the operation will be expanded from 100,000 tonnes to 200,000 tonnes capacity using the K99 Process. This expansion is the subject of an application being prepared for a further amendment to the existing Works Approval. The Company intends completing the development envisaged in the existing Works Approval (including the wet process facility at the Wedin site) during subsequent development stages, as market and commercial conditions allow. The Company has estimated a future development strategy, which is reflected in the mining and production volumes referred to in this Study and has assumed that approval to proceed with these subsequent stages will be provided in the normal course of business.

The description below describes both the approved project and the current stage for clarity.

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5.3.1.1 Approved Project

The objectives of the WAK Project are to establish a kaolin mine and process plants in the Shire of Wickepin with a capacity to produce 360,000 tonnes of kaolin product per annum. The Project Ore Reserve (see *section 11* and *Table 10*) is 34.7 million tonnes (Mt). The mine could operate at the target rate of 360,000 tpa for almost 100 years on these Ore Reserves. Mining operations would disturb approximately three hectares (ha) of land each year.

The kaolin will to be de-gritted at a primary beneficiation plant located close to the mine. The primary plant will separate the valuable clay from host sand using screens and cyclones. The project aims to export 100,000 tpa of the beneficiated kaolin. The remaining 260,000 tpa of kaolin will be pumped as a low-density slurry through a pipeline to a location approximately 18km south of the mine site known as the Wedin Rail Siding.

Further processing to achieve the following range of products will occur at the plant at the Wedin Siding:

- Centrifuge refining of the kaolin into different size ranges.
- Centrifuge de-watering.
- Pressing to create a damp cake product.
- Rotary mixing and fluid bed drying with hot air for a granule product.

The finished products will be stored in a 10,000t storage area in one tonne bulk bags and freight containers and transported by rail to Kwinana for direct loading onto ships.

The project is expected to employ between 60 and 80 people and will provide a major stimulus to the economies of the Shire of Wickepin and Narrogin.

5.3.1.2 Current Stage

The current stage for the Project only involves the primary beneficiation of kaolin-containing ore to a high-grade kaolin product suitable for use in processes such as paper manufacture, ceramics and paint, as well as some direct-shipping of Ore. The Ore, waste, tailing and product quantities referred to in the original works approval remain materially unchanged. All mining and development activities will be undertaken at the mine site, with no development (or operations), save for loading and unloading train carriages as required, occurring at this stage at the Wedin location.

The process consists of the following key steps:

- Whole-of-feed drying;
- Size reduction;
- Dry attritioning;
- Beneficiation;
- Product packaging; and
- Tailing disposal (dry or damp, not pumped slurry).

This a relatively simple process based on the physical beneficiation of ore, where the beneficiation is based almost entirely on particle size discrimination

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5.3.2 Area of Disturbance

5.3.2.1 Approved Project

M70/1143 has a total area of 996.35 ha. The mining and de-gritting operations will disturb only a small part of the tenement as follows:

- Open Pit – 3 ha each year
- Mine site operational area, including stockpiles for clay waste, ore and product, run-off dam, de-gritting plant, office, diesel fuel storage tank, and other minor components – 6ha.
- The Wedin process plant will require an area of approximately 2 ha.

Mine Site

The estimated areas that will be disturbed for the mine site area (M70/1143) are listed in *Table 5* and *Table 6*. As the mining activity is a shallow strip or box-cut type operation, the total disturbed area for the activities is specified in *Table 5*. The active disturbed areas during any typical 12-month period are listed in *Table 6*.

Table 5. M70/1143 Total Disturbed Area

Description of Mining Disturbances	Area (ha)
Open Pit	47.6
Waste dumps (lower risk) (temporary)	8.8
Topsoil stockpiles (temporary)	4.1
ROM pad	2.1
Plant site and mining infrastructure including office / workshops7	7.9
Fresh water pipeline corridors	0.4
Haul roads	5.0
Access tracks	3.8
Undisturbed Land of tenement area 993.8 ha	**914.3**

Table 6. M70/1143 Expected Disturbed Area for any 12 Month Period

Description of Mining Disturbances	Area (ha)
Open Pit	7.6
Waste dumps (lower risk) (temporary)	8.8
Topsoil stockpiles (temporary)	4.1
ROM pad	2.1
Low grade ore stockpiles (located on areas to be mined in future)	4.6
Plant site and mining infrastructure including office / workshops7	7.9
Strip mining (backfilled mining voids) (rehab in progress)	3.8
Fresh water pipeline corridors	0.4
Haul roads	5.0
Access tracks	2.3
Undisturbed Land of tenement area 993.8 ha	**947.4**

All overburden and plant tailings will be used as back-fill in the strip-mining operation. Therefore, any areas designated as waste dumps or topsoil stockpiles in *Table 5* will be temporary and will be completely removed as part of the rehabilitation works.

Areas nominated as pipeline corridors in the table represent only those lengths of pipelines which are laid in areas which will not otherwise be disturbed as mining areas or haul roads. Wherever possible, pipelines will be located in roadway corridors or on land which will be used for mining or stockpiles.

The low-grade ore stockpile listed in *Table 6* will only be temporary and will be located on an area of ore close to the plant. The low-grade stockpile is therefore not listed in the total disturbed area as this would be a duplication of a portion of the open pit area.

The mine pit will be rehabilitated progressively as mining proceeds and will be returned to agricultural uses.

Wedin Site

The areas that will ultimately be disturbed on Lot 14431 comprise cleared agricultural land, a pine plantation and a Tagasaste (tree lucerne) plantation.

5.3.2.2 Current Stage

Mine Site

The disturbance areas described in *Table 5* and *Table 6* for the approved project are the same as those that will occur as part of development and operations for the current stage.

Wedin Site

No disturbance will occur at the Wedin site as a consequence of this development stage.

5.3.3 Pipelines

5.3.3.1 Approved Project

The estimated disturbance areas for the pipelines on L70/156 is approximately 10.7 ha based on the proposed pipeline route and a six-metre corridor. For almost the entire pipeline route the pipes will be installed in cleared paddocks which are used for broadacre cropping and grazing activities. Clearing of remnant vegetation will only be required for less than 1,100 m of the total 17.8 km route length and where-ever possible the pipes will avoid large trees. Smaller vegetation will need to be cleared to remove the fire hazard.

5.3.3.2 Current Stage

As all the processing activities will be conducted at the mine site there will be no need for a pipeline from the mine site to the Wedin railway siding.

5.3.4 Wedin Rail Siding

5.3.4.1 Approved Project

The disturbed areas for the Wedin Rail Siding site on G70/251 is approximately 16.9 ha. The majority of the disturbed area required is already cleared for broadacre cropping and grazing activities. Some vegetation will need to be cleared within the existing Wedin rail reserve to allow for the installation of new track for the rail siding.

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5.3.4.2 *Current Stage*

As all the processing activities will be conducted at the mine site there will be no need for a process plant and facilities to be constructed at the Wedin railway siding, during this stage of development.

5.3.5 Mining

5.3.5.1 *Approved Project*

The mining process will involve soil stripping by conventional means (scraper or similar) on a campaign basis, and overburden and ore extraction by excavator and articulated mining truck in a box-cut mining operation. No drilling, blasting or crushing will be required to extract the ore. The typical depth of mining will be around 20 to 30m below the surface with a maximum depth of 35 m.

Approximately 1,260,000 tpa will be mined to produce approximately 360,000 tpa of refined kaolin resulting in around 900,000 tpa of overburden and quartz that will be rejected during processing. The proven ore reserve on ML70/1143 is 112 Mt therefore, the kaolin reserves at the mine site are sufficient for a mine life in excess of 100 years at the proposed level of production.

All mining will occur well above the water table and no pit de-watering will be required other than removal of direct rainfall. The natural moisture level of the weathered granite is between 12 and 18% by weight and has a low potential for generating dust.

Haul roads will be constructed using laterite gravel and washed tailings sand to create a well-drained and hard-wearing surface. The roads will be watered regularly and treated with dust suppression agents (binders).

5.3.5.2 *Current Stage*

Up to 1 million tpa will be mined (ore and waste), with up to 400,000 tpa processed in the primary beneficiation plant, with up to 400,000 tpa of material (both processed and direct shipping material) sold.

5.3.6 Processing

5.3.6.1 *Approved Project*

Mine Site

The project will produce kaolin of two different specifications. A portion of the ore will be treated by dry screening to produce beneficiated kaolin with a kaolin content from c.40% to c.90%. This product is known as Kaolin Ore K90. The beneficiated ore will be trucked either directly to Kwinana or to the Wedin site for loading on to trains. The remaining ore will be partially processed at the mine-site to produce 260,000 tpa of kaolin in slurry form. The slurry will be piped to the Wedin site for further processing, packaging and loading onto trains.

The processing at the mine site involves de-gritting with screens and cyclones to separate kaolin of <45 microns from waste ‘quartz sand’. The processing (de-gritting) plant at the mine site will comprise:

- stockpiles for approximately 10,000 t of ore;

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- process lines;
- tanks for storage of recycled water;
- a diesel storage tank and bowser; and
- Store shed and site office.

The de-gritting plant comprises:

- a feed hopper;
- wet drum screen;
- vibrating screen;
- hydro-cyclones;
- vacuum belt filter; and
- a de-gritting refuge.

The process involves:

- Mixing of the ore with water;
- Wet scrubbing to break up the kaolin lumps into discrete individual particles;
- Separation of kaolin of <45 microns from waste materials by screens, hydrocyclones and vacuum belt filtration; and
- Further processing of the coarse kaolin fraction in the de- gritting centrifuge.

Two chemicals are added to prevent flocculation namely sodium hydroxide (1,200 tpa) and dispersant (Antiprex 270 tpa).

Washed sand tails will be returned to the pit and then covered with overburden and topsoil to recreate the original stratigraphy and to allow re-use for agricultural purposes. Some clay rich material will be included in the soil layers to improve retention of water and fertilizer in the rehabilitated areas.

Wedin Site

Facilities at the Wedin site include:

- Processing plant;
- A container handling yard;
- Bunded diesel and chemical stores;
- Workshop and spare parts store;
- Storm water run-off collection pond and pump system;
- Administration and amenities buildings; and
- Communication tower.

The processing plant at the Wedin site will receive the kaolin and water slurry from the de-gritting plant at the mine-site. The components of the Wedin process plant are:

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- Classification centrifuges;
- Dewatering;
- Pressing;
- Drying; and
- Bagging of product.

The slurry is first passed through classification centrifuges to separate the fine and coarse clay. The fine and coarse kaolin streams are then flocculated by the addition of a dilute acid before being dewatered to form thickened slurries which will then be rinsed and further de-watered in a cake press. Some of the damp kaolin filter cake will be treated further to optimize particle size and viscosity and then granulated and dried in a gas- fired dryer. The gas supply will be butane or LPG delivered by road train from Kwinana.

Both filter cake and granules will be packaged and stored in bulk bags and ISO shipping containers prior to loading onto rail wagons for haulage to Kwinana. The storage area will hold up to approximately 10,000 t of product.

The project subject of the 2013 Works Approval involved a wet kaolin processing circuit using traditional filtering and drying process. The traditional process is described below.

All wet kaolin circuits must operate with the slurry in the classification area (refining into particle size ranges) having a slightly alkaline pH, typically around 8.0 to 8.5. In order to de-water the resulting refined slurry in the traditional process acid is added to drop the pH of the slurry to approximately 5.0 to 5.5. This has the effect of flocculating the solids in the slurry so that the extremely fine solids particles can be collected in a filter-press of some type before thermal drying processes are applied. Long chain polymer flocculants cannot be used as these have a detrimental effect on the kaolin dispersion properties in its end-use.

After filtration, the permeate water (still at pH 5.0 to 5.5) is recycled back to the start of the refining process, where sodium hydroxide must be added to bring the pH back up to 8.0 to 8.5. This process is repeated as the water goes around the circuit. Consequently, the reaction products of the acid and alkali constantly being added to lower and raise the pH build up in the recycled process water in the form of a salt; either sodium chloride or sodium sulphate, depending upon which acid is used. As kaolin processing must use fresh process water to achieve the required final product quality, the salt must constantly be removed from the recycle water stream.

To remove the salt, the project as descried in the Works Approval included a Reverse Osmosis (**RO**) plant with the saline waste being discharged into shallow solar evaporation ponds where it would evaporate to leave dry solid salt. The solid salt would be periodically harvested and returned to the mine site for encapsulation and burial.

In the revised process presented in the Mining Proposal (2015), rather than flocculate the kaolin solids contained in the refined slurry and de-water via filter-presses, the slurry will be maintained at an elevated pH (8.0 to 8.5) and multi-stage evaporation will be used to produce thickened paste slurry which will be suitable for forming into granules and subsequent thermal drying into the final product form. This process has several advantages over that previously proposed including:

- The kaolin going into the granulation and drying process is still slightly alkaline, rather than acidic as was the case previously. This is of benefit to the end-use customer, as it makes the dry kaolin much easier to re-disperse into slurry with good rheological

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properties and reduces reagent consumption in the customer's process which is also alkaline;

- No acid is added to WAK's circuit, removing a hazardous reagent completely from the site and greatly reducing the consumption of sodium hydroxide;
- The number of physical processing stages and equipment items within the plant are greatly reduced, and the RO and solar evaporation ponds are no longer required. No waste salt is generated by the process; and
- The evaporator plant and equipment will be located at the Wedin Rail Siding site, and will replace the previously proposed filtration buildings and associated equipment.

5.3.6.2 Current Stage

Mine Site

In the current development stage, only dry processing of the ore will be undertaken at the mine site. This will be achieved using an improved process to that envisaged in the existing Works Approval. This improved process, that the Company refers to as the K99 Process, uses the same unit processes that the preceding (K90) process used, but unit efficiencies have been improved to the point that it is now able to beneficiate the Ore to a kaolin product that achieves acceptable market standards. Consequently, the current stage may be accurately described as a subset of the project envisaged in the existing Works Approval and Mining Proposal.

Wedin Site

As the process for the current development stage is now restricted to a dry process located at the mine site there is no longer the need for a process plant to be established at the Wedin site during this stage of development.

5.3.7 Water Supply and Recycling

5.3.7.1 Approved Project

Fresh water for processing will be supplied from a new lateral pipeline connection to the existing Water Corporation pipeline that runs along the Williams – Kondinin Road.

Fresh process water will be delivered to the Wedin plant via a buried pipeline from an existing Water Corporation main located approximately 7 km west of the site. Some upgrades to Water Corporation pumping and piping systems will be required to cater for the additional demand on the local network.

Water from de-watering and pressing operations will be recycled through a pipeline to the de-gritting plant for re use. Water pumped from the mine process plant to the Wedin site is returned for re-use through a second pipeline from the Wedin site.

5.3.7.2 Current Stage

The development stage does not use process water, although water will be required for dust suppression in mining operations. Fresh water will be delivered to the mine site via a buried pipeline from an existing Water Corporation main located approximately 10 km west of the site. Upgrades to Water Corporation pumping and piping systems will not be required to cater for the additional demand on the local network.

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5.3.8 Tailings

5.3.8.1 Approved Project

Waste materials from the de-gritting plant comprise washed and de-watered quartz sand and a minor amount of coarse clay mixed with fine sand. The sand will be returned by truck to the pit soon after it is discharged from the plant. The coarse clay will be filtered and pressed to a damp cake before being returned to the mine pit by truck as backfill. Some of this clay may be dried further and mixed with topsoil to improve retention of water and nutrients for rehabilitation purposes.

5.3.8.2 Current Stage

Tailing from this development stage will be limited to dry quartz-rich reject sand from the dry beneficiation process. Consistent with the Works Approval and Mining Proposal. The sand will be returned by truck to the pit soon after it is discharged from the plant and permanently stored in mined-out pit sections.

5.3.9 Infrastructure

5.3.9.1 Approved Project

Pipelines

Two pipelines will be required to connect the mine site and Wedin process plants. These pipelines are each around 20km in length and will be laid across a portion of M70/1143, along the length of L70/156, to G70/251. Sections of the pipelines will be sited on road reserves or will cross under roads. Shire of Wickepin approval is required for the pipelines to be constructed at these locations.

The first pipeline will carry dilute kaolin slurry (approx. 15 to 20% solids by weight) to the Wedin site and the other pipeline will return clean water to the mine site. The liquid in each pipeline will be at ambient temperature and will have a pH of around 8. The only chemicals present in the materials being piped will be a biodegradable dispersant and a small amount of sodium hydroxide to raise the pH slightly. The salinity of the water in the pipelines will be less than 1000 ppm TDS (and is expected to be less than 500 ppm TDS). The maximum pressure expected at any point in the pipeline should be less than 1000 kPa.

Power Supply

Power to the mine site and Wedin 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, which will be trucked in and stored in on-ground storage tanks.

Railway and Haulage

A 1 km long railway siding from the existing line will be constructed on the Wedin site. The container handling yard will be located adjacent to the siding and a container forklift will be used to lift containers on and off the wagons.

Around 266 trains per year will be required to transport the 360,000 t of kaolin. This equates to 5-6 loaded trains/week or 10 to 12 train movements/week.

Delivery of bulk consumables to the Wedin site such as diesel, chemicals in ISO bulk containers, and packaging materials may be either by road or rail transport.

Roads and Haulage

The estimated tonnage of plant and equipment and building materials delivered by road to the sites over a 15-month construction period is 2,000 t. This equates to around 250 truck movements in and out with an 8t average payload. This is approximately 17 truck movements each way per month.

The 100,000 tpa of beneficiated kaolin will be packaged in bulk bags which will be placed in shipping containers at the de-gritting plant. There will be virtually no potential for dust emissions in transit. This product will either be transported by road to the Wedin rail siding for loading onto trains or may be transported by trucks directly to Kwinana. Transporting of the beneficiated ore from the mine site will require an average of five truck movements per day carrying the product (at 83 t gross vehicle weight) and five return empty truck movements (at 28 t).

Road haulage also will be used to deliver LPG, small quantities of specialty chemicals and spare parts. Reject clay and salt from the Wedin site also will be returned to the mine-site in trucks.

Workforce

The project is expected to employ between 60 and 80 people. WAK does not plan to operate a residential camp at the mine site and expects to employ local people wherever possible. It is expected that the employees will mainly live in the Shires of Wickepin and Narrogin. Required services such as electricians, earthmoving contractors etc, will also be sourced from the local region provided these are cost competitive.

Mining operations will occur between 7am and 7pm usually for 5 days per week but at times 7 days per week. The processing plants at the mine and Wedin sites will operate on a continuous basis.

5.3.9.2 Current Proposed Project

Pipelines

The current proposed project does not require pipelines to transport slurry or water between the mine site and the Wedin site in the initial stage.

Power Supply

Power to the mine site will be provided by an LNG-fired, or diesel-fired, “over the fence” power supply installed at the site.

Thermal energy for drying will be from LPG, or LNG (if the power supply is LNG-fired), which will be trucked in and stored in on-ground storage tanks.

Railway and Haulage

Rail and rail haulage may be used for the transport of product from the mine and goods to the mine from time to time.

Roads and Haulage

The estimated tonnage of plant and equipment and building materials delivered by road to the site over the 15-month construction period is less than 1,500 t. This equates to around 75 truck

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movements in and out with a 20 t average payload. This is approximately 5 truck movements each way per month and consequently is unlikely to materially impact other stakeholders.

Workforce

During construction, the estimated maximum workforce at the site is 100, but during the operating phase, peak employment for this development stage is 50 people. Sourcing and accommodation provisions for this stage of development are the same as those envisaged for the approved project.

Mining operations will occur between 7am and 7pm usually for 5 days per week but at times 7 days per week. The processing plant will operate on a continuous basis.

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6. ENVIRONMENTAL IMPACTS AND MANAGEMENT

The Project is relatively small and will operate in a heavily altered environment with very low population density and limited remnant native flora and fauna. The processing involved is also not sophisticated, involving very limited use of process inputs other than labour and energy (electrical, thermal and transport). Consequently, the environmental impact of the Project is expected to be relatively minor. Notwithstanding that assessment, the Company will actively manage those impacts that are unavoidable to minimise any adverse impacts on flora, fauna or the local community.

6.1 Soils

In the active mining and project development areas, the Project will materially alter soil profiles and horizons. In these areas, active erosion controls will be implemented as required and all topsoil removed will be stockpiled for later rehabilitation use.

The Project will have negligible impact on soils outside the active mining and project development areas. Should erosion impacts be created, these will be actively managed.

6.2 Groundwater

Groundwater at the site is expected to be more than 50 m deep and is not likely to be intercepted during mining. Groundwater monitoring bores will be installed at the site to determine groundwater presence and to monitor water quality. There will be no requirement to pump, use or discharge groundwater at the project sites.

6.3 Surface Water

No runoff is expected from the mine site (or at the siding following a future development stage) as all surface runoff water will be collected and used for mine dust suppression (or in a future wet process). A site drainage plan will be implemented to capture surface runoff for recovery form use in the process plant. Storm water ponds will be designed for a 1:100-year flood event.

There is a small intermittent stream on the Wedin site as a small drainage line due to a culvert under the railway line. The intention is to leave this in its current position, but it may need to be re-positioned to manage site drainage. If this is required, the entry and exit points of the stream from the site will not be modified and the natural flow of the stream will not be affected.

6.3.1 Vegetation and Flora

The mine site (and the Wedin site) have 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. Most of this remnant vegetation will not be disturbed by the mining operations.

There is a pine plantation and an area of planted tree lucerne located immediately to the south of the existing costean. Some of the pines and all of the tree lucerne will be removed during mining operations.

The Remnant Vegetation Protection Area located adjacent to Lot 1443 will not be affected.

An access road will be constructed south across Lot 14431 to connect with Wogolin Sth Road. Only a small section of this road is within M70/1143 and has been approved by DMP as part of the 2015 Mining Proposal. The other longer section of road required planning approval from

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the Shire of Wickepin. A short length of this section of the road crosses an area of degraded remnant vegetation.

A Native Vegetation Clearing Permit will be required from the DWER/DMIRS 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.

The Wedin site (Lot 8798) includes about 40ha of remnant vegetation that is contiguous with a larger area of vegetation on adjacent locations that include Reserve E11286 for Camping and Water Reserve E19839. The future proposed facilities on Lot 8798 will not require the clearing of any of the remnant vegetation on the property.

The mine site (and the Wedin site) are within the buffer zones of the Toolibin Reserves Threatened Ecologic Community (TEC). This TEC includes Toolibin Lake which is a wetland of international significance under the RAMSAR Convention, located approximately 14 km from the mine site. 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.

6.4 Fauna

Due to the degraded status of the Project area, natural fauna is limited, so impacts will also be limited.

The Project does not include a wet TSF or involve the use of toxic chemicals that require storage in an open waste storage facility and consequently, the potential for adverse impact on native fauna is very limited.

Notwithstanding this, the Company will actively monitor local native fauna and actively mitigate any adverse, or potentially adverse impacts identified.

6.5 Atmospheric Emissions

6.5.1 Approved Project

The only atmospheric emission from the mining and processing operations will be from:

- exhaust fumes from diesel engines from machinery;
- sand and waste clay material returned to the mine pit as backfill; and
- stack emissions from drier exhausts.

LPG will fuel the drying process and low pollutant emissions are expected.

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 was 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. The stack on the dryer will be approximately 18m high to allow a 3m clearance above the crest of the adjacent buildings.

The peak flows at the dryer and stack will be as detailed in *Table 7* below. Peak flows are expected to occur for less than 600 hours per year. The average flows will be approximately

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65% of these levels. Gas consumption will be 24 GJ/h. The temperature of the exhaust gas will be around 90 – 105ºC.

Table 7. Drier Stack Emissions

Drier Exhaust gas	Nm3/h	Mol/h	MWt	kg/h	mol%	mass%
O_2	8,137	363	32	11,624	15%	18%
N_2	35,550	1,587	28	44,438	67%	69%
CO_2	656	29	44	1,289	1%	2%
H_2O	8,565	382	18	6,882	16%	11%
TOTALS	**52,908**	**2,362**		**64,233**		

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.

6.5.2 Current Stage

The current development stage uses mining machinery and a dryer to dry the feed to the beneficiation plant in the same manner as the approved project and the processing rate as the same as the approved project. Fuel for the drier may be LNG, rather than LPG, which would result in reduced greenhouse gas emissions for drying.

Additionally, power for the Project will be provided by an “over the fence” power provider utilising LNG-fired reciprocating engines.

Consequently, the emissions for the current stage are the same as, or less than, those considered in the approved project.

6.6 Noise

Noise levels from mining equipment at the mine site were modelled (Herring Storer, 9002-2-08109E) (see Appendix 14) which indicated 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 from the pit 2 mine site and all of the process plant will be enclosed in buildings and the cladding can be designed to achieve noise attenuation.

Noise modelling will be conducted 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 be designed to ensure compliance with night-time noise regulations. There will also be loading and other machines operating but it would be possible to limit these activities to day-time operations, if that were necessary to achieve the regulatory standards.

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6.7 Light

The site 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.

6.8 Hazardous Materials

Approved Project

The main chemicals used in the process comprise sodium hydroxide, sulphuric or hydrochloric acid, a biodegradable dispersant and minor quantities of biocide. 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*.

- *Sodium Hydroxide - Class 8 UN 1824*
  The project will require an estimated 1200tpa most of which will be delivered to, stored, and used at the mine site with a small amount used and stored at the Wedin site. It is expected that 50% sodium hydroxide solution will be delivered by road train with two trailers and a maximum capacity of 60t (40m³). There will be 2 deliveries per month. Each truck will visit the Wedin site first to top up the storage tank there before proceeding to the mine site. The storage tank at the Wedin site is expected to have a capacity of 20m³ and at the mine site 79m³.
- *Antiprex (Dispersant) - Class 8 UN No.2218*
  An estimated 270tpa (40 – 70% solution) will be required at the mine site and 100tpa at Wedin plant site. This will be delivered by road in 20m³ tankers with two deliveries per month to the mine site and one delivery every two months to the Wedin site. There will be a 40m³ storage tank at each site.
- *Glutaraldehyde (Biocide) – Not classified but treated as Class 8*
  5tpa will be delivered to the Wedin site by truck in a one tonne steel container, once every 3 months. The storage tank at the site will have a capacity of 1.5m³. The biocide is used to occasionally dose the process liquor, as the dispersant (Antiprex) is bio-degradable and promotes growth of moulds on the insides of tanks in warm conditions. Domestic bleach (dilute ammonia) is also used to wash down tanks and equipment to control mould and bacteria growth. Glutaraldehyde must be stored away from strong bases (caustic) as contact would result in an exothermic reaction. Optimum product stability occurs when product is stored at pH of 3.7 - 4.5 and less than 38ºC. This temperature can generally be achieved in a ventilated shed.
- *Sulphuric Acid – Class 8 UN 2967*
  Estimated 600 tpa 98% sulphuric acid 32.6m3delivered by road train to the mine site. One delivery per month.
- *Flocculant*
  An estimated 20tpa will be required at the Wedin site for water clarification prior to reverse osmosis. It is expected that flocculant will be delivered monthly and the maximum inventory would be around 3t.

All storage tanks and unloading facilities will be enclosed within fully lined and bunded areas and will be designed in accordance with the relevant Dangerous Goods storage and handling

codes, standards, and regulations. The services of a DMP (now DMIRS) accredited Dangerous Goods consultant will be used during the design engineering phase, and to prepare and achieve the required Dangerous Good licences.

During periods of storage tank maintenance, the plant will be supplied from Intermediate Bulk Containers (IBCs). One IBC per day of 98% sulphuric acid and two IBCs of 50% sodium hydroxide per day will be required.

Current Stage

As the current stage incorporates only dry ore beneficiation, no hazardous materials are required for the process.

6.9 Transport

Approved Project

The project will involve truck transport of the 100,000 tpa of beneficiated kaolin from the mine site and periodic delivery of minor process requirements. This product either will be transported by road to the Wedin rail siding for loading onto trains or will be transported by trucks directly to Kwinana. In the latter case, the estimated number of truck movements each day is 5 each way. It is likely however, that the transport will not be continuous but will be timed with ship loading requirements. In this case, the number of loads per day will be more than this average but there will also be periods when there will be no truck movements.

Transport of products from the Wedin site to Kwinana is expected to involve 2 train movements a day (1 arrival and 1 departure) over a period of about 7 days per month.

Current Stage

The transport requirement for the current development stage are similar, though somewhat reduced in terms of total volumes during construction, to the Approved Project.

6.10 Waste Management

6.10.1 Mineral Waste

6.10.1.1 Waste Rock/Overburden

All waste rock and overburden will ultimately be placed back into mined-out areas of the Resource. At the commencement of operations, a small, temporary, Waste Rock Dump (**WRD**) may be required and this will be situated closed to the mining operations.

6.10.1.2 Tailings

The tailings generated in the operations associated with the current stage of development consist of dry siliceous sand and pebbles. This material will be co-disposed in the mined-out areas of the Resource in the same manner as the waste rock. There is no need to separate waste and tailings in this regard.

6.10.2 Domestic Waste

Domestic waste from the site will be disposed of in accordance with the requirements of the Shire of Wickepin. Sewage from amenities facilities will be treated using a suitably sized "Biomax" (or equivalent) aerobic treatment system. The produced water will be used for watering of screening vegetation around the processing plant sites. An "Application to construct or install an apparatus for the treatment of sewage" will be made to the Shire of Wickepin

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Garbage (non-sewage) from facilities will be stored in covered containers and regularly transferred to Great South Waste's Narrogin tip. Recyclables will be segregated from general waste and transferred to the recycling depot at the Narrogin tip.

6.10.3 Industrial Waste

Industrial wastes will be disposed of as follows:

- Oils, lubricants, oil filters, oily rags, oil trap waste, and coolants will be stored in closed vessels in bunded areas, and collected for recycling by companies such as Wren Oil;
- Office type waste (paper and cardboard) will be collected for recycling;
- Solid wastes will typically be worn pipe and machinery items and packaging from delivered spare parts and consumables. Metal (steel and copper) items will be collected for recycling as will plastics (HDPE, LDPE, and polypropylene) and cardboard. The Narrogin Shire tip is a collection point for recyclable materials;
- Any non-recyclable solid wastes will be disposed of at the Narrogin tip, with hazardous materials segregated as per the requirements of the Narrogin Shire tip (e.g. batteries, paints and thinners);
- Intermediate bulk containers (IBCs) and pallets will be returned to the provider for re-use; and
- Nucleonic sources (e.g. in slurry density gauges) will be disposed of at the end of their useful life in accordance with the Radiation Safety Act 1975.

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7. SOCIAL ENVIRONMENT

The WAK Project will not cause any negative impacts on surrounding agricultural land use. The pipeline easement has been located adjacent to the boundaries of paddocks in order to minimize the loss of productive land. There will not be any negative impacts on communities in the Shire of Wickepin. The impact of noise emissions on the two nearest neighbours will be assessed in detail during detailed design and commissioning.

The project is expected to have a very positive effect on the economies of Wickepin and Narrogin. It will be a major employer of local people and contractors and therefore will stimulate local incomes and expenditures.

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8. REHABILITATION AND CLOSURE

An MCP was prepared in 2015 and submitted to and approved by the DMP (WAK, 2015: see Appendix 1). The MCP has recently been updated and resubmitted to DMIRS as part of the tenement approval conditions. The 2020 Revised MCP (WAK, 2020) is provided as Appendix 2.

The primary objective of closure of the mine and processing activities is to return the land profile consistent with the surrounding topography and establish either productive agricultural land or native vegetation, depending on the outcome of consultation with stakeholders and considering past land uses.

The primary objectives for rehabilitation and closure are to achieve:

- A safe, stable and resilient landforms and soils;
- Appropriate hydrology to support rehabilitated habitats;
- Visual amenity and suitability for agreed land use; and
- Broad-acre crops of relevance to the landholder and self-sustaining vegetation comprised of local provenance species and agreed targets for vegetation recovery.

The following commitments are made regarding these objectives:

Compliance

- The disturbed mining environment shall be made safe.
- Closure requirements of the regulatory authorities will be met.
- All legally binding conditions and commitments relevant to rehabilitation and closure will be met.

Landforms

- The landform of pit areas after mining and backfilling will be restored to a form similar to that pre-mining, with all areas being graded such that broad-acre cropping is possible with modern large-scale seeding, spraying and harvesting equipment. The landform of process plant and infrastructure areas will be unchanged from its original state as there are only very minimal bulk earthworks required for plant construction.
- All plant tailings and plant closure demolition products buried as part of pit back-fill operations will be non-polluting.
- Any landform depressions which may collect water will be designed as stock dams in consultation with the occupying farmer.
- Final landforms will be stable and no more prone to dust generation than the surrounding undisturbed farming land.

Revegetation

- Areas of disturbed farmland will be planted as soon as possible with crops such as lupins, in order to stabilise the topsoil and prevent erosion by wind or water. These areas can then re-join adjacent active farming areas in the normal cropping and grazing rotation.
- Consideration will be given to the planting of Tagasaste ('tree lucerne') in farmland locations where visual screening or wind-breaks are required.
- Any areas of native vegetation disturbed (along the pipeline route and rail siding) will be re-planted in consultation with landowners to achieve the owners' objectives.

- The rehabilitated land will have equivalent functions and resilience as the pre-mining land.
- Soil properties will be appropriate to support the post mining land use.

Fauna

- The abundance and diversity of fauna will be equivalent to pre mining conditions for agricultural land in this area.

Water

- Backfilled mine areas will have surface and groundwater hydrological flow patterns appropriate for the specified post-mining land use.
- Where there is a backfill volume deficit in rehabilitated mining areas, the resultant lowered landform will be designed to collect any rainfall run-off in a managed way and not result in water-logged cropping areas. Any required low points in the resultant topography will be constructed as shallow farm dams suitable for stock watering and potential aquaculture.
- Areas on which plant and infrastructure were located will be returned to a landform which restores the pre-existing drainage patterns and farm dams.
- Surface and groundwater levels and quality will reflect original levels and water chemistry.
- There will be no long-term reduction in the availability of water to meet local environmental values.

Infrastructure and Waste

- During decommissioning and through closure, wastes will be managed consistent with the waste minimisation principles.
- No infrastructure to be left on-site unless agreed to by regulators and post-mining landowners.
- The location and details of any buried hazards will be clearly defined and robust markers will be installed and maintained.

Waste Rock

- No waste rock dumps will remain after mine closure.
- No acid mine drainage from water shed from waste rock stockpiles or from other run-off.
- No nuisance dust generation from waste rock dumps.

Pollution

- Achieve a condition where any contaminants at the site will be at or below agreed criteria.

Socio-economic

- Enable all stakeholders to have their interests considered during the mine closure process.
- Ensure that the closure process occurs in an orderly, cost-effective and timely manner.

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- Ensure that the cost of closure is adequately represented in Company accounts and that the community is not left with a liability.

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9. GEOLOGICAL SETTING AND MINERALISATION

9.1 Introduction

The geology of the deposit is well described in CSA Global CSA Report Nº R351.2019 (see Appendix 1). The following has been extracted from that report.

9.2 Regional Geology

The Project is located within the Western Gneiss Terrane of the Yilgarn Craton; an area dominated by Meso to Neo-archaean granitoids and associated intervening greenstone belts. The granitoids of the region have been assigned ages of 3000-2600 Ma.

9.3 Property Geology

Within the Project, the lithologies are dominated by granitic basement of the Yilgarn terrane, into which dioritic and/doleritic dykes of Paleoproterozoic age (c. 2400 Ma) have intruded. These dykes strike east-northeast through the Project area and are associated with the Widgiemooltha large igneous province. Both the granitic basement and dykes are overlain to varying depths, by a regolith profile which includes (in order of decreasing depth) transitional and saprolitic horizons, a mottled clay zone, and a lateritic/colluvial horizon. A typical profile, from surface down, is:

0-0.2m:	Pale grey quartz sand
0.2-2m:	Laterite
2-4m:	Mottled sandy clays
4-6m:	Pink kaolinised granite
6-16m:	Cream to white kaolinised granite
16-20m:	Yellow kaolinised granite
20-30m:	Grey saprolitic granite
30m:	Fresh granite

A typical geological cross-section is shown in Diag. 1 below:

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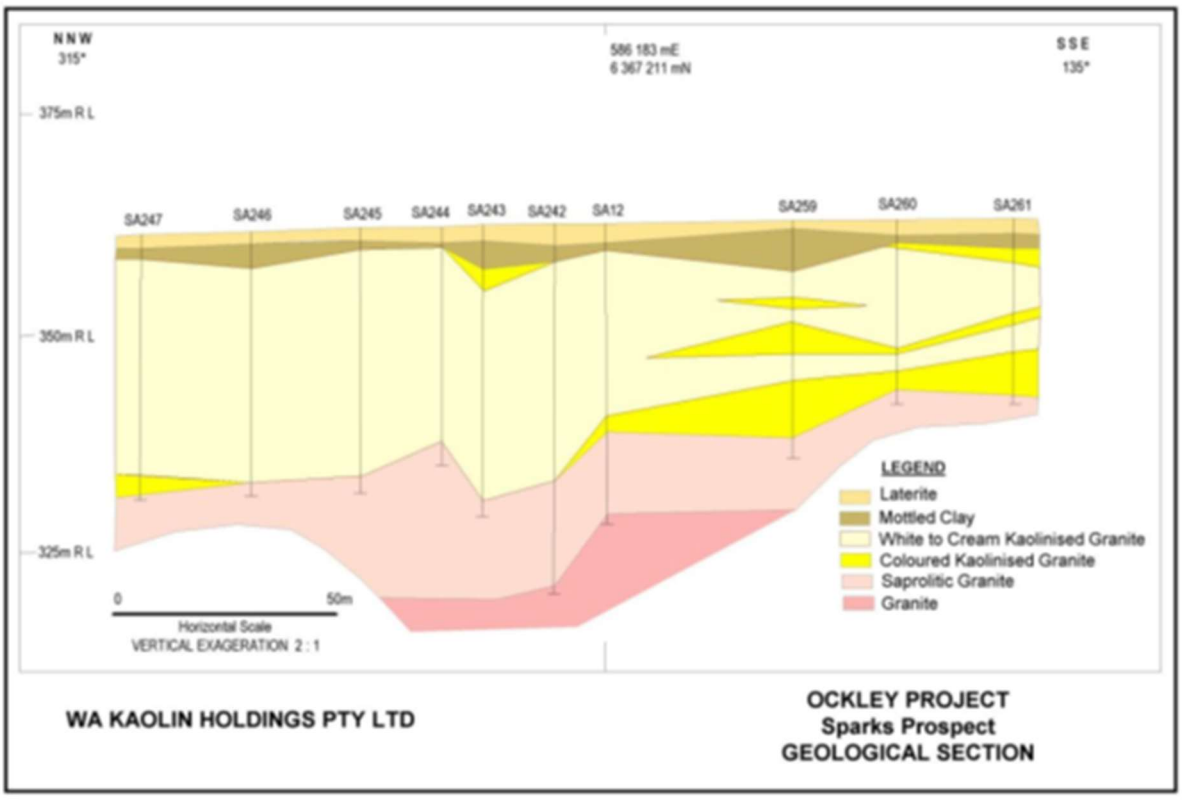
Diag. 1. Typical Geological Cross Section



9.4 Deposit Geology and Mineralisation

9.4.1 Lithology, Weathering and Oxidation

The geology of the WAK Project deposits is typified by bleached saprolite, comprising predominantly of the minerals, kaolinite and quartz. To varying degrees, this composition may be overprinted by haematitic and goethitic iron oxides.

9.4.2 Summary of Mineralisation and Controls

The mineralisation of the WAK Project is weathering derived; constrained by a particular regolith horizon in an area of generally low relief. The result is a shallow, laterally extensive and sub-horizontal deposit.

9.4.3 Factors Affecting Continuity of Grade and Geology

Continuity of grade at the Project is heavily controlled by the depth and completeness of weathering over the parent primary lithology (granite) and the presence of potentially contaminating lithologies (intrusive mafic dykes).

9.5 Sampling Techniques and Data

9.5.1 Drilling Techniques and History

All drillholes within the database provided by WAK have been drilled by air-core (AC), which is considered the most suitable method for the drilling and sampling of regolith. Holes were drilled to blade refusal. Collars have been drilled in a number of campaigns between 1994 and 2006, by three companies; CRAE (now Rio Tinto), WAK, and CAEMI (part of Vale). The latest holes drilled by CAEMI were conducted in a campaign of due diligence while WAK maintained

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ownership of the Project. Samples were collected from the inside return tube, through a cyclone and deposited in spoils piles on the ground on a per-metre basis.

A summary of all drilling over the whole project is provided in *Table 8*.

Table 8. Drilling history

Year(s)	Company	No of holes	Hole type	Metres
1994	CRA	46	AC	1,394
1995	CRA	237	AC	7,363
1996	CRA	59	AC	1,792
2006	CAEMI	160	AC	3,261
2003	WAK	127	AC	2,471
2004	WAK	59	AC	1,233

9.5.2 Sampling Techniques and Sample Recovery

Samples were recovered directly from the rig-mounted cyclone via the inner return tube of the drill rods, whereupon they were deposited as spoils piles on the ground on a per-metre basis.

9.5.3 Logging

Logging for the Project drilling was completed on a semi-qualitative basis using one of two defined sets of codes corresponding to the main regolith horizons. While no documentation is available to definitively separate the two differing sets of logging codes, it is apparent from the dates of completion within the drilling, that CRAE data have been collected using one set of codes, and WAK/CAEMI data have been collected using a second. However, the material of importance kaolinized granite, mottled clay, granite and laterite are recorded using common codes across both sets of logging. The Competent Person, Dr Ian Wilson was involved in all phases of drilling, logging and sampling. The level of detail in the logging is considered appropriate for use in Mineral Resource estimation.

9.5.4 Subsampling Techniques and Sample Preparation

In all phases of drilling, samples were collected via scoop sampling of the drill spoil piles that were deposited on the ground on a per-metre basis. Approximately 1-2 kg of material was collected for each sample. Intervals from each drillhole were selected for sampling on the basis of visual appraisal of whiteness or coloration of each metre. The nature of the industrial mineral under consideration is such that scoop sampling in such a fashion is considered by the Competent Person to be an appropriate method of sampling.

9.5.5 Analytical Methods

Samples were screened to <45 urn, then yield values were determined via mass balance. Brightness values were determined via reflectance metering using standard operating conditions as specified in ISO 2470.

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9.5.6 Verification and Sampling and Assaying

9.5.6.1 Twin Drilling

Several holes within M70/1143, from drilling conducted by CRAE in 1994 and 1995, were twinned by WAK in 2003. Results show very high correlation between both logged lithologies and brightness values (*Figure 6*).

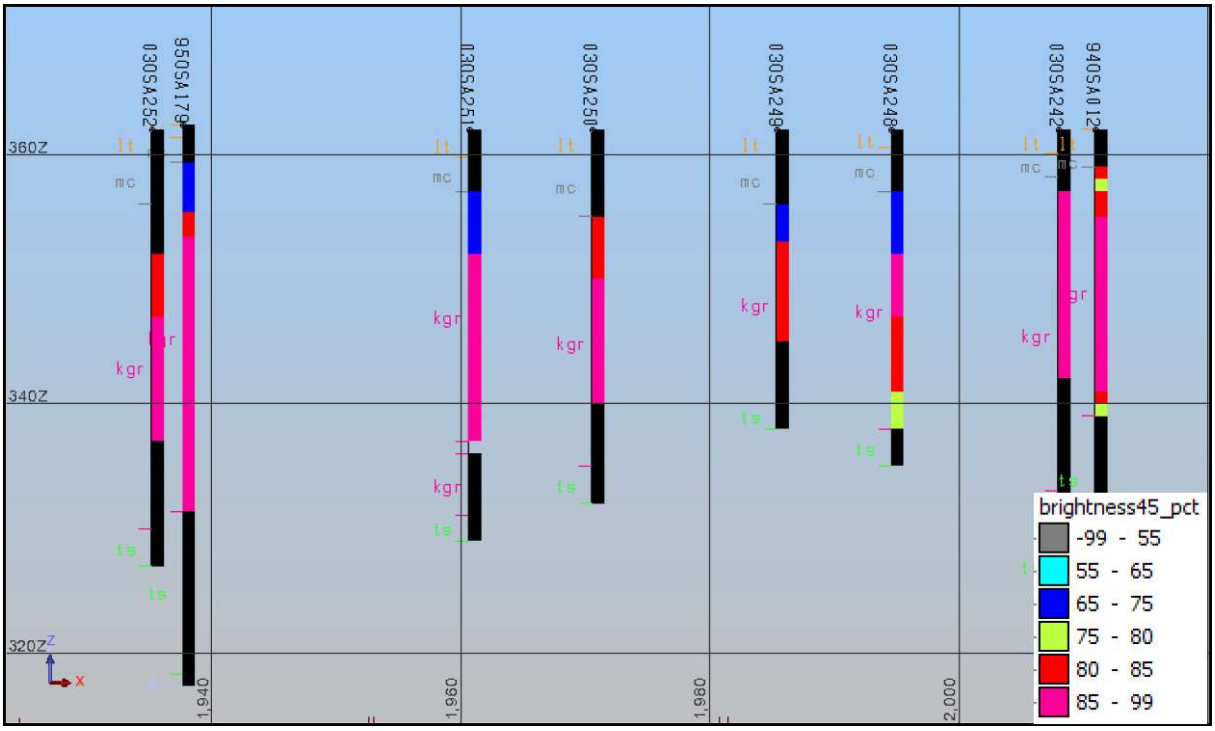

Figure 6. Twin drilling from the Project

9.6 Geological Modelling

9.6.1 Software

Geological modelling was undertaken by CSA Global using Surpac software.

All interpreted strings were "snapped" to drillholes based on logged lithologies and chemical assays. The strings were then triangulated to form wireframes.

9.6.2 Lithology, Structure and Alteration

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

9.6.3 Mineralisation

Mineralisation at the Project is wholly constrained within the regolith horizon defined by the lithological code corresponding to "kaolinized granite", which represents the saprolitic horizon within the weathering profile above the host granite within the Project area. This horizon has been modelled by two DTM surfaces defining the lower contact to either transitionally weathered granite or granite, and the upper contact to either mottled zone clays or laterite (*Figure 7* and *Figure 8*).

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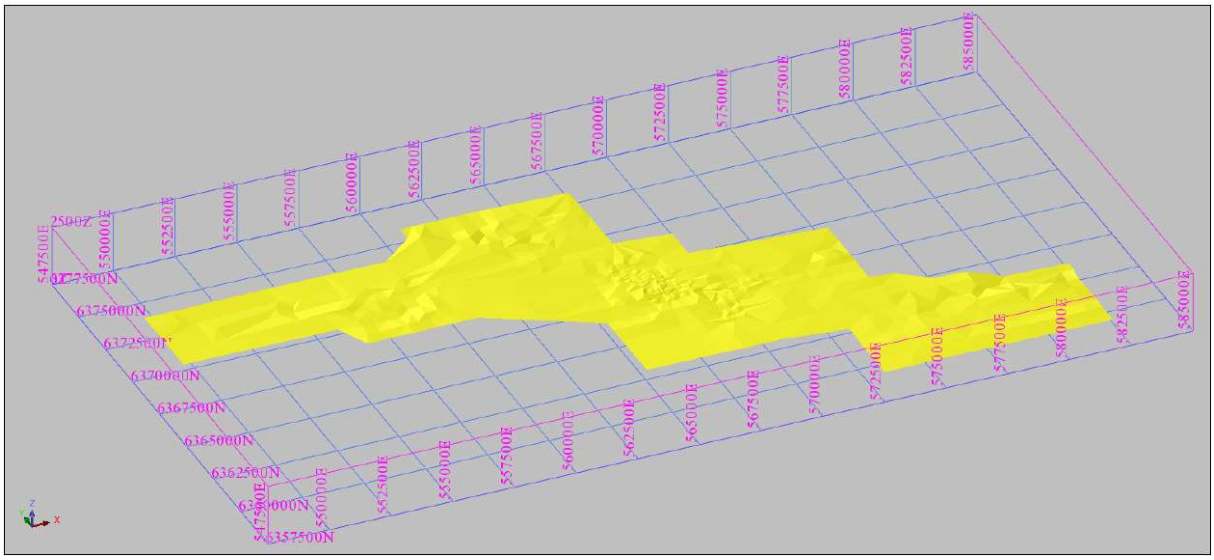

Figure 7. Geological surface extents, WAK Project

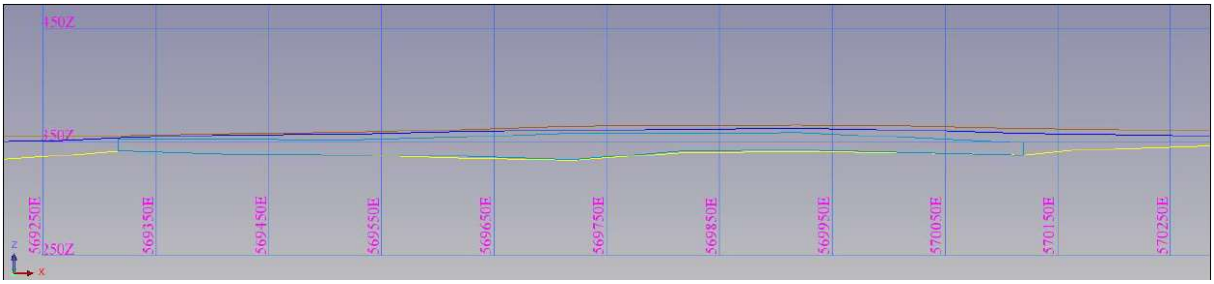

Figure 8. Cross section showing (top to bottom) base of laterite surface, base of mottled clay surface, mineralisation, base of kaolinized granite (Section 6366500 mN)

Within this horizon, the mineralised body has been defined by a nominal 80% brightness cut-off on the basis that this value is the target cut-off for production within the pits currently being mined on M70/1143. The result is a number of highly tabular bodies that are sub-horizontal and highly laterally continuous (*Figure 9*).

The following techniques and guidelines were employed when interpreting the mineralisation:

- Drillholes were appraised in north-south sections, displayed on screen with a clipping window set to half the distance from adjacent sections
- Interpreted strings were snapped to drill hole intervals
- A nominal 2 m minimum thickness was used for the purposes of mineralisation continuity
- Where drillholes existed, and had the host horizon (kaolinized granite) logged but no assay data, they were either excluded or in select cases, used as vertices for the interpreted mineralisation
- If a mineralised envelope did not extend to the next section, it was projected a maximum of halfway to the next section and terminated.

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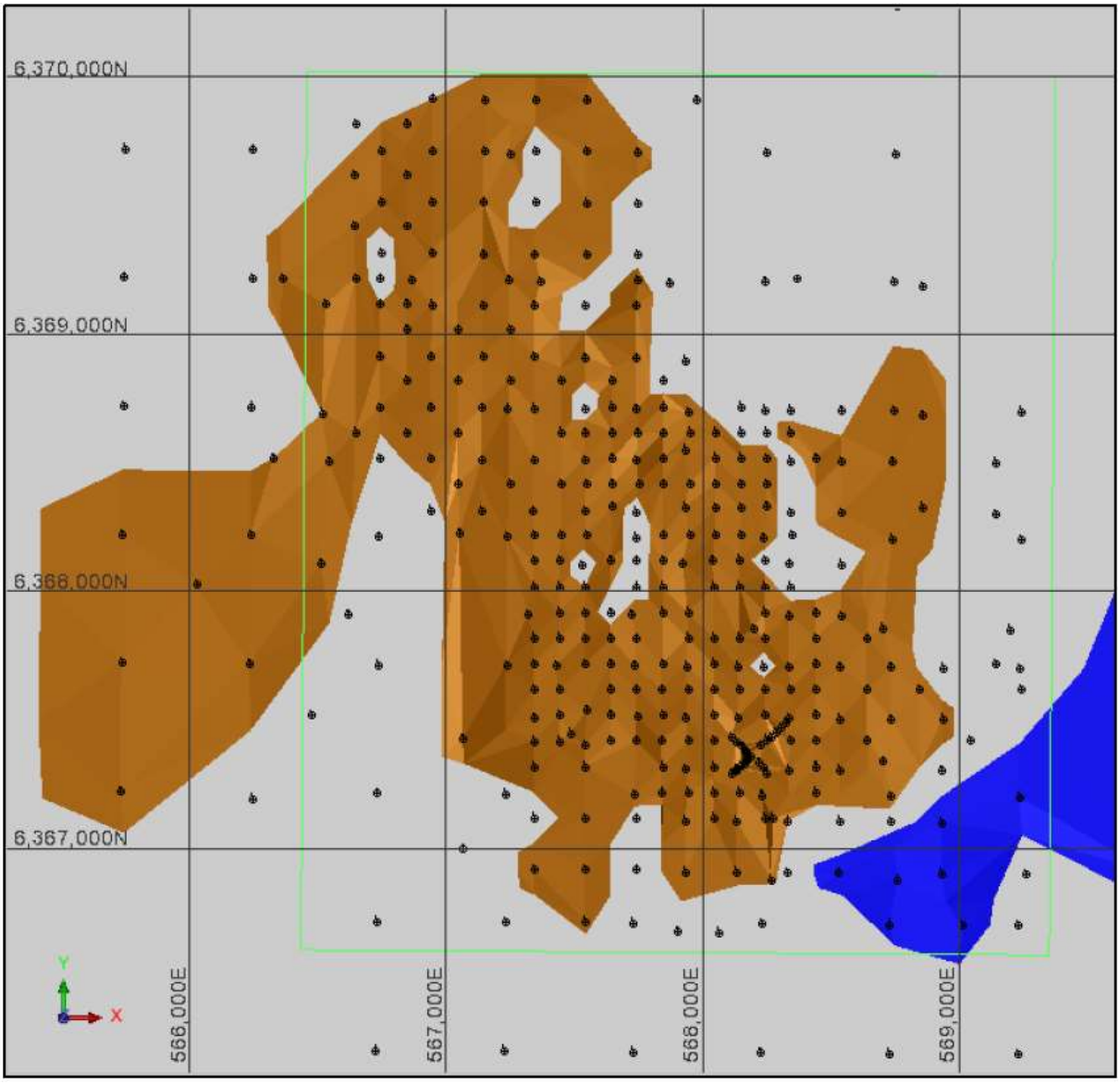

Figure 9. Mineralisation domains M70/1143

9.6.4 Topography

A topographic surface was built for the Project using the drill hole collar data, and then extended horizontally where required to ensure coverage and appropriate coding of the subsequent block model (*Figure 10*).

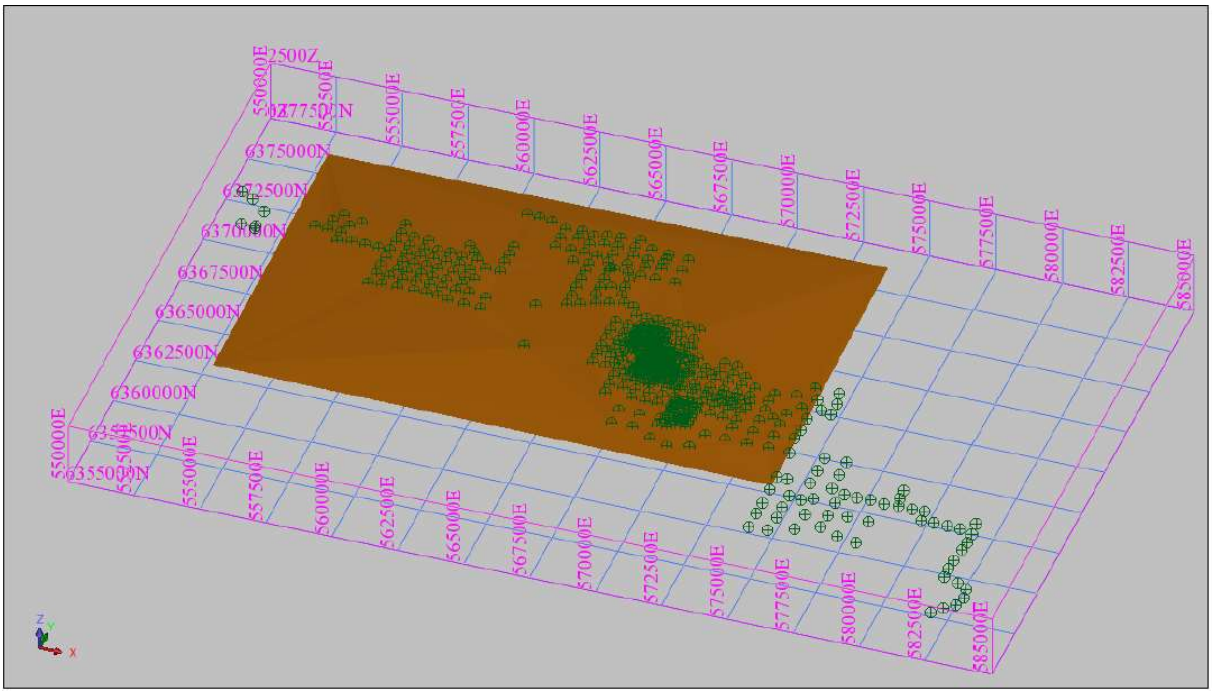

Figure 10. Project topographic surface, as built from drillhole collars

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10. MINERAL 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 full report is included as Appendix 5. The following has been extracted from that report.

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. 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 report concludes that;

"*The WAK Project comprises five [now 4 after relinquishment of R70/41 in April 2018] retention licences and a single mining lease within the Shire of Wickepin, in the south-eastern wheatbelt of Western Australia. Within these licences, deeply weathered basement granite has resulted in the formation of a kaolin-rich regolith horizon that is currently being exploited for kaolin by WAK.*

Available historical drilling data has been used to define a Mineral Resource over M70/1143 within the Project area which has been classified and reported in accordance with the JORC Code as Measured, Indicated and Inferred. The current mining activities on M70/1143 satisfy both the Clause 20 reasonable prospects hurdle for reporting of Mineral Resources and also Clause 49 specific to Industrial Minerals in accordance with the JORC Code."

The MRE has been estimated in accordance with the JORC Code and it is therefore suitable for public release. Mineral Resources are reported for the <45 µm fraction of the kaolinized granite horizon.

The kaolin Mineral Resource for the WAK Project is detailed in *Table 9*.

Table 9. WAK Project, Mineral Resources, 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**

11. ORE RESERVES

Ore Reserves have been estimated by CSA global and the full report (CSA Global Report Nº R301.2020, 30 July 2020) may be found in Appendix 6 of this Study.

An Ore Reserve of 30.5Mt has been estimated and classified as Probable in accordance with the JORC Code and is shown *Table 10*.

Table 10. Ore Reserve Estimate, Wickepin Deposit (1 June 2020)

JORC Classification	Tonnes (Mt)	ISO Brightness (%)	Yield (%)	In Situ Kaolin (Mt)
Proved				
Probable	30.5	83.7	51.8	15.8
Total	**30.5**	**83.7**	**51.8**	**15.8**

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12. MINING

Mining, mining method and assumptions including mine recovery factors and mining dilution factors have been considered in the CSA Global Report Nº R301.2020, which is included in this report as Appendix 6. The following is a summary of the mining aspects of that report.

12.1 Mining Method and Assumptions

Open cut mining is assumed, 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 WAK 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; and
- 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

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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 11*.

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

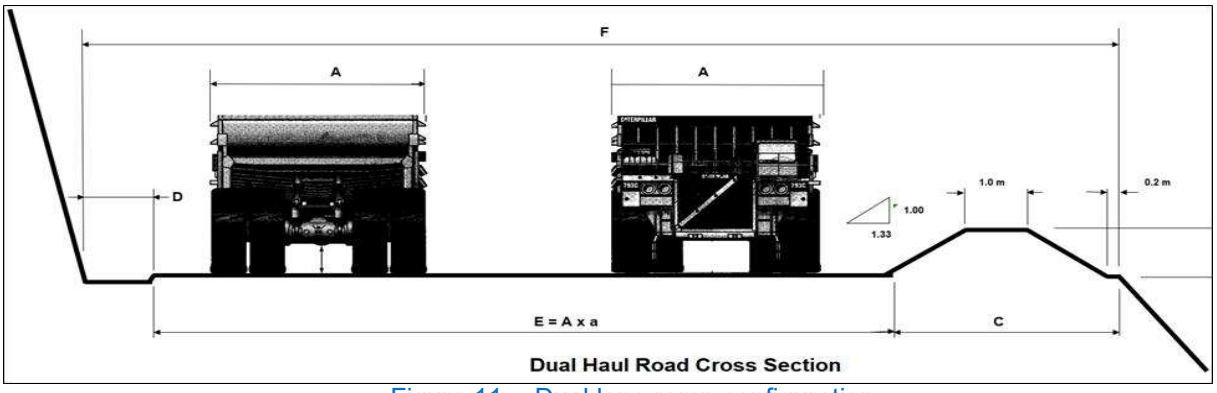

Figure 11. Dual lane ramp configuration

12.2 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.

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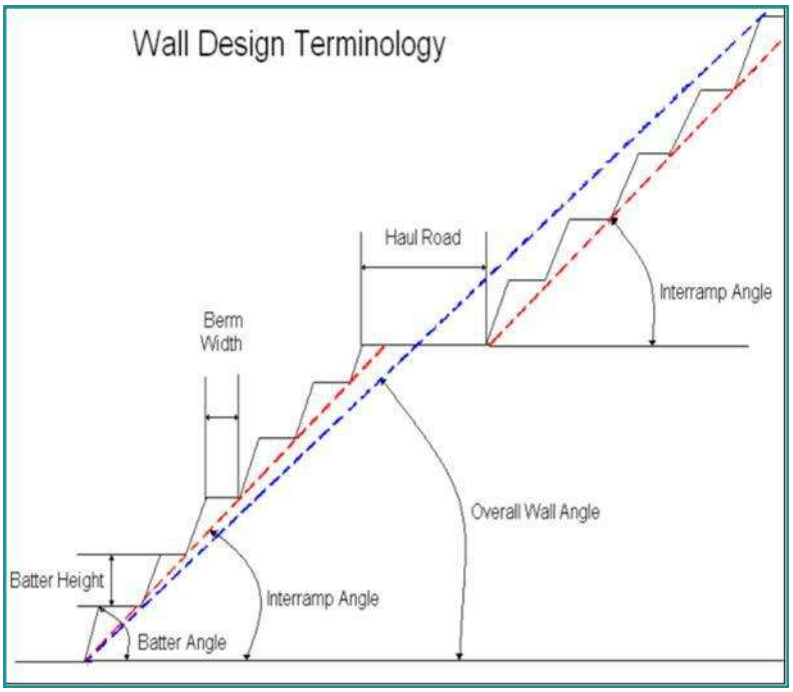

Figure 12. Wall Design Terminology

Geotechnical analysis has been carried out using actual site parameters. According to WAK, 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).

12.3 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.

12.4 Mining Schedule (LoM)

CSA Global used MineSched™ software to produce the following schedules on a yearly & monthly basis. Mining rates were adjusted to suit the WAK's proposed processing schedule as in *Table 11*. 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).

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Table 11. Processing ramp up schedule

Item		Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7
	Plant	Kwinana	Wickepin					
	Year	1	2	3	4	5	8	11
Ave Hrs/Day		16	24	24	24	24	24	24
Ave Days/Week		5	5	7	7	7	7	7
Plant Utilization		90%	90%	95%	95%	95%	95%	95%
Kaolin Production Rate (t/h)		5	25	25	43	50	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. 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 13 provides the scheduled movements of material for the LoM, *Figure 14* splits this into Ore and waste. *Figure 15* then provides the ore mining schedule by classification.

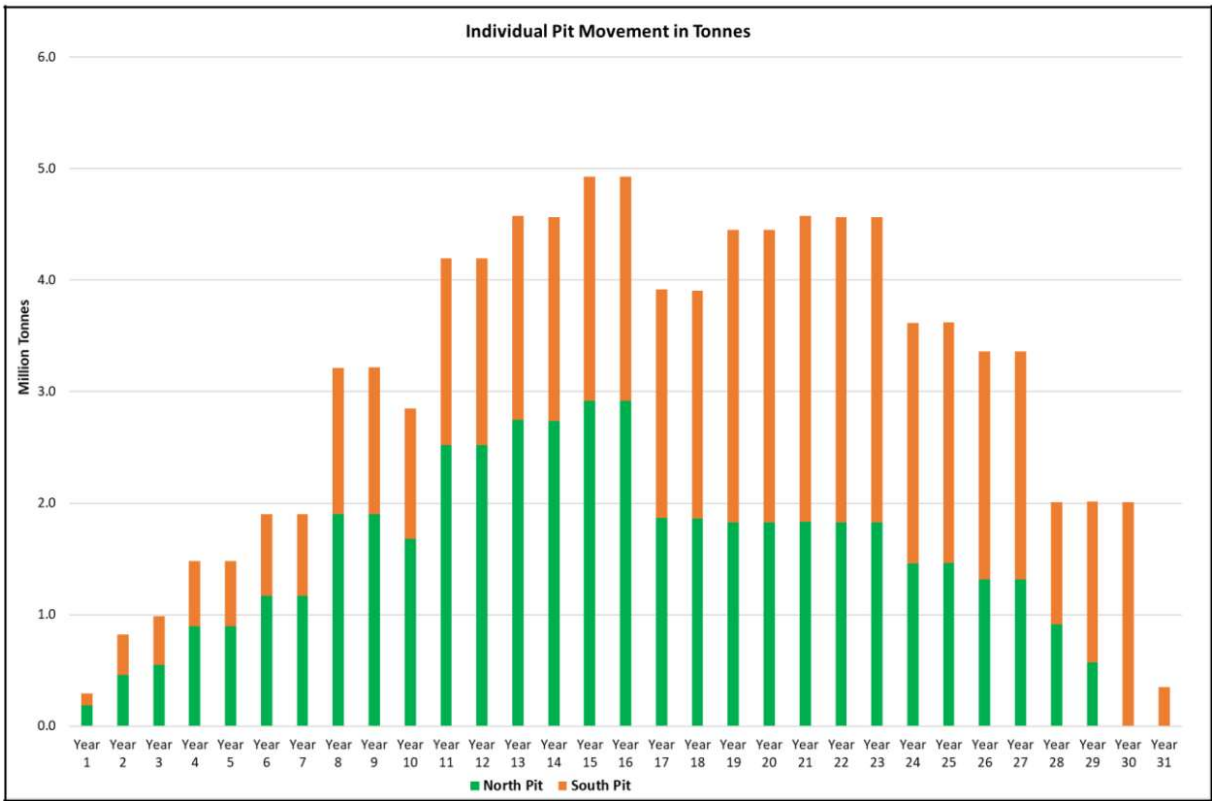

Figure 13. Individual Pit Movement in Tonnes (North Pit vs South Pit)

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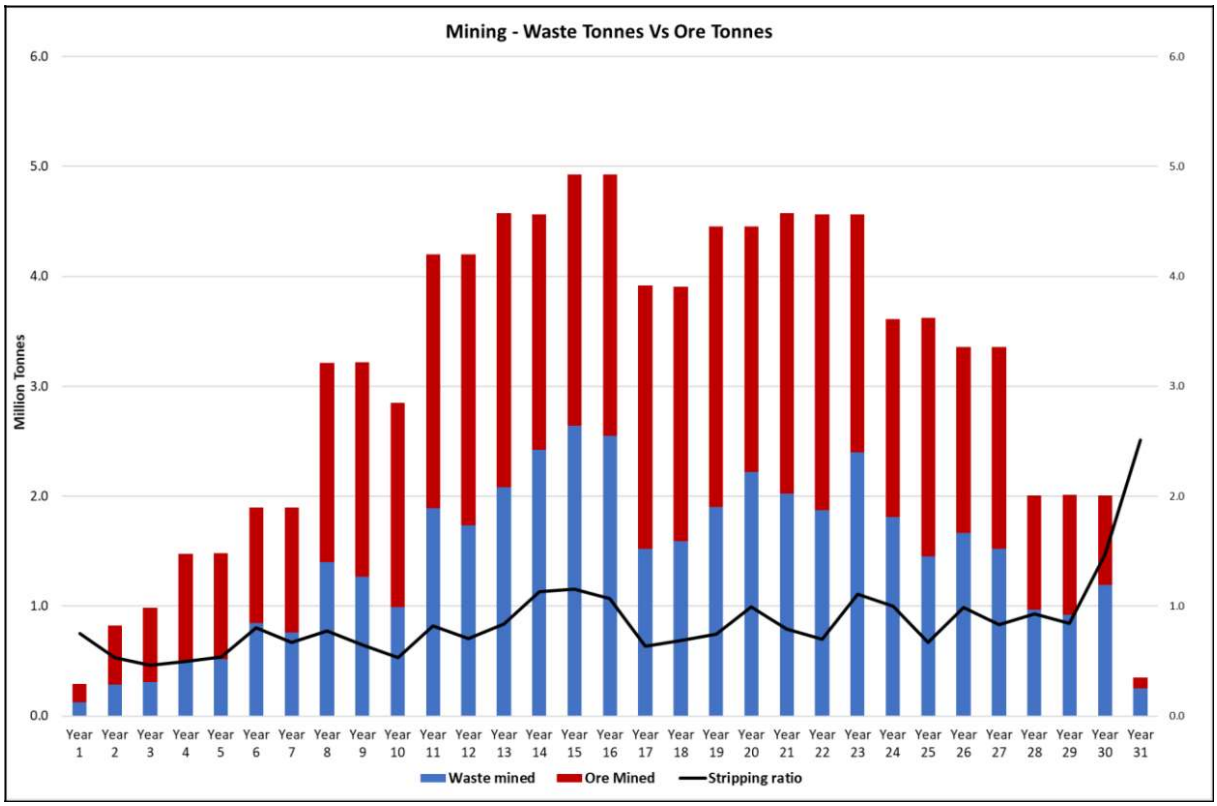

Figure 14. Total Waste and Ore Movement in Tonnes

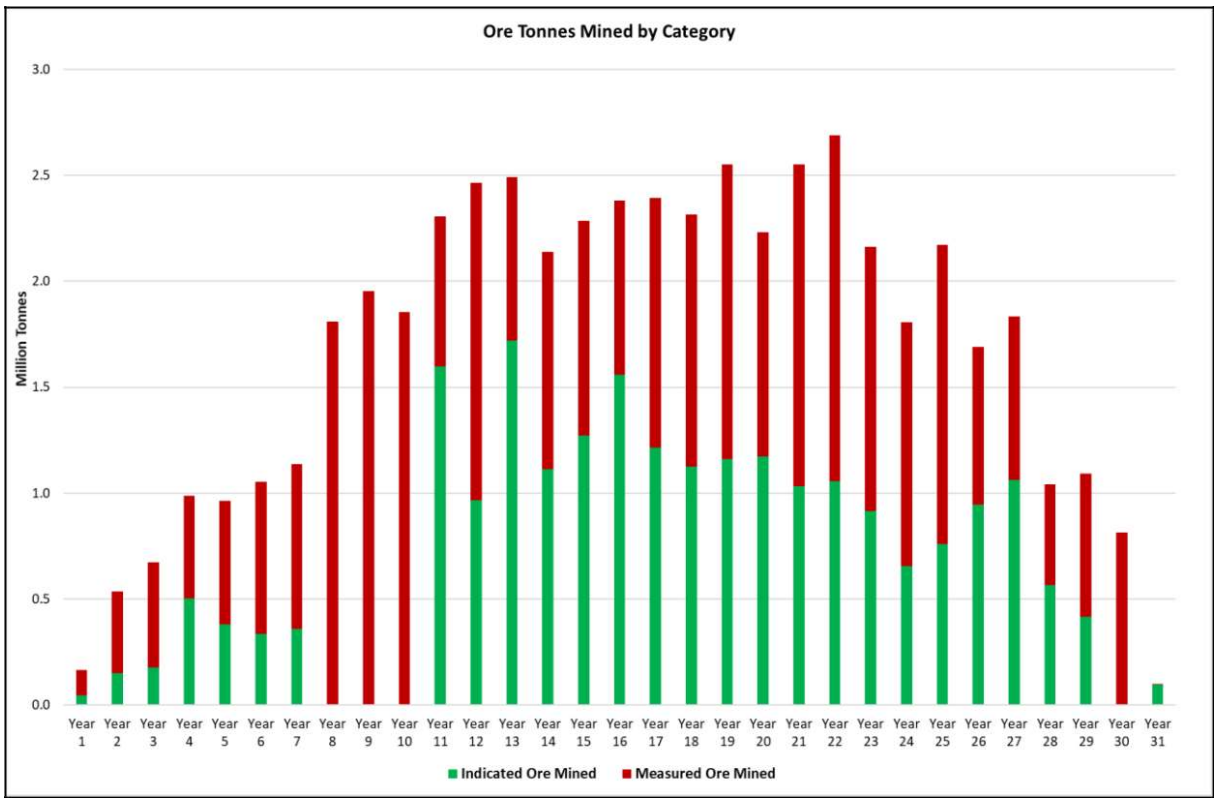

Figure 15. Measured and Indicated Ore Mined in Tonnes

13. METALLURGY

13.1 Process Development

Between 2007 and 2010 WAK established and operated a mine on ML70/1143, and a Pilot Production Facility for kaolin products at Lot 3, Ward Road, East Rockingham Kwinana (**Kwinana Plant**). 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 the K90 process (producing a dry screened, low grade product) and a wet process to generate high grade kaolin products. The proposed commercial development of this process did not proceed due to commercial reasons.

Further process development, using the Kwinana Plant facilities as a base, was subsequently undertaken and the K99 dry process (K99) successfully developed. K99 has been operational at the site since April 2017 and further process improvements were made over this period.

K99 consists of:

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

The core of the IP and heart of the proprietary process developed by WAK is in the dry attritioning and beneficiation sections of the plant.

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

BDB were separately engaged to undertake a technical review of K99 (see Appendix 6) and this report contained the following expert opinion in response to the agreed scope.

13.2 Independent Expert Opinion

BDB undertook a review and provided an Independent Expert Opinion of the K99 Process and proposed development project in 2019/20. The findings of that opinion were as follows.

13.2.1 Metallurgical Factors Demonstrated

The data analysed for this report has allowed a detailed analysis of the operating performance of the K99 process and Kwinana Plant and BDB concludes that a process recovery of 88% to kaolin product is reasonable for the assessment of the commercial potential of the Project and determination of Mineral Resource estimates. This figure will be reviewed as part of the feasibility study currently underway.

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13.2.2 Environmental Factors

The Project has many environmental approvals and permits in place. It is noted however that these approvals are for the earlier recovery process and include a wet processing section. Initial review of this situation concludes that the existing approvals may require amendment for the Project. BDB concludes that there are no apparent reasons why such amendments would not be approved in the normal course of business.

13.2.3 Scale-up

The Project involves a throughput rate (per module) just over 2-times greater than that achieved at the Kwinana Plant and an increase in scale of that nature could represent a material risk to it. BDB has concluded that there are a range of factors inherent ion the Project and K99 that reduce that possible risk and that remaining risk may be mitigated through a thorough design process for the Project.

The risk reduction factors BDB considers to be material are as follows:

- K99 is relatively simple, involving no recirculating loads and a limited number of unit operations;
- The design ore treatment rate for each module is 250,000 tpa or 32 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 unusually high risk to the Project.

13.2.4 Capital Cost and Operating Cost

The operating cost estimate for the Project, at $209.41 per tonne [at the time of the Report] of kaolin product is considered reasonable and contains a modest contingency allowance. The capital cost estimate is also considered to be reasonable. Both operating cost and capital cost estimates will be further examined in the DFS phase.

13.2.5 Feasibility

Given that the Project:

- is based on a Resource and process that have been successfully tested through the Kwinana Plant at commercial scale;
- that the product of that processing has been successfully sold to organisations within the stated target market for the Project; and
- the required scale-up of the process appears reasonable and within the capacity of the equipment supply market and local project sub-contracting sector.

BDB is of the view that the Project is technically feasible.

The financial model for the project indicates that the project is likely to be commercially feasible if the assumptions used are realised in operation.

13.2.6 Process Risk and Mitigation

Risk associated with K99 has been assessed by BDB in an informal manner and this assessment is summarised in *Table 12* below:

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Table 12. K99 Risks

Risk	Likelihood	Impact	Mitigation
Recovery below financial model assumption	Possible	Moderate	Conservative detailed design at implementation
Scale-up not fully achieved	Possible	Moderate	Conservative detailed design at implementation
Product grade not achieved	Possible	Significant	Conservative detailed design at implementation Change mining area within resource

A formal assessment of risk associated with the Project as a whole, including K99, has now been undertaken and can be found in *Section 1*.

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14. MINERAL PROCESSING FACILITIES

14.1 General

Processing will follow the Kwinana small scale proof of concept plant (still operating) and will include a combination of conventional ore preparation plant including loading, feeding, crushing and conveying, followed by a conventional rotary dryer and product elevation system. Dry ore is then fed into a purpose build cyclonic dry separation plant. The kaolin fraction is then separated from the airstream via conventional baghouse filter and transferred to silos for bagging. The waste product is sand with some residual kaolin adhering to it.

Referencing *Figure 16* to *Figure 20* below, damp ore is loaded to the ROM bin by front end loader and is passed through a grizzly to remove oversize lumps. It is fed from the ROM bin by an apron feeder to a roll crusher to break down lumps of kaolin matrix and coarse quartz to approx. <5mm. The crushed ROM is then directed to a discharge conveyor which elevates the ore to a surge bin and on to the rotary dryer via a weigh-belt conveyor. Ore enters the dryer at approximately 10-20% moisture (depending on weather and storage conditions) and emerges at approximately 0.5%.

The dry ore is then elevated and delivered to the air separation system. Waste from separation is the coarse fraction, which will be wet down in a ribbon style mixer for dust suppression then conveyed to coarse and fine waste bunkers and returned to back fill spent ore pits for land rehabilitation. Alternatively, it can be bagged/stockpiled for sale to road base/concrete plants/other applications. Finished product from separation is the fine fraction, which is collected in filter baghouses and transferred to product silos via conveyors and mixing equipment.

Silos will be allocated to different finished product specifications. Silo products are then elevated to bagging stations or transferred to the granulation station before bagging.

Finished products for export are trucked to port in containers or bulk tippers according to customer requirements. The future will see a large proportion of output going to port by rail if the tier 3 rail network is upgraded and re-opened. Export packaging, therefore, can be bulk bags in containers, break bulk (loose bulk bags in the hold of a ship) or loaded to ship in bulk.

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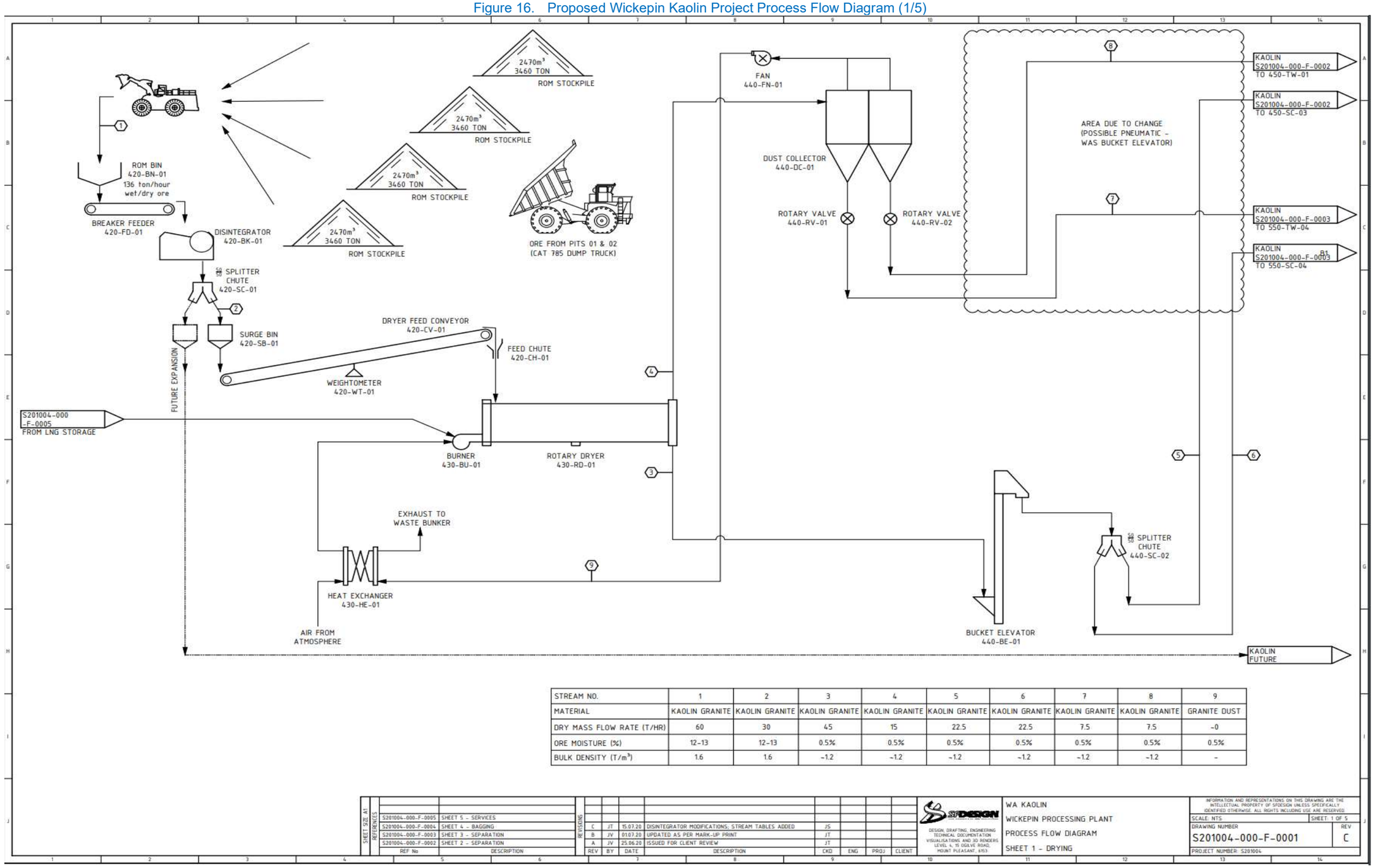
14.2 Process Flow Diagrams and Mass Balance

Figure 16. Proposed Wickepin Kaolin Project Process Flow Diagram (1/5)



STREAM NO.	1	2	3	4	5	6	7	8	9
MATERIAL	KAOLIN GRANITE	KAOLIN GRANITE	KAOLIN GRANITE	KAOLIN GRANITE	KAOLIN GRANITE	KAOLIN GRANITE	KAOLIN GRANITE	KAOLIN GRANITE	GRANITE DUST
DRY MASS FLOW RATE (T/HR)	60	30	45	15	22.5	22.5	7.5	7.5	~0
ORE MOISTURE (%)	12-13	12-13	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
BULK DENSITY (T/m³)	1.6	1.6	~1.2	~1.2	~1.2	~1.2	~1.2	~1.2	-

REF No	DESCRIPTION
S201004-000-F-0005	SHEET 5 - SERVICES
S201004-000-F-0004	SHEET 4 - BAGGING
S201004-000-F-0003	SHEET 3 - SEPARATION
S201004-000-F-0002	SHEET 2 - SEPARATION

REV	BY	DATE	DESCRIPTION	CKD	ENG	PROJ	CLIENT
C	JT	15.07.20	DISINTEGRATOR MODIFICATIONS; STREAM TABLES ADDED	JS			
B	JV	01.07.20	UPDATED AS PER MARK-UP PRINT	JT			
A	JV	25.06.20	ISSUED FOR CLIENT REVIEW	JT			

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WA KAOLIN
WICKEPIN PROCESSING PLANT
PROCESS FLOW DIAGRAM
SHEET 1 - DRYING

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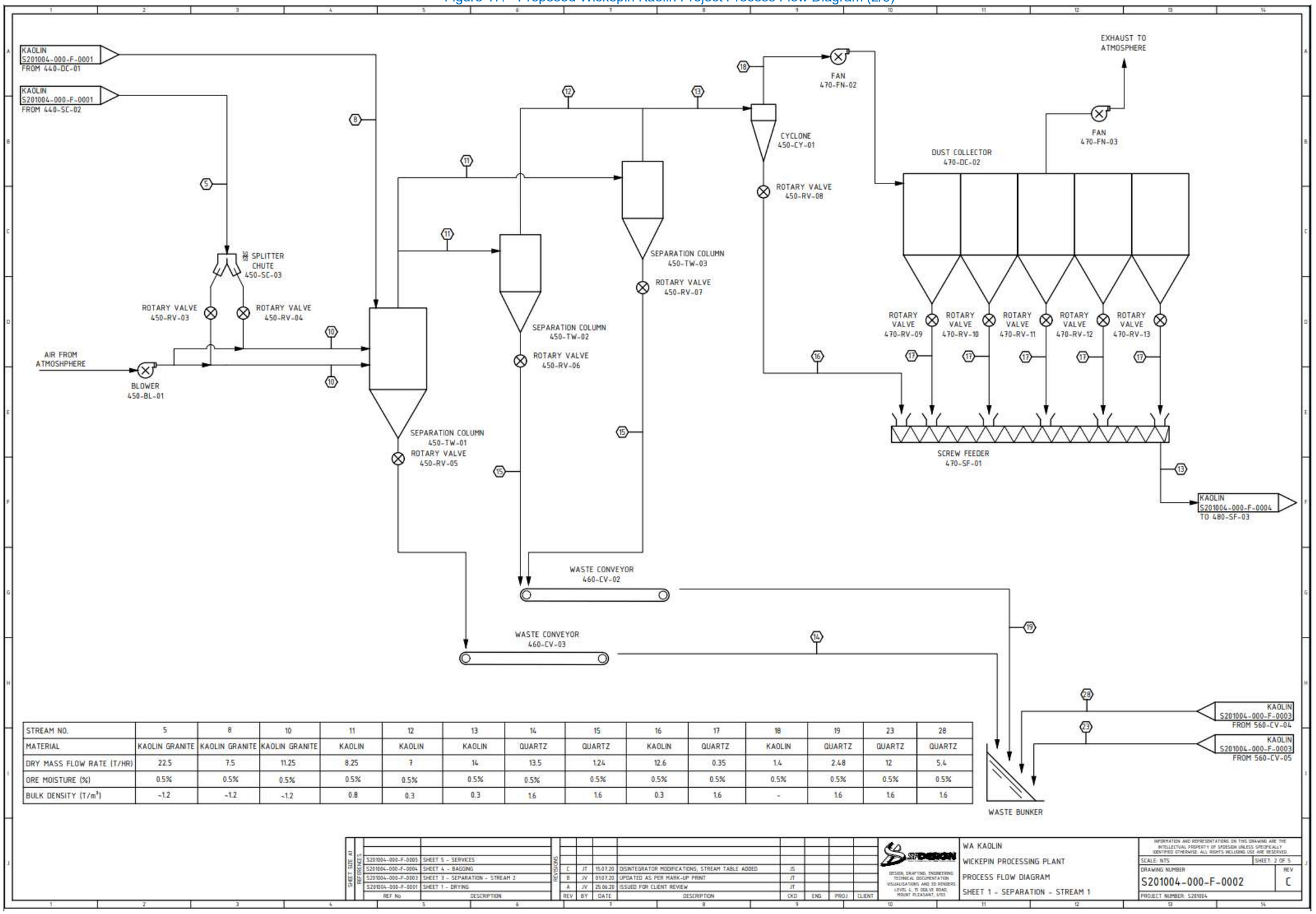
PROJECT NUMBER: S201004

Figure 17. Proposed Wickepin Kaolin Project Process Flow Diagram (2/5)



STREAM NO.	5	8	10	11	12	13	14	15	16	17	18	19	23	28
MATERIAL	KAOLIN GRANITE	KAOLIN GRANITE	KAOLIN GRANITE	KAOLIN	KAOLIN	KAOLIN	QUARTZ	QUARTZ	KAOLIN	QUARTZ	KAOLIN	QUARTZ	QUARTZ	QUARTZ
DRY MASS FLOW RATE (T/HR)	22.5	7.5	11.25	8.25	7	14	13.5	1.24	12.6	0.35	1.4	2.48	12	5.4
ORE MOISTURE (%)	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
BULK DENSITY (T/m³)	~1.2	~1.2	~1.2	0.8	0.3	0.3	1.6	1.6	0.3	1.6	-	1.6	1.6	1.6

SHEET SIZE: A1

REF No	DESCRIPTION
S201004-000-F-0005	SHEET 5 - SERVICES
S201004-000-F-0004	SHEET 4 - BAGGING
S201004-000-F-0003	SHEET 3 - SEPARATION - STREAM 2
S201004-000-F-0001	SHEET 1 - DRYING

REVISIONS

REV	BY	DATE	DESCRIPTION	CKD	ENG	PROJ	CLIENT
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B	JV	01.07.20	UPDATED AS PER MARK-UP PRINT	JT			
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WA KAOLIN
WICKEPIN PROCESSING PLANT
PROCESS FLOW DIAGRAM
SHEET 1 - SEPARATION - STREAM 1

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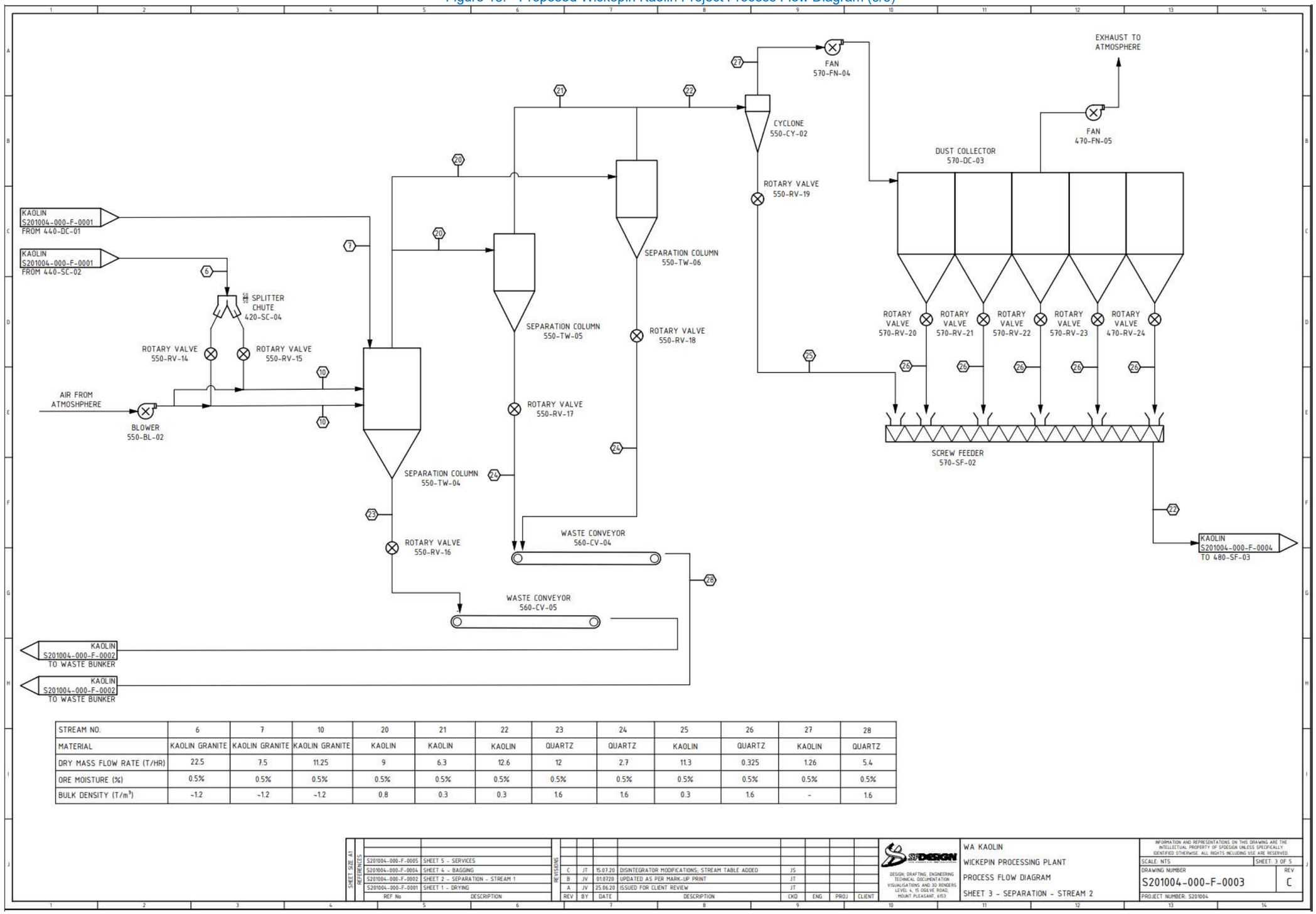
Figure 18. Proposed Wickepin Kaolin Project Process Flow Diagram (3/5)



STREAM NO.	6	7	10	20	21	22	23	24	25	26	27	28
MATERIAL	KAOLIN GRANITE	KAOLIN GRANITE	KAOLIN GRANITE	KAOLIN	KAOLIN	KAOLIN	QUARTZ	QUARTZ	KAOLIN	QUARTZ	KAOLIN	QUARTZ
DRY MASS FLOW RATE (T/HR)	22.5	7.5	11.25	9	6.3	12.6	12	2.7	11.3	0.325	1.26	5.4
ORE MOISTURE (%)	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
BULK DENSITY (T/m³)	~1.2	~1.2	~1.2	0.8	0.3	0.3	1.6	1.6	0.3	1.6	-	1.6

SHEET SIZE: A1

REFERENCES

REF No	DESCRIPTION
S201004-000-F-0005	SHEET 5 - SERVICES
S201004-000-F-0004	SHEET 4 - BAGGING
S201004-000-F-0002	SHEET 2 - SEPARATION - STREAM 1
S201004-000-F-0001	SHEET 1 - DRYING

REVISIONS

REV	BY	DATE	DESCRIPTION	CKD	ENG	PROJ	CLIENT
C	JT	15.07.20	DISINTEGRATOR MODIFICATIONS; STREAM TABLE ADDED	JS			
B	JV	01.07.20	UPDATED AS PER MARK-UP PRINT	JT			
A	JV	25.06.20	ISSUED FOR CLIENT REVIEW	JT			

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WA KAOLIN
WICKEPIN PROCESSING PLANT
PROCESS FLOW DIAGRAM
SHEET 3 - SEPARATION - STREAM 2

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PROJECT NUMBER: S201004

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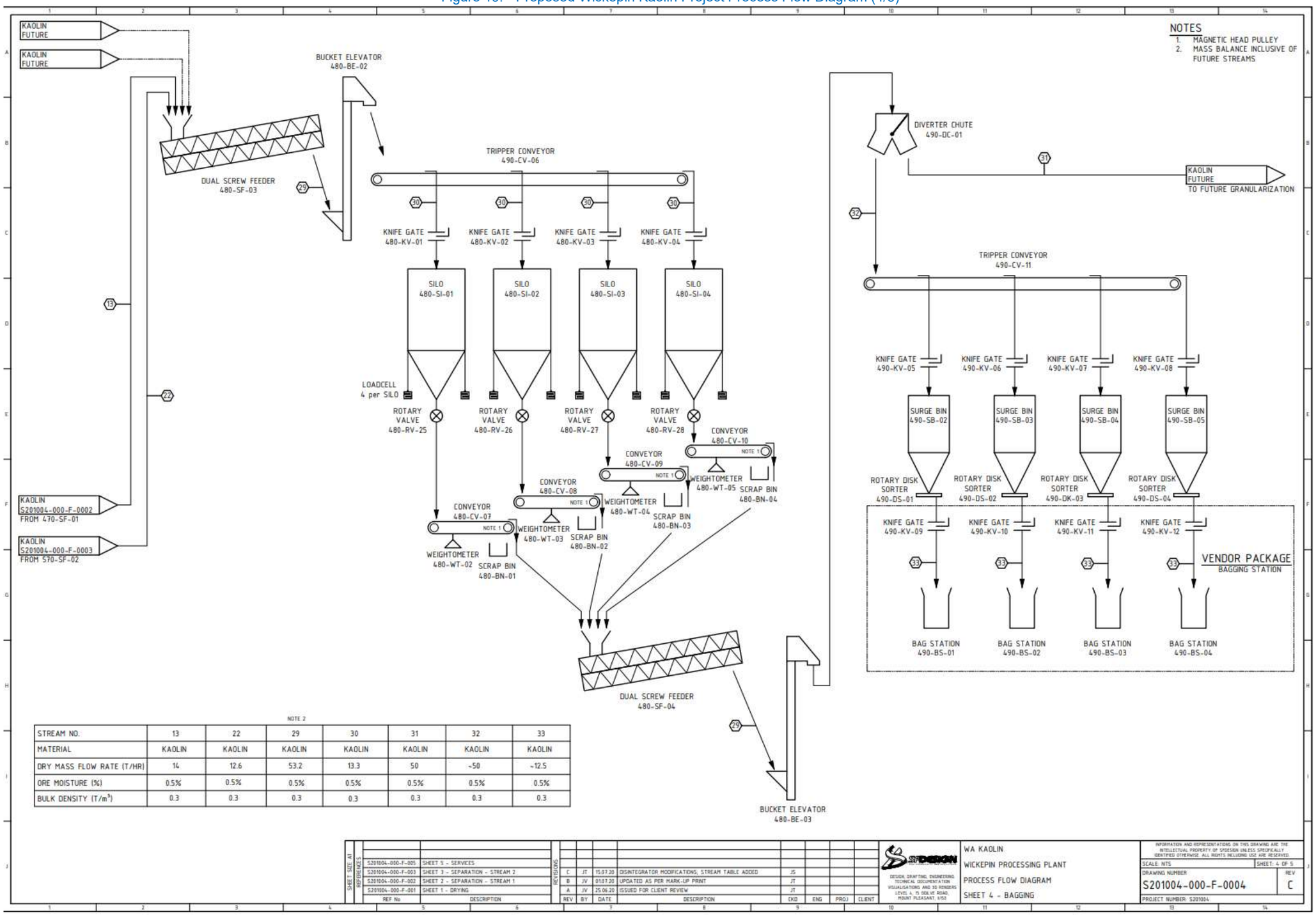
Figure 19. Proposed Wickepin Kaolin Project Process Flow Diagram (4/5)



STREAM NO.	13	22	29	30	31	32	33
MATERIAL	KAOLIN	KAOLIN	KAOLIN	KAOLIN	KAOLIN	KAOLIN	KAOLIN
DRY MASS FLOW RATE (T/HR)	14	12.6	53.2	13.3	50	~50	~12.5
ORE MOISTURE (%)	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
BULK DENSITY (T/m³)	0.3	0.3	0.3	0.3	0.3	0.3	0.3

Figure 20. Proposed Wickepin Kaolin Project Process Flow Diagram (5/5)

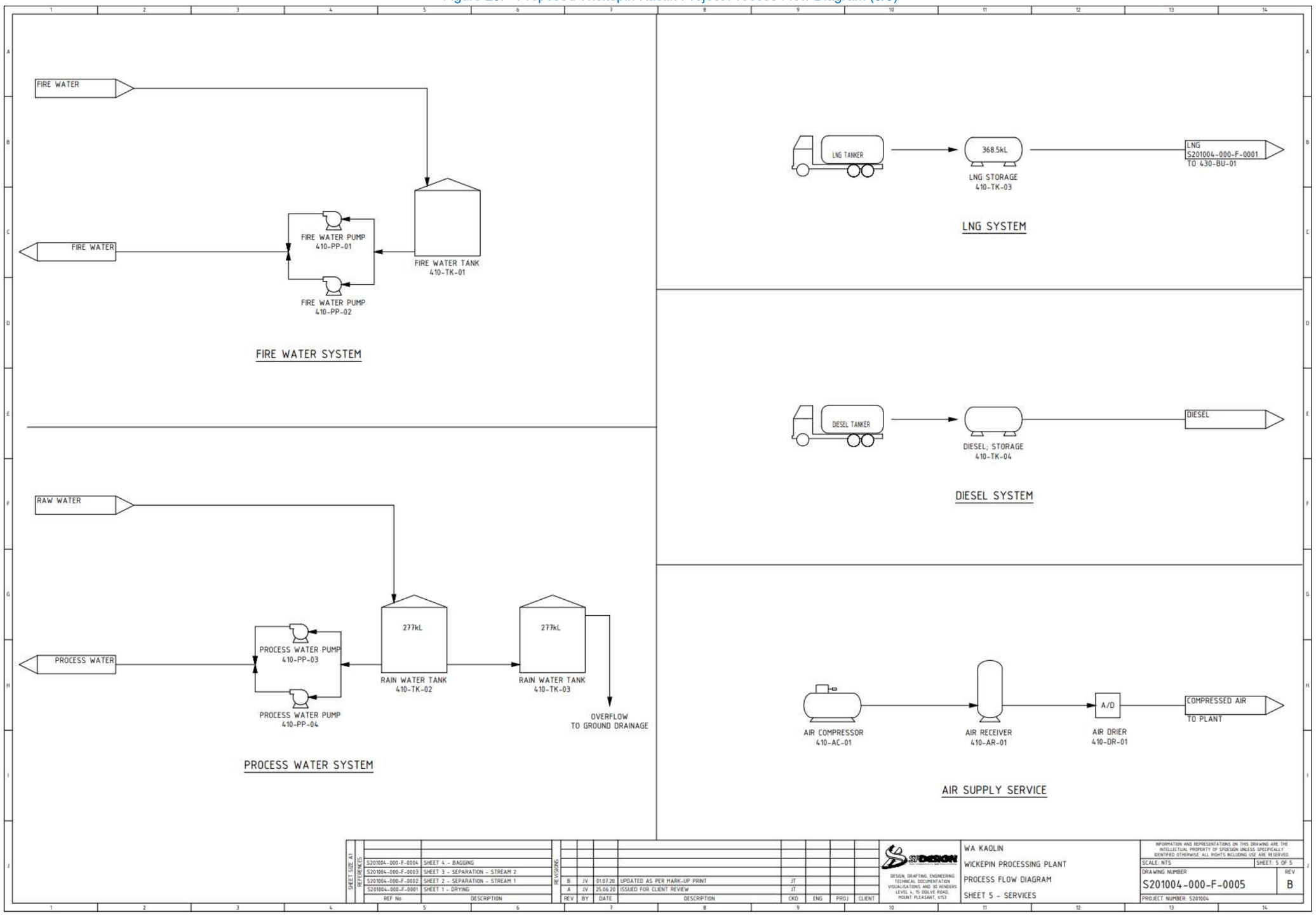


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Figure 21. Proposed Wickepin Kaolin Project Process Mass Balance

WA KAOLIN WICKEPIN PROCESSING PLANT

Mass Balance

23-Jul-20
SLB

Stream No.	Description	Solids (t/h)	Mass Liquid (t/h)	Wet Solids (t/h)	Solids (t/m^3)	Density Liquid (t/m^3)	Slurry (t/m^3)	Solids (m^3/h)	Volume Liquid (m^3/h)	Slurry (m^3/h)	Percent Solids (% w/w)	Air Flow Nm^3/h
CRUSHING & DRYING												
	Crushing circuit feed	65.4	8.9	74.3	1.60	1.00	1.49	40.9	8.9	49.8	88.0	
	Breaker feeder rate	65.4	8.9	74.3	1.60	1.00	1.49	40.9	8.9	49.8	88.0	
	Breaker splitter to Stage 2 plant (future)	65.4	8.9	74.3	1.60	1.00	1.49	40.9	8.9	49.8	88.0	
	Breaker splitter to Stage 1 desintegrator / crusher	65.4	8.9	74.3	1.60	1.00	1.49	40.9	8.9	49.8	88.0	
	Disintegrator discharge conveyer	65.4	8.9	74.3	1.60	1.00	1.49	40.9	8.9	49.8	88.0	
	Rotary kiln feed	65.4	8.9	74.3	1.60	1.00	1.49	40.9	8.9	49.8	88.0	
	Kiln dust collector feed	16.4	0.0	16.4	0.30	1.00	0.30	54.5	0.0	54.5	100.0	
	Kiln dust collector discharge splitter - to stream 1	8.2	0.0	8.2	0.30	1.00	0.30	27.3	0.0	27.3	100.0	
	Kiln dust collector discharge splitter - to stream 2	8.2	0.0	8.2	0.30	1.00	0.30	27.3	0.0	27.3	100.0	
	Kiln dicharge bucket elevator	49.1	0.0	49.1	1.60	1.00	1.60	30.7	0.0	30.7	100.0	
	Kiln dicharge bucket elevator splitter - to stream 1	24.5	0.0	24.5	1.60	1.00	1.60	15.3	0.0	15.3	100.0	
	Kiln dicharge bucket elevator splitter - to stream 2	24.5	0.0	24.5	1.60	1.00	1.60	15.3	0.0	15.3	100.0	
KAOLIN SEPARATION STREAM 1												
	Separation column 01 feed - side wall inlet A	12.3	0.0	12.3	1.60	1.00	1.60	7.7	0.0	7.7	100.0	
	Separation column 01 feed - side wall inlet B	12.3	0.0	12.3	1.60	1.00	1.60	7.7	0.0	7.7	100.0	
	Separation column 01 feed - top	8.2	0.0	8.2	0.30	1.00	0.30	27.3	0.0	27.3	100.0	
	Separation column 01 - waste	14.7	0.0	14.7	1.60	1.00	1.60	9.2	0.0	9.2	100.0	
	Separation column 01 - product	18.0	0.0	18.0	0.30	1.00	0.30	59.9	0.0	59.9	100.0	
	Separation column 02 feed - side wall inlet	9.0	0.0	9.0	1.60	1.00	1.60	5.6	0.0	5.6	100.0	
	Separation column 03 feed - side wall inlet	9.0	0.0	9.0	1.60	1.00	1.60	5.6	0.0	5.6	100.0	
	Separation column 02 - waste	1.9	0.0	1.9	1.60	1.00	1.60	1.2	0.0	1.2	100.0	
	Separation column 03 - waste	1.9	0.0	1.9	1.60	1.00	1.60	1.2	0.0	1.2	100.0	
	Feed to final stage classification cyclone (SC02+SC03 produc	14.2	0.0	14.2	0.30	1.00	0.30	47.2	0.0	47.2	100.0	
	Mass split to cyclone underflow - dust collector bypass	11.3	0.0	11.3	0.30	1.00	0.30	37.7	0.0	37.7	100.0	
	Mass split to cyclone overflow - dust collector feed	2.8	0.0	2.8	0.30	1.00	0.30	9.4	0.0	9.4	100.0	
	Combined product screw feeder stream 1	14.2	0.0	14.2	0.30	1.00	0.30	47.2	0.0	47.2	100.0	
	Combined product - Individual rotary valve (x5)	2.8	0.0	2.8	0.30	1.00	0.30	9.4	0.0	9.4	100.0	
KAOLIN SEPARATION STREAM 2												
	Separation column 04 feed - side wall inlet A	12.3	0.0	12.3	1.60	1.00	1.60	7.7	0.0	7.7	100.0	
	Separation column 04 feed - side wall inlet B	12.3	0.0	12.3	1.60	1.00	1.60	7.7	0.0	7.7	100.0	
	Separation column 04 feed - top	8.2	0.0	8.2	0.30	1.00	0.30	27.3	0.0	27.3	100.0	
	Separation column 04 - waste	14.7	0.0	14.7	1.60	1.00	1.60	9.2	0.0	9.2	100.0	
	Separation column 04 - product	18.0	0.0	18.0	0.30	1.00	0.30	60.0	0.0	60.0	100.0	
	Separation column 05 feed - side wall inlet	9.0	0.0	9.0	1.60	1.00	1.60	5.6	0.0	5.6	100.0	
	Separation column 06 feed - side wall inlet	9.0	0.0	9.0	1.60	1.00	1.60	5.6	0.0	5.6	100.0	
	Separation column 05 - waste	1.9	0.0	1.9	1.60	1.00	1.60	1.2	0.0	1.2	100.0	
	Separation column 06 - waste	1.9	0.0	1.9	1.60	1.00	1.60	1.2	0.0	1.2	100.0	
	Feed to final stage classification cyclone (SC05+SC06 produc	14.2	0.0	14.2	0.30	1.00	0.30	47.2	0.0	47.2	100.0	
	Mass split to cyclone underflow - dust collector bypass	11.3	0.0	11.3	0.30	1.00	0.30	37.7	0.0	37.7	100.0	
	Mass split to cyclone overflow - dust collector feed	2.8	0.0	2.8	0.30	1.00	0.30	9.4	0.0	9.4	100.0	
	Combined product screw feeder stream 2	14.2	0.0	14.2	0.30	1.00	0.30	47.2	0.0	47.2	100.0	
	Combined product - Individual rotary valve (x5)	2.8	0.0	2.8	0.30	1.00	0.30	9.4	0.0	9.4	100.0	
PRODUCT STORAGE & BAGGING												
	Combined product to storage silos	28.3	0.0	28.3	0.30	1.00	0.30	94.3	0.0	94.3	100.0	
	Product silo outflow - typical	28.3	0.0	28.3	0.30	1.00	0.30	94.3	0.0	94.3	100.0	
	Product silo outflow - maximum rotary/belt feeder flow	28.3	0.0	28.3	0.30	1.00	0.30	94.3	0.0	94.3	100.0	
	Bagging plant feed	56.6	0.0	56.6	0.30	1.00	0.30	188.7	0.0	188.7	100.0	
	Bagging plant individual fill rate	56.6	0.0	56.6	0.30	1.00	0.30	188.7	0.0	188.7	100.0	

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Figure 22. Proposed Wickepin Kaolin Project Mass Balance Schematic

WA KAOLIN WICKEPIN PROCESSING PLANT

MASS BALANCE SCHEMATIC

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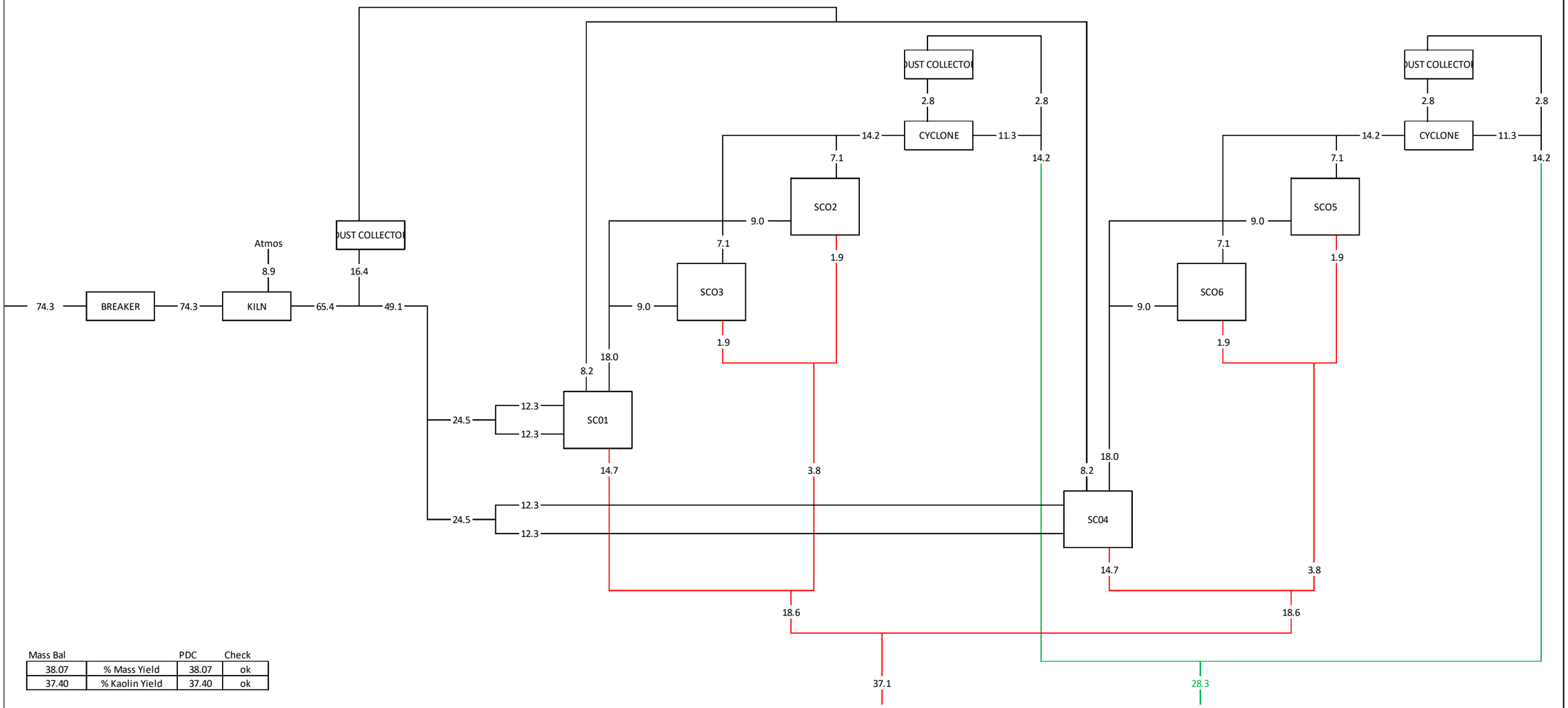
Design Criteria Created for Mass Balance Only. Note that sources have not changed for A1.



Mass Bal		PDC	Check
38.07	% Mass Yield	38.07	ok
37.40	% Kaolin Yield	37.40	ok

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14.3 Detailed Process Description

The reader should refer to the process flow diagrams which have been provided in Section 14.2, (Drawings S201004-000-F-0001, S201004-000-F-0002, S201004-000-F-0003, S201004-000-F-0004, S201004-000-F-0005).

14.3.1 Feeding and Crushing circuit

Refer to the Process Flow Diagram (**PFD**) and Drawing S201004-000-F-0001

If required, ROM is blended at the mine stockpiles to the required blend of mineralogy and grade. ROM presents at approximately 50% kaolin and 50% quartz. The majority of the quartz fraction is >75 micron (before any attrition in the process). To account for losses, including moisture, approximately 2.4 tonnes of ROM are required to produce 1 tonne of kaolin at >99% passing 45µm. ROM is delivered to the feeding and crushing circuit by a FEL. The feeder (420-FD-01) is an apron feeder with feed hopper above fitted with a static grizzly. The feeder is fitted with galvanised trays and all steel surfaces of hopper and feeder are galvanised. The feeder is fitted with a variable speed drive and has capability of delivering 120 tph of damp ore into the disintegrator/roll crusher (420-BK-01) which crushes both the quartz fraction and lumps of agglomerated kaolin to a (approximately) 4mm top size.

The stainless-steel surge bin (420-SB-01) loads at a controlled depth onto conveyor (420-CV-01) which is fitted with a weightometer (420-WT-01) to monitor the ROM feed rate. The conveyor elevates feed from the outlet of a up to the rotary dryer and kiln (420-RD-01). The head drum of the conveyor is magnetic to remove any tramp iron from the feed.

14.3.2 Drying Circuit

Refer to the PFD and Drawing S201004-000-F-0001

The rotary dryer is 2.5 m diameter and 16m in length with lifters and ploughs to help advance the feed forward. All surfaces that are exposed to feed are 304 stainless steel. Heating is by direct fired gas burner model Fives North American 4795-20 delivering up to 60GJ/h. As mentioned above the ore presents at approx. 13% moisture and is required to exit at 0.5%. Some attrition apparatus may be inside the drier to further break up any remaining lumps of kaolin. Moisture and kaolin dust from the drier are separated via a baghouse/dust collector (440-DC-01) The baghouse is insulated and the air inlet temperature is approximately 120 deg to ensure the moisture and dust laden airflow keeps above dew point. All exposed surfaces of the baghouse are stainless steel.

14.3.3 Dry Separation Circuit

Dry ore is elevated and blown into Separation Column (T1) where proprietary configuration and techniques are involved to separate the coarser quartz fraction from the dry ore. The product stream then undergoes a further separation in Separation Column (T2) which likewise has proprietary configuration and techniques that are not disclosed in this DFS.

14.3.4 Product Collection and Silo Storage

Refer to the PFD and Drawing S201004-000-F-0004

The two product streams are mixed via a dual screw conveyor (480-SF-03) then elevated to load into four storage silos. Each silo can strategically house different grades of product depending on particle size requirements. Weightometers on the discharge conveyors precisely measure the desired product grades, then combined in a dual screw conveyor (480-SF-04) to minimise aeration to the finished product.

14.3.5 Finished Product Packaging and Loadout

Refer to the PFD and Drawing S201004-000-F-0004

The dry circuit passes through a diverter chute (490-DC-01) where some product is rehydrated for granularization. The remaining dry product is bagged and packaged via four bagging stations suitable for handling 600 kg and 1,200 kg bags.

14.3.6 Water Services

Refer to the PFD and Drawing S201004-000-F-0005

Fresh water will be sourced from Wickepin town water and from two 277 kL rainwater tanks (410-TK-02 and 410-TK-03). The rainwater tanks will overflow to nearby dam on WAK property and a pump will be installed to bring water from the dam back up to the tanks as required.

Apart from amenities, the only water required in the Project is for dust suppression. The respirable level of quartz in the ore is below detection and the level in finished products and the waste stream has been determined to range between 0.008% and 0.07% w/w. These levels are considered low, however environmental dust monitoring will be undertaken and where appropriate, suitable personal protective equipment will be mandated in the operations.

Process Water is distributed throughout the plant via the Process Water Pumps (410-PP-03/410-PP-04) (Duty/Standby).

Fire water is delivered by an independent fire water system. This system consists of wo electric pumps (main pump and jockey pump) and a diesel back-up pump. Fire water services will be installed according to the relevant regulations and a pipeline from the Water Corporation Supply will be installed to keep the dedicated fire water tank full.

In the future a spent pit to be used as water storage which will reduce the need for Water Corporation Supply during periods of low rainfall.

14.3.7 Tailings Disposal

Refer to the PFD and flowsheet 3397.05-F-008.

The coarse quartz will be discharged separately to the fine quartz and bagged off or stockpiled for sale. If no sales occur it will be returned as backfill of the spent pits. The fine quartz can likewise be bagged for sale but will not be stockpiled until wet down in a ribbon style mixer to suppress dust emissions. Similarly, if there are no sales or insufficient sales, the damp fine quartz will also be returned as backfill of the spent pits.

14.3.8 Air Services

Refer to the PFD and flowsheet 3397.05-F-009.

Two air compressors (duty/standby) will provide compressed air for plant services and instrument air. One Plant Air Receiver and one Instrument Air Receiver provide capacity for the air services. A desiccant dryer of equivalent capacity is also included for the Instrument Air.

14.4 Quality Assurance

WAK Holding's quality control system is summarised in Diag. 2 below.

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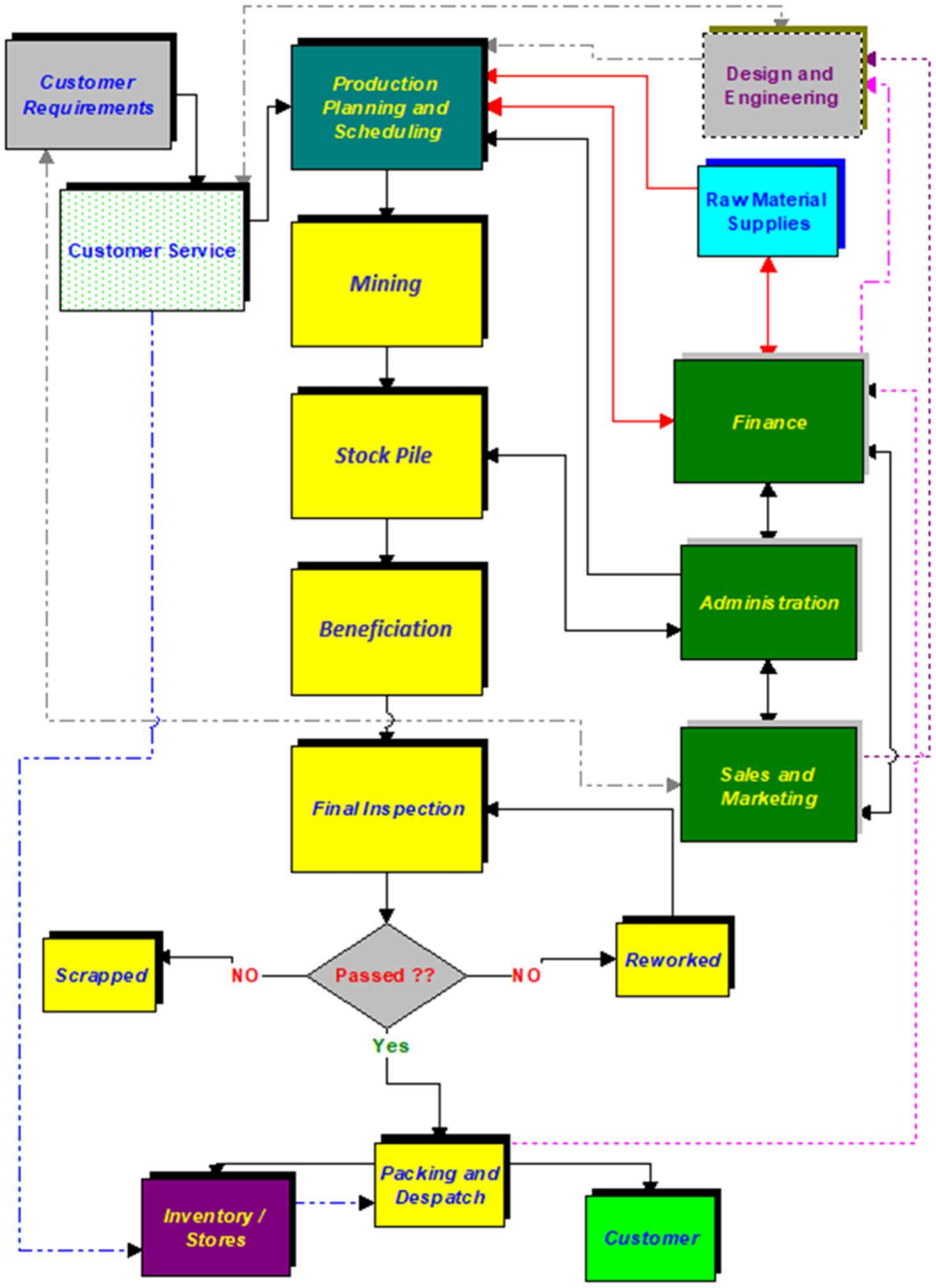
Diag. 2. Quality Assurance Diagram



Note: All systems are supported by the Quality, Occupational Health & Safety and Environmental Management System information

15. TAILINGS AND WASTE FACILITIES

Waste and overburden removed during the mining process will be returned to mined-out pit areas as part of the ongoing rehabilitation works during operation. Consequently, there will be no permanent waste rock dumps associated with the Project. A temporary waste rock dump may be required at the commencement of operations if the mining area associated with trial mining is unable to store waste and overburden stripped at the beginning of the operation.

Tailings from the beneficiation plant will also be permanently stored in mined out pit areas and subsequently no separate TSF will be required.

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 minerals or elements in the mined ore, waste or overburden.

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16. UTILITIES

Utilities required for the project are power and water as detailed below.

16.1 Power Supply

Project power requirements are expected to be 560 kW for mechanical equipment involved in 25 tph Kaolin processing and granulation.

Electrical Power will be supplied by a site-based power station incorporating 3x 550 kVA diesel fuelled generator sets (2 duty, 1 standby arrangement) to generate 415v AC, 3 phase power.

The mechanical equipment is expected to operate for 7200 hours per annum, equating to an annual electrical power demand (including process infrastructure) of over 6 GWh p.a. A 30 kL diesel storage tank located on site will provide fuel to the gensets have an expected consumption of 100 litres/hr at prime load

16.2 Water Supply

As the process is dry, the only water required is for amenities and fire. Water for these services will be collected from rainwater to storage tanks and augmented via the Wickepin Shire town water supply and is the subject of an application to the Water Corporation. This additional supply will be sized to the needs of the project and be delivered by a new pipeline installed underground along Sparks road and following the designation route into the process plant. Should peaks in demand exceed this supply, additional water requirements may be sourced from an existing catchment storage dam within the mining lease.

Additional water consumption may be required for high peak dry periods frequent in the summer months of the year in Wickepin. During these periods, roads will require dust suppression. This is particularly so in high traffic areas such as:

- Access roads;
- Active mining areas;
- Container loading and unloading areas;
- Ore stockpiles (loading and unloading); and
- Tailings handling areas.

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17. INFRASTRUCTURE AND SERVICES

Existing transport infrastructure available to the Project is limited to road and rail corridors and these will be sufficient for the construction and operational needs of the Project. Internal project roads for light road vehicles, heavy road vehicles and mining equipment will be developed as part of the initial capital and as required during the life of the Project.

17.1 Transport Corridors

WAK will use road transport to deliver product to port. There is sufficient road transport capacity available to transport the permitted 380,000 tpa, but WAK will work diligently with authorities and stakeholders to re-open the tier 3 rail line from Wedin to Narrogin (see map in Appendix 8) and negotiate suitable rolling stock with the rail operator, so the majority of product movement can be on rail. This will relieve local and regional truck movements. The DFS assumes the use of the Freemantle Port for container shipments and the Bunbury Port for Bulk shipments. Albany Port may also be utilised if required.

DFS cost estimates for transport and logistics are based on existing operating and sales experience.

17.2 Site Buildings

The Process Area layout is detailed in *Figure 24* below and the project involves a single building detailed in *Figure 25* to *Figure 28* below. This is a a permanent fixed structure using structural steel mounted to engineered concrete floors and footings. There are no demountable buildings nor outbuildings, nor campsites. The roofing and external wall are of 'zincalume' corrugated iron and there is a concrete firewall in between storage and process areas. Office, laboratory and staff amenities will be established within this structure.

17.3 Communication

Communication will be provided to the Project by existing telecommunication providers and no additional provisions have been allowed for, or are deemed necessary.

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18. OPERATING STRATEGY

18.1 General

The operating strategy for the Wickepin mine and processing plant is modelled on an expanded case of the existing pilot plant operations in Kwinana. The mining will be conducted by contractors until there is justification for a full-time mining crew, at which time there will be an assessment of the costs and benefits of running our mining team with our own equipment.

Ore will be transferred from the mine to the stockpiles adjacent to the plant using haul trucks. The ore processing plant will operate 24 hours per day, 7 days per week with the ore picked from the stockpiles and transferred to the continuous process feeder using an FEL

The process receives mined ore by FEL, which enables blending of ROM to the required blend of mineralogy and grade. The ROM is fed to the processing plant via a ROM bin fitted with a static grizzly. The initial stage consists of a single stage disintegrator fed by an Apron Feeder. The discharge from the disintegrator is fed to the gas fired rotary kiln via a feed conveyor fitted with a weightometer to monitor the ROM feed rate.

The rotary kiln dries the ROM to less than 1% moisture in readiness for the separate stage. After the kiln the dried ROM is fed to the separation stage using an air blown eductor. The material is collected from the separating stage in a multi chamber, offline pulsing baghouse. The collected product is then transferred to the main storage silos.

The quartz that is removed from the ore by the process will be loaded into the empty haul trucks and then stockpiles adjacent to the mine. The quartz will be used to remediate the mining void on a campaign basis.

The packing operations then transfer the K99 from the main silo to blending vessels from which the product will be packaged into various size bags: 1200 kg Supersacks, 650 kg bulk bags and 20 kg poly-woven bags.

The packaged K99 products will be stored in the warehouse according to production date and package size. As 98% of production will be exported, the vast majority of product will be loaded into 40’ high cube containers using forklifts with bag handling attachments.

In the early phases of production (up to 500,000 tpa) WAK has elected to use road transport (only) to deliver its K99 to port. There is sufficient road transport capacity available to transport the (up to) 400,000 tpa of K99 that would be produced by the processing plant. The port of Fremantle will be the port of loading for exports of bagged material.

The port of Bunbury will be used for direct shipment of ore which has available capacity for the bulk loading facilities. The logistics contractor who operates one of the bulk loading facilities at Bunbury has quoted an end to end logistics solution for the transport of ore from the mine gate, storage at the port and loading of the vessels. Cost estimates used in the DFS for transport and logistics are based on an independent assessment and consequent budget estimate provided to the Company by QUBE Bulk.

18.2 Roster

The ore processing plant will operate on a continuous roster with a conventional 4 panel 12 hour, 8-week cycle. The manning levels for the 200,000 tpa stage are tabled below.

Table 13. Proposed Manning Levels

Management, Administration and Sales	No.	Day Shift - Processing Plant	No.
Accounts Payable	1.0	**Electrician/Instrument Tech**	0.5
Accounts Receivable	1.0	**Geologists (1 snr, 1 jnr)**	0.4
Applications Specialists	1.0	**Mining Engineers (1 snr, 1 jnr)**	1.0
CEO	1.0	**Mining Manager**	1.0
Ceram. & Spec. Bus. Unit Manager	1.0	**Production Manager**	1.0
CFO	0.6	**Production Supervisors**	1.0
Engineering Manager	1.0	**Rotating Shift - Processing Plant**	
Export Shipping Coordinator	1.0	**Float**	4.0
HR & OHS Manager	0.5	**Lab Operators**	4.0
Logistics & Procurement Manager	0.5	**Maintenance Fitter**	4.0
Operations Manager	1.0	**Operators & Packaging K99**	16.0
Payroll / Accounts Assistant	1.0	**Storeman Shipper**	4.0
Process Engineer	1.0		
Projects Engineers	1.0		
QA Manager	0.5		
Quality Control Manager	0.5		
Sales Manager	1.0		
Sales Support Staff	1.0		
Secretarial / General Admin	0.5		
Sen. Accountant	1.0		
Tech Serv. Lab Operators	1.0		
Tech Serv. Lab Supervisor	0.5		

18.3 Plant Utilisation

The design processing plant production rate is 25 tph, yielding 200,000 tpa on a continuous 24 h/d basis with a utilisation of 95%.

18.4 Maintenance

The annual cost of maintenance materials the plant area has been calculated by applying a factor (1.8% of cumulative capex pa) to the area's installed mechanical costs. The factor is based on actual data from similar sized plants and is between 1 and 8%. The annual cost obtained includes all non-specified maintenance costs, for example lubricants, piping, welding, wear linings, electric cable, screen panels, and conveyor parts. It also includes miscellaneous items such as baghouse filters.

Sustaining capital (1.2% of cumulative capex pa) will involve elements of the processing plant that require upgrades during the normal course of production. The plant and associated infrastructure have been designed to ensure that items of capital equipment will have a useful life that exceeds the depreciation rate if adequately maintained and such maintenance is allowed for in the operating cost estimates under maintenance.

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19. CAPITAL COST ESTIMATES

19.1 Basis of Estimate

19.1.1 Mechanical Design

Equipment has been selected based on specifications and datasheets that were created specifically for the study. The equipment identification was in accordance with agreed work breakdown structure, the existing project equipment type identifier and a 3-digit identification number. The tagging included an area number prefix followed by the equipment nomenclature and unique sequential numbers for each equipment type.

19.1.2 Equipment Sizing

Preliminary equipment selection and motor sizing has been based on information contained within the process design criteria and mass balance. The quotations received for each equipment package underwent a high-level evaluation to confirm equipment suitability and to select the preferred Vendor. Selection of Vendor was based upon the most commercially attractive, technically compliant offer. Following Vendor selection, the equipment details and pricing have been populated in the equipment list.

Pumps have been sized based on the volumetric flow rates and fluid densities from the mass balance and an estimate of the pump differential head.

Conveyors have been sized based on the mass balance flow rates, bulk densities and conveyor profile. Conveyor design belt loading was set as a basis at 80% of the maximum capacity with an allowance for edge clearance. The belt speeds selected ranged from 1 m/s to 1.5 m/s which are on the lower end of normal conveyor design speed. Whilst the low conveyor speed will result in slightly larger belt widths, it will reduce the wear rate at transitions. Final belt selections were from standard commonly available belt widths.

No design margins were applied to the mass balance when specifying the equipment duty points. However, equipment was selected ensuring that it could comfortably meet the duty point or that minor adjustments could be made to increase the equipment throughput.

19.1.3 Deviations from Standard Design (Pilot Plant)

The following items are deviations away from the pilot plant design which will result in increased plant reliability, improved yield and reduced labour content.

Kiln to be drying specific; crushing is undertaken by a disintegrator

Implementation of stainless steel ducting

Plant is completely undercover away from weather conditions

No R&D necessary

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19.2 Process Design Criteria

Figure 23. Proposed Wickepin Kaolin Project Process Design Criteria

WA KAOLIN WICKEPIN PROCESSING PLANT

PROCESS DESIGN CRITERIA

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1 Owner	Owner Specified
2 Testwork	Testwork/Pilot Derived
3 Assumed	Client to Advise
4 Engineer	Generally Accepted Practice / Design Experience
5 Calculated	Calculated Data
6 Vendor	Vendor Supplied Data

Description	PFD Reference	Unit	Operating Case 1 Paper	Operating Case 2 Ceramic	Annual Average	Revision	Source	Source Comment
OPERATING PHILOSOPHY								
Throughput								
Target Product			Paper	Ceramic	Average	B	3	Client to Advise
Annual Phase 1 Product Output		dry Mtpa	0.1	0.1	0.2	B	3	Client to Advise
ROM Material								
ROM Ore Host			Kaolinised Granite	Kaolinised Granite	Kaolinised Granite	A	3	Confirmed by Client
Gangue Mineral			Quartz	Quartz	Quartz	A1	3	Confirmed by Client
ROM Ore Moisture		%	12	12	12	A1	3	Confirmed by Client
ROM Kaolin Content		%	42	46	44	A	3	Confirmed by Client
Production & Metallurgy								
Typical Impurities in Product		%	3	0.5	1.75	B	3	Client to Advise
Kaolin Recovery - Process losses		%	90	80	85	B	3	Confirmed by Client (DFS)
Product Yield - Process Dry @ 100% Purity		%	37.8	36.8	37.4	A	5	
Product Mass - Process @ Saleable Purity		%	39.0	37.0	38.1	B	5	
Mass Balance								
Annual Required wet ROM Input		Mtpa	0.265	0.272	0.535	B	5	
Moisture to Atmosphere		Mtpa	0.032	0.033	0.064	B	5	
Wet Concentrate		Mtpa	0.103	0.101	0.204	B	5	
Wet Waste		Mtpa	0.130	0.139	0.267	B	5	
Wet Concentrate		tpoh	28.67	27.95	28.30	B	5	
Wet Waste		tpoh	36.07	38.55	37.12	B	5	
Physical Properties								
Ore Bulk Density		t/m^3	1.6	1.6	1.6	A1	3	Confirmed by Client
Kaolin Bulk Density (Unsettled)		t/m^3	0.3	0.3	0.3	A1	3	Sheet - Bulk Densities
Production Schedules								
Operating Days per Annum		days	166.5	166.5	333	B	3	Cell to be updated
Dry Plant Availability		%	90	90	90	A	3	Target

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PROCESS DESIGN CRITERIA

23/07/2020
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1 Owner	Owner Specified
2 Testwork	Testwork/Pilot Derived
3 Assumed	Client to Advise
4 Engineer	Generally Accepted Practice / Design Experience
5 Calculated	Calculated Data
6 Vendor	Vendor Supplied Data

Description	PFD Reference	Unit	Operating Case 1 Paper	Operating Case 2 Ceramic	Annual Average	Revision	Source	Source Comment
DRY PROCESSING								
Phase 1 Breaker Plant								
Configuration			Shared Bin, Apron, Breaker					
Breaker Circuit Feed - nominal wet	2	tpoh	73.6	75.6	74.3	A2	5	
Breaker Circuit Feed - neglecting water weight		tpoh	64.73	66	65.4	A2	5	
Drying Kiln (Phase 1 operation)	430-RD-01							
Configuration			Shared Kiln, Dust Collection					
Kiln Discharge Temperature - Design		C	120	120	120	A1	3	
Kiln Feed (wet)	2	wet tpoh	74	76	74	A2	3	
Kiln Discharge		tpoh	64.7	66.5	65.4	B	3	
Kaolin Split to Kiln Dust Collector		%	25	25	25.0	A1	3	
Kaolin Split to Kiln Dust Collector	4	tpoh	16.2	16.6	16.4	A	5	
Bucket Elevator	3	tpoh	49	50	49	A	5	
Separation Circuit A Split	440-SC-02	%	50	50	50	B	3	
Dust Collector A Split	440-DC-01	%	50	50	50	B	3	
Kaolin Separation Circuit A								
Configuration			2 stage pneumatic separation; second stage split x 2 streams					
Stage 1								
Feed to 450-TW-01 via sidewall	5	tpoh	24.3	24.9	24.5	A2	5	
Number of Eduction Lines			2	2	2	A2	3	
Feed to 450-TW-01 via sidewall per split stream	10	tpoh	12.1	12.5	12.3	A2	5	
Feed to 450-TW-01 via top	8	tpoh	8.1	8.3	8.2	A2	5	
Total feed to Separation Circuit 1 - Separation Column 1A	450-TW-01	tpoh	32.4	33.2	32.7	A2	5	
Proportion of waste within feed to 450-TW-01		%	47.5	42.5	45.0	B	5	Target 47.5% and 42.5% as advised by client
Waste separated at 450-TW-01	14	tpoh	15.4	14.1	14.7	B	5	

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PROCESS DESIGN CRITERIA

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3 Assumed	Client to Advise
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5 Calculated	Calculated Data
6 Vendor	Vendor Supplied Data

Description	PFD Reference	Unit	Operating Case 1 Paper	Operating Case 2 Ceramic	Annual Average	Revision	Source	Source Comment
Stage 2								
Feed to 450-TW-02A & 450-TW-02B combined	11 (2 OFF)	tpoh	17.0	19.1	18.0	B	5	
Percentage Split to 450-TW-02A		%	50.0	50.0	50.0	B	5	
Feed to 450-TW-02A - Side Wall Entry	11	tpoh	8.5	9.6	9.0	B	5	
Proportion of waste within feed to 450-TW-02A	450-TW-02A	%	15.7	26.9	21.3	B	5	assumes even split
Waste separated at 450-TW-02A	15	tpoh	1.3	2.6	1.9	B	5	
Feed to 450-TW-02B - Side Wall Entry	11	tpoh	8.5	9.6	9.0	B	5	
Proportion of waste within feed to 450-TW-02B	450-TW-02B	%	15.7	26.9	21.3	B	5	assumes even split
Waste separated at 450-TW-02B	15	tpoh	1.3	2.6	1.9	B	5	
Waste separated at 450-TW-02A & -02B	19	tpoh	2.7	5.1	3.8	B	5	
Final Classification Stage								
Feed to Final Stage Classification Cyclone	450-CY-01	tpoh	14.3	14.0	14.2	A	5	
Mass Split to Cyclone Underflow - Dust Collector Bypass		%	80	80	80	A1	3	
Mass Split to Cyclone Underflow - Dust Collector Bypass		tpoh	11.5	11.2	11.3	A	5	
Mass Split to Cyclone Overflow - Dust Collectors		tpoh	2.9	2.8	2.8	A	5	
Number of Discharge Rotary Valves		tpoh	5	5	5	A	3	
Number of Discharge Rotary Valves Simultaneously Online		tpoh	1	1	1	A	3	
Rotary Valve Specification - nominal		tpoh	2.9	2.8	2.8	A	5	
460-CV-03 Discharge	14	tpoh	15.4	14.1	14.7	A	5	
460-CV-02 Discharge	19	tpoh	2.7	5.1	3.8	A	5	
Combined Discharge		tpoh	18.0	19.3	18.6	A2		
Total Kaolin Concentrate Output		%	39.0	37.0	38.1	A1	5	Wet Concentrate so includes moisture and impu
Total Kaolin Output		%	37.8	36.8	37.4	B	5	

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PROCESS DESIGN CRITERIA

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1 Owner	Owner Specified
2 Testwork	Testwork/Pilot Derived
3 Assumed	Client to Advise
4 Engineer	Generally Accepted Practice / Design Experience
5 Calculated	Calculated Data
6 Vendor	Vendor Supplied Data

Description	PFD Reference	Unit	Operating Case 1 Paper	Operating Case 2 Ceramic	Annual Average	Revision	Source	Source Comment
Kaolin Separation Circuit B								
Configuration			2 stage pneumatic separation; second stage split x 2 streams					
Stage 1								
Feed to 550-TW-04 via sidewall	6	tpoh	24.3	24.9	24.5	A2	5	
Number of Eduction Lines			2	2	2	A2	3	
Feed to 550-TW-04 via sidewall per split stream	10	tpoh	12.1	12.5	12.3	A2	5	
Feed to 550-TW-04 via top	7	tpoh	8.1	8.3	8.2	A2	5	
Total feed to Separation Circuit 2	550-TW-04	tpoh	32.4	33.2	32.7	A2	5	
Proportion of waste within feed to 550-TW-04		%	47.5	42.5	45.0	B	5	Target 47.5% and 42.5% as advised by client
Waste separated at 450-TW-01	23	tpoh	15.4	14.1	14.7	B	5	
							5	
Stage 2								
Feed to 550-TW-05 & 450-TW-06 combined	20 (2 OFF)	tpoh	17.0	19.1	18.0	B	5	
Percentage Split to 450-TW-02		%	50.0	50.0	50.0	B	5	
Feed to 550-TW-05 - Side Wall Entry	20	tpoh	8.5	9.6	9.0	B	5	
Proportion of waste within feed to 550-TW-05	550-TW-05	%	15.7	26.9	21.4	B	5	
Waste separated at 550-TW-05	24	tpoh	1.3	2.6	1.9	B	5	
Feed to 550-TW-06 - Side Wall Entry	20	tpoh	8.5	9.6	9.0	B	5	
Proportion of waste within feed to 550-TW-06	550-TW-06	%	15.7	26.9	21.4	B	5	
Waste separated at 550-TW-06	24	tpoh	1.3	2.6	1.9	B	5	
Waste separated at 550-TW-05 & -06	28	tpoh	2.7	5.1	3.8	B	5	
Final Classification Stage								
Fresh Feed to Final Stage Classification Cyclone		tpoh	14.3	14.0	14.2	A	5	
Mass Split to Cyclone Underflow - Dust Collector Bypass		%	80	80	80	A1	3	
Mass Split to Cyclone Underflow - Dust Collector Bypass		tpoh	11.5	11.2	11.3	A	5	
Mass Split to Cyclone Overflow - Dust Collectors		tpoh	2.9	2.8	2.8	A	5	
Number of Discharge Rotary Valves		tpoh	5	5	5	A	3	
Number of Discharge Rotary Valves Simultaneously Online		tpoh	1	1	1	A	3	
Rotary Valve Specification - nominal		tpoh	2.9	2.8	2.8	A	5	
560-CV-05 Discharge		tpoh	15.4	14.1	14.7	A	5	
560-CV-04 Discharge		tpoh	2.7	5.1	3.8	A	5	
Combined Discharge		tpoh	18.0	19.3	18.6	A2		

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PROCESS DESIGN CRITERIA

23/07/2020
SLB

1 Owner	Owner Specified
2 Testwork	Testwork/Pilot Derived
3 Assumed	Client to Advise
4 Engineer	Generally Accepted Practice / Design Experience
5 Calculated	Calculated Data
6 Vendor	Vendor Supplied Data

Description	PFD Reference	Unit	Operating Case 1 Paper	Operating Case 2 Ceramic	Annual Average	Revision	Source	Source Comment
Total Kaolin Concentrate Output		%	39.0	37.0	38.1	A1	5	Wet Concentrate so includes moisture and impu
Total Kaolin Output		%	37.8	36.8	37.4	B		
Waste Product Handling								
Separation Circuit 1 Screw Feeder 1&2 Discharge		tpoh	18.0	19.3	18.6	A	5	
Separation Circuit 2 Screw Feeder 1&2 Discharge		tpoh	18.0	19.3	18.6	A	5	
Combined Waste Streams		tpoh	36.1	38.5	37.1	A	5	
Product Handling and Transfer								
Combined 1&2 Product Streams to Product Storage	29	tpoh	28.7	27.9	28.3	A	5	
Future Product Stream to Product Storage		tpoh	28.7	27.9	28.3	A1	3	
Combined Product Streams to Product Storage		tpoh	57.3	55.9	56.6	A1	5	

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PROCESS DESIGN CRITERIA

23/07/2020
SLB

1	Owner	Owner Specified
2	Testwork	Testwork/Pilot Derived
3	Assumed	Client to Advise
4	Engineer	Generally Accepted Practice / Design Experience
5	Calculated	Calculated Data
6	Vendor	Vendor Supplied Data

Description	PFD Reference	Unit	Operating Case 1 Paper	Operating Case 2 Ceramic	Annual Average	Revision	Source	Source Comment
PRODUCT STORAGE AND BAGGING								
Bagging Plant Storage								
Number Product Storage Silos			4	4	4	A	3	
Minimum Product Storage Residence Time		h	5	5	5	A	5	
Storage Silo Filling / Extraction Differential		tpoh	28.7	27.9	28.3	A	5	
Minimum Product Storage - no design factor		tonnes	143.3	139.7	141.5	A	5	
Minimum Product Silo Capacity - per silo		tonnes	35.8	34.9	35.4	A	5	
Minimum Surge Bin Capacity - per silo		m^3	119.4	116.4	117.9	A	5	Plus ullage
Rotary Valve and Product Weighfeeder Design - Operating			1	1	1	A	3	
Product Outflow - per Feeder		tpoh	57.3	55.9	56.6	A	5	
Magnetic Separation								
Magnetic Separator - Magnetics Pull			negligable	negligable	negligable	A	3	
Bagging								
Bagging Capacity Required - stage 1		tpoh	28.7	27.9	28.3	A1	3	
Bagging Capacity Required -future design allowance		tpoh	57.3	55.9	56.6	A1	3	
Bagging Plant Feed Rate - vendor specified rate (includes changeovers)		tpoh	57.3	55.9	56.6	A	5	
Number Product Surge Bins			4	4	4	A	3	
Minimum Surge Capacity		min	15	15	15	A	3	
Minimum Surge Bin Capacity - per bin		tonnes	7.17	6.99	7.08	A	5	
Minimum Surge Bin Capacity - per bin		m^3	23.89	23.29	23.58	A	5	Plus ullage

19.3 Major Equipment Packages

19.3.1 Equipment Selection

Equipment pricing was sought for major equipment as contained with the package listing below (*Table 14*). Minor equipment was selected and priced based upon database information.

Table 14. Package and Vendor Listing

Package Number	Package Item	Vendors
01	Inbound ROM bin	Fabricated
02	Front End Loader	CAT
03	Apron Feeder	TBC
04	Disintegrator	J.C. Steele & Sons
05	Conveyors	TBC
06	Rotary Dryer	ANSAC
07	Bucket Elevator	TBC
08	Separation Circuit	NYB
09	Product Collection	TBC, DE Engineers
10	Packaging, Storage & Loadout	Vacupac
11	Valves (Rotary, Knife Gate)	Eziduct, TBC

Note: Vendor selected for the DFS is the first vendor listed for each package in the above.

Package 01 – Inbound ROM Bin

- ROM Bin (420-BN-01)
  - Fabricated per equipment fabrication drawings supplied by SFDesign

Package 02 – FEL

- CAT 972M (420-LD-01)
  - 5.5m^3 bucket capacity to feed 30m^3 Inbound ROM bin

Package 03 - Apron Feeder

- Apron Feeder (420-BN-01)
  - Vendor to be supplied with SFDesign drawings to size

Package 04 – Disintegrator

- Disintegrator (420-BK-01)
  - Vendor supplied

Package 05 – Conveyors

- SFDesign conveyor design package (420-CV-01, 460-CV-02, 460-CV-03, 560-CV-04, 560-CV-05, 4800-CV-06, 480-CV-07, 480-CV-08, 480-CV-09, 480-CV-10, 490-CV-11)

Package 06 – Rotary Dryer

- Rotary Dryer (430-RD-01)
  - Vendor supplied

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- Surge Bin (420-SB-01)
    - Prior to Rotary Dryer
- Heat Exchanger (430-HE-01) - TBC
    - Heat recovery from Kiln and redirection to waste bunker

Package 07 – Bucket Elevator

- SFDesign bucket elevator design package (440-BE-01, 480-BE-02, 480-BE-03)

Package 08 – Separation Circuit

- Blower (450-BL-01)
- Separation Columns T1 - (450-TW-01) & T2 - (450-TW-02, 450-TW-03)
    - Proprietary Design fabricated in stainless steel to WAK specifications
- Ducting
    - SFDesign

Package 09 – Product Collection

- Cyclone (450-CY-01) and Push Fan (450-FN-02) - TBC
- Baghouse (470-DC-02)
    - Vendor to supply air bags
    - SFDesign housing
- Main Suction Fan (470-FN-03)
- Product Transfer/Blending System (470-SF-01, 570-SF-02, 480-SF-03, 480-SF-04)
- Silos (480-SI-01, 480-SI-02, 480-SI-03, 480-SI-04)
- Blending and Transfer System to packaging station(s) (490-SB-02, 490-SB-03, 490-SB-04, 490-SB-05)

Package 10 – Packaging, Storage and Loadout

- Packaging Stations (490-BS-01, 490-BS-02, 490-BS-03, 490-BS-04)
- OH Cranes
- Racking
- Container Loading Apparatus
- Container Handling

Package 11 – Valves (Rotary, Knife Gate)

- Rotary Valves
    - Concomitant to Dust Collectors, Separation columns, Cyclone, Silo Discharge
- Knife Gate Valves
    - Silo Intake, Packaging Surge Bins

Miscellaneous Packages

- Mobile Equipment
- Maintenance Equipment

19.4 Plant Layout

The layout for the DFS is shown in *Figure* 24. Structural drawings of the processing shed are shown in *Figure* 25 to *Figure* 28.

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19.4.1 Inbound Ore

Ore is excavated from each pit and after sorting to initial quality criteria (grade control), is transported by dump trucks to ore storage bays as shown in *Figure 24*.

19.4.2 Outbound Waste

Using the same dump trucks on their return trip to the pits, the waste sand stream will be returned to backfill spent pit areas.

19.4.3 Conveyor Layout

Belt profiles for each conveyor were created in order to suitably arrange the processing buildings. Sufficient spacing is required to achieve the required elevation for the discharge point without exceeding the maximum allowable conveyor angle or minimum allowable bend radius. Conveyor load points are horizontal in order to minimise spillage, with the conveyor bend radius calculated based upon the conveyor belt selection and required belt tension. As conveyor discharges are fixed point the conveyor head end typically on an incline. This reduces the total length of conveyor. Should the head end location need to be movable to distribute discharge (shuttle or tripper), the conveyor length would be increased in order to achieve a horizontal head end. The following Conveyor design parameters were used in the preliminary conveyor calculations and profile layouts:

1. Conveyor speed 1 m/s to 1.5 m/s;
2. Maximum belt loading of 80% (after allowing for edge clearance);
3. Maximum conveyor angle of 18 degrees; and
4. Maximum conveyor angle at loading point 8 degrees.

19.4.4 Product Loadout

After packaging stations (490-BS-01, 490-BS-02, 490-BS-03, 490-BS-04) bulk bags and supersacks are to be moved by forklifts from stations to two gantry cranes located on grid line 2A rows B to D as in *Figure 26* then transported to a SAM LoadPlate for container loading.

19.4.4.1 Forklifts

4 x 2.5t container specified LNG powered forklifts will be required for bagging station loadout, gantry crane stacking, product storage and limited container loading. Forklifts require fork positioning and rotation attachments allowable.

19.4.4.2 Gantry crane

2 x 5t gantry cranes to be installed on grid lines B&C and C&D running from 2A to 11 as in *Figure 26*. Each crane will pick up 4 packaged bags located on grid line 2A to a LoadPlate situated between grid lines 10A and 11 as shown in *Figure 26*.

19.4.4.3 SAM LoadPlate

Both 20'and 40' ISO containers can be loaded with the same LoadPlate as the product to be loaded is assembled outside the container on the plate area. Once a load is ready it is driven into the container in 'One shot', the product is retained in the container and the plate is withdrawn. Bulk bags can be loaded without pallets or slipsheets. LoadPlate is elevated to allow for 'Live loading' of trucks. Once loaded the container doors are closed, seals attached, and the container is ready for shipment. Preparation of the next load continues on the

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LoadPlate as the loaded container is either placed in storage via a Reach Stacker or carted straight to wharf.

19.4.4.4 Laden container fork

A diesel powered 55 t Reach Stacker will perform the duty of unloading empty containers along the northern end of the proposed site and reload any full containers in storage as shown in *Figure 24*. The pneumatic tyred Reach Stacker will also place the container on a stand prepared for the LoadPlate for loading.

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Figure 24. Process Plant Layout

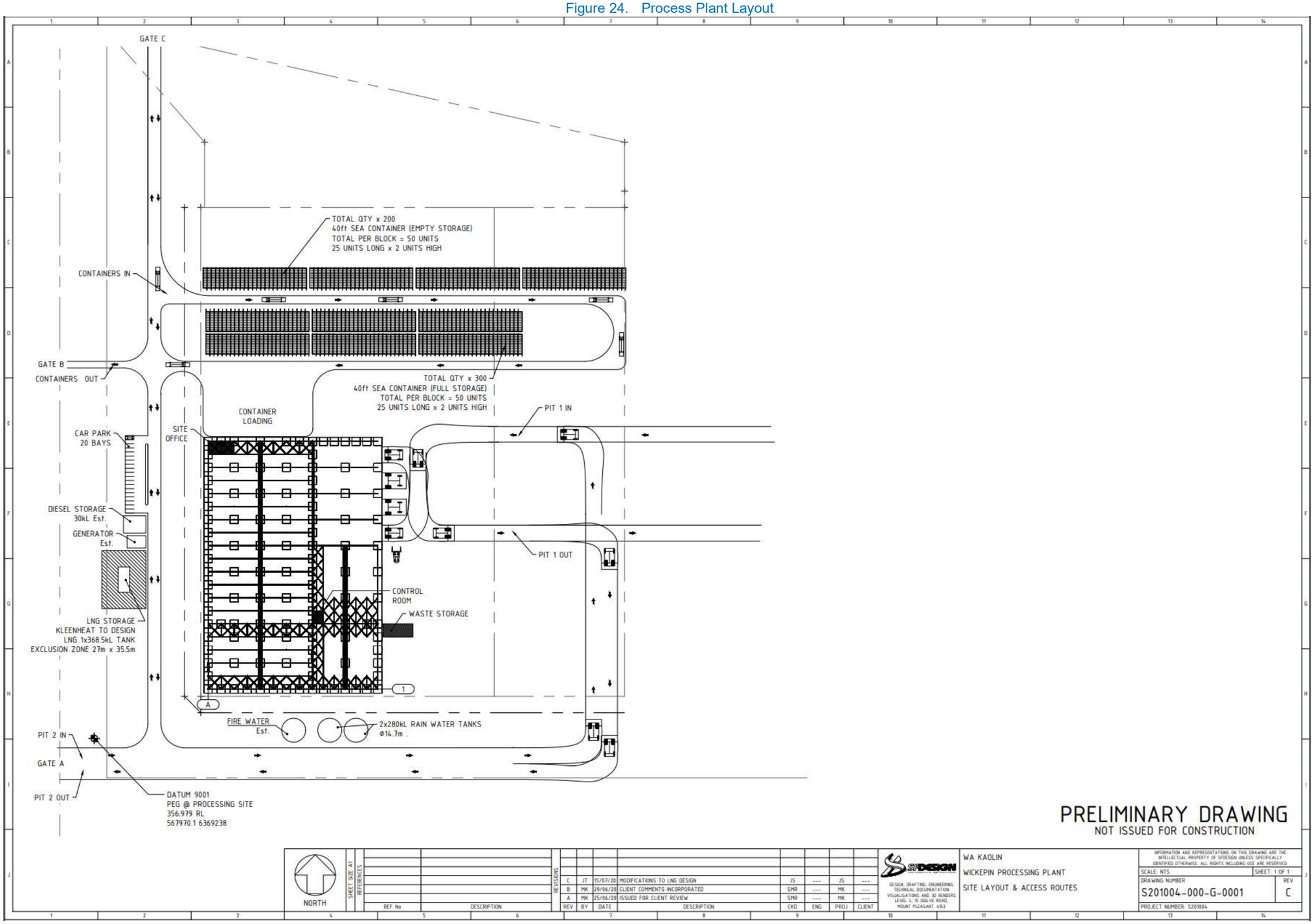

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Figure 25. Processing Shed Structural (1/4)

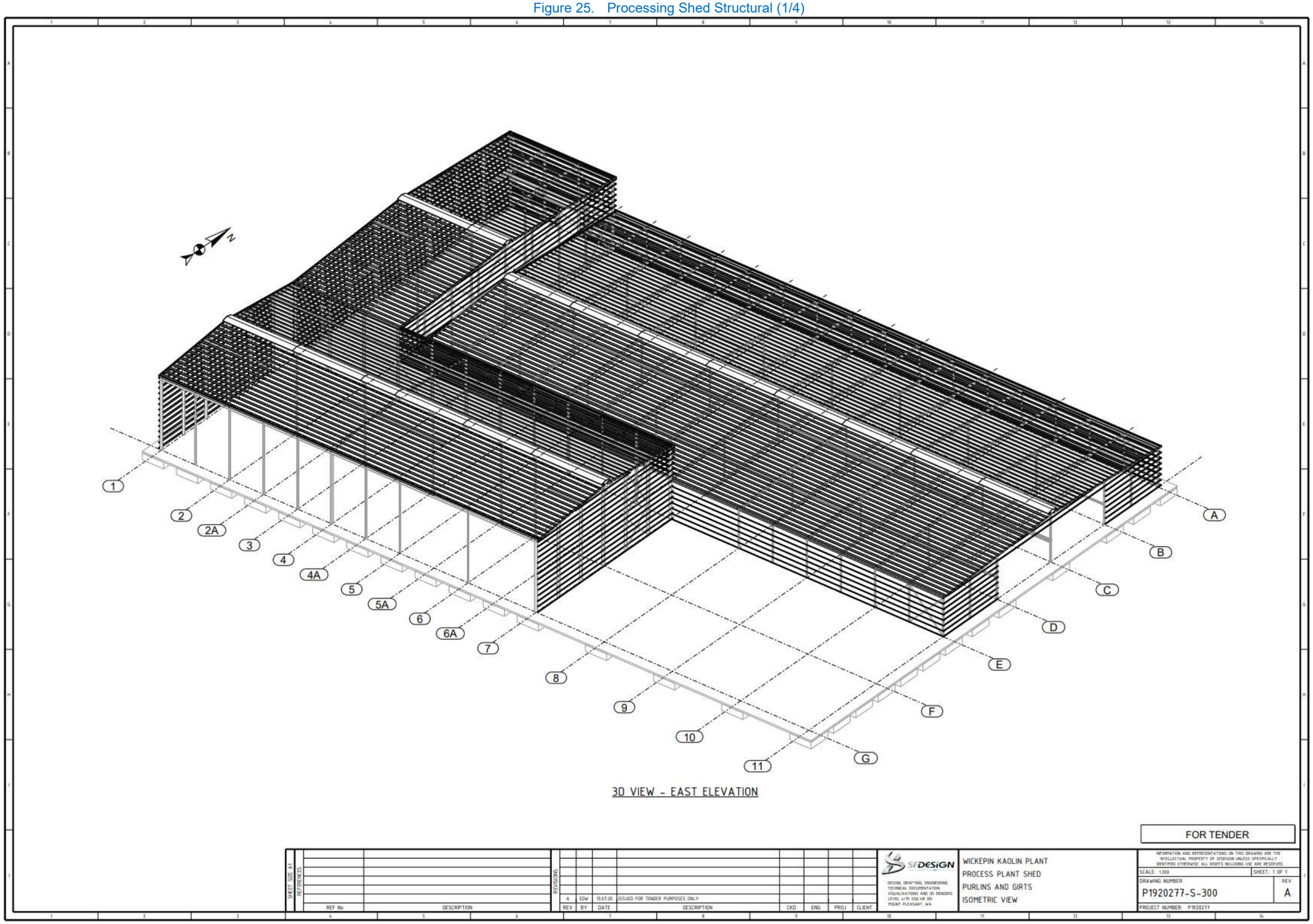

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Figure 26. Processing Shed Structural (2/4)

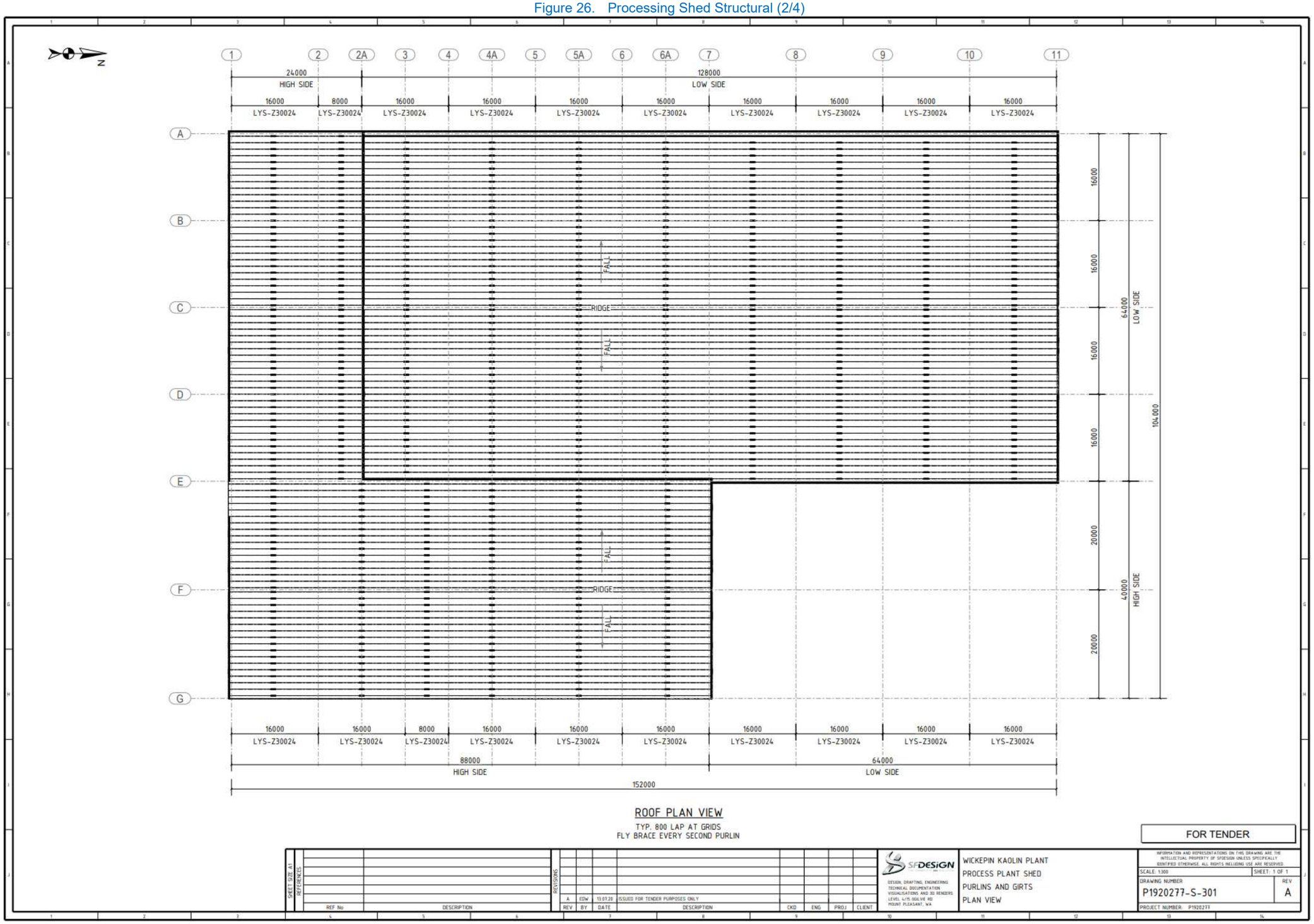

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Figure 27. Processing Shed Structural (3/4)

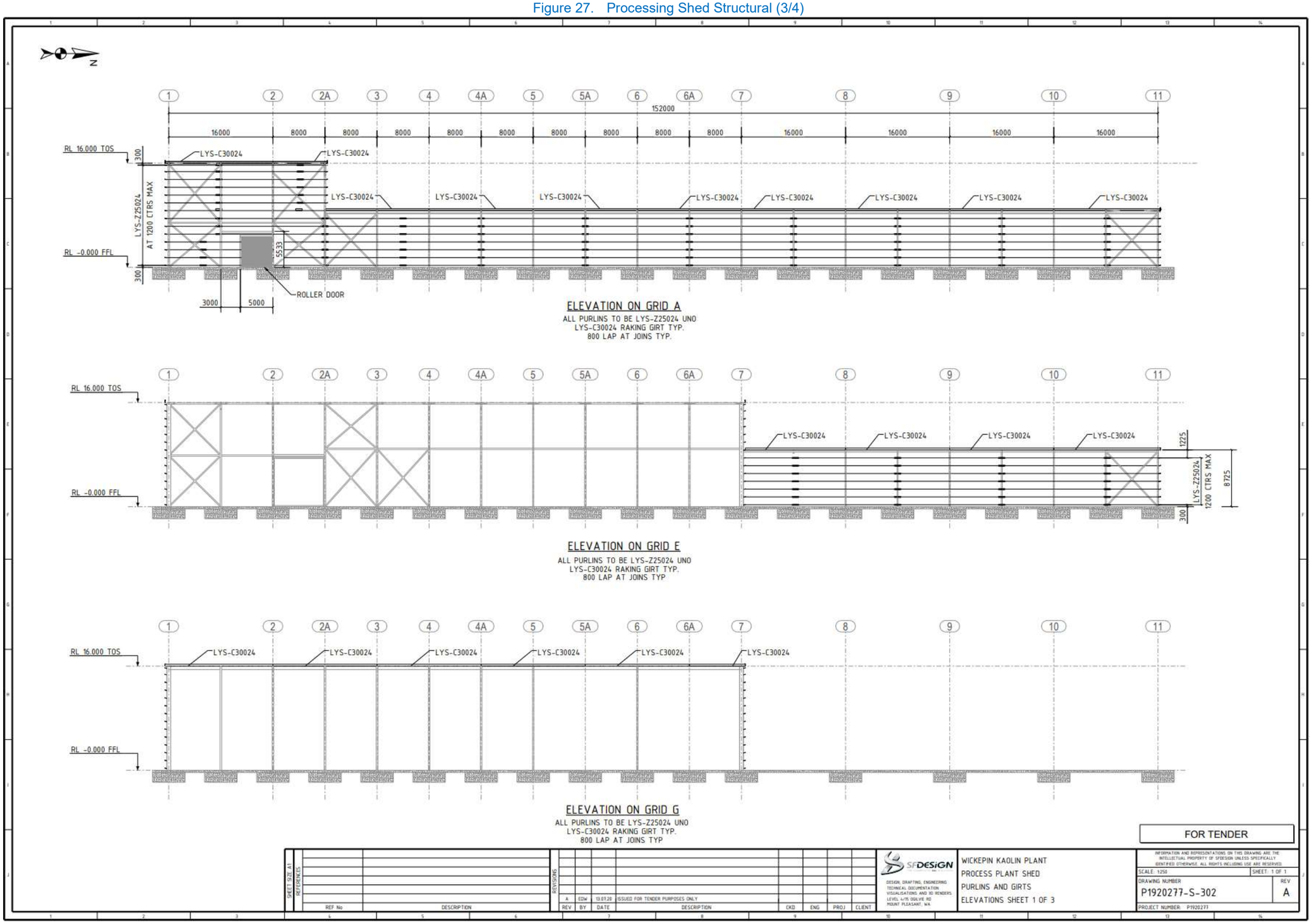

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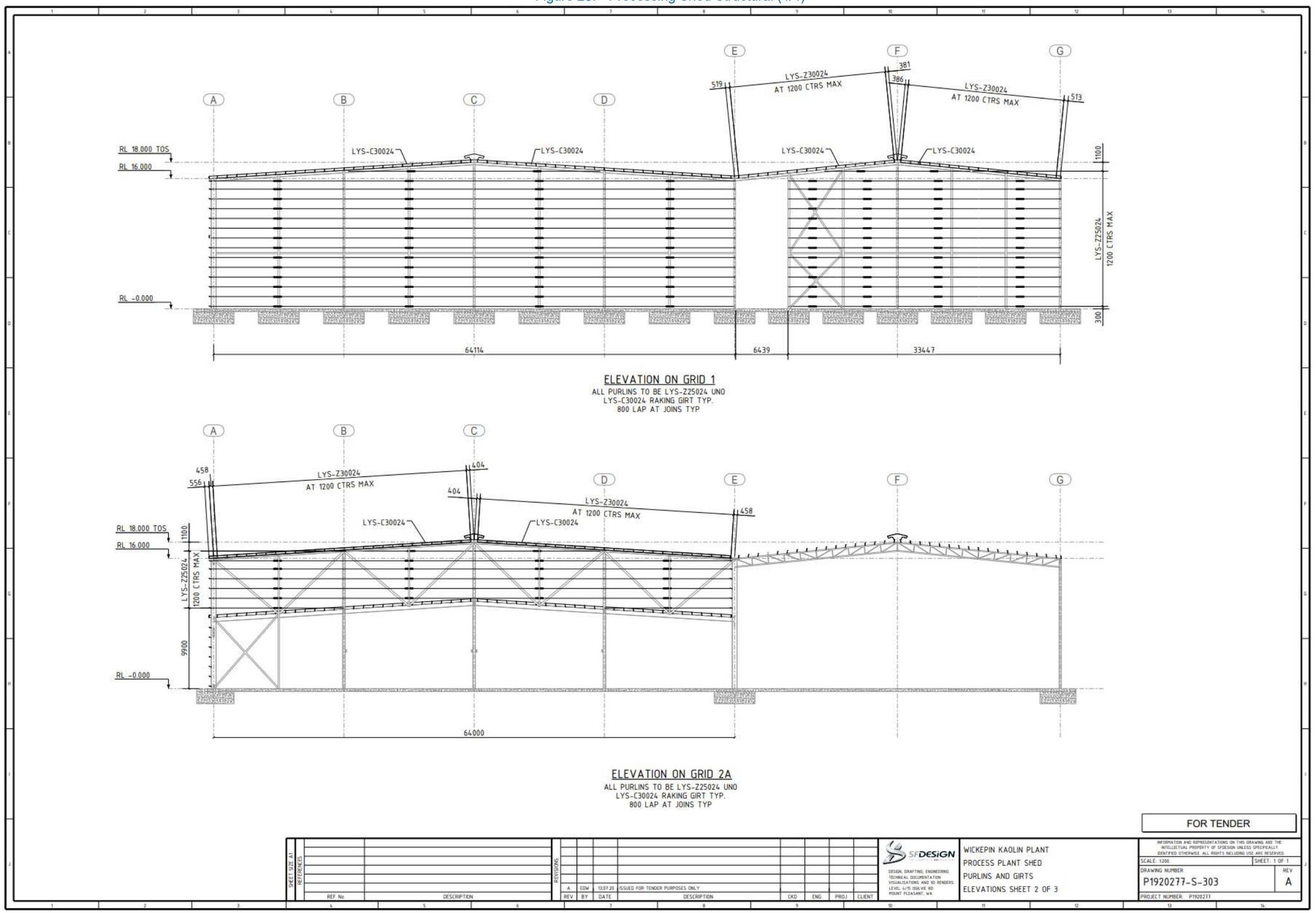
Figure 28. Processing Shed Structural (4/4)



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19.5 Capital Estimate

A Capital cost estimate for the current development and an expansion of the Wickepin operation plus associated works at the Kwinana Facility is summarised in *Table 15* below.

The capital estimate for the expansion of the initial operation assumes that the costs will be the same as those experienced for the initial construction. No provision is made for escalation, but equally, no provision is made for the likely cost savings associated with experience gained during the construction of the initial phase.

Table 15. Capital Cost Estimate

Cost Area	Module				
	Factor	Initial (12.5 tph)			Expansion
Description		1	2	Total (25 tph)	Total (25 tph)
DIRECT					
Civil		573,449	381,411	954,860	246,000
Structural		4,467,957	192,500	4,660,457	2,858,000
Mechanical		3,509,762	1,645,747	5,155,509	4,891,000
Electrical		1,084,793	321,595	1,406,388	770,000
Infrastructure		118,730	-	118,730	209,000
Mob Equipment		1,448,980	65,403	1,514,383	446,000
Overheads		1,030,620	396,700	1,427,320	970,000
TOTAL DIRECT COSTS		12,234,291	3,003,355	15,237,647	10,389,000
INDIRECT					
Procurement (owner)	2%	215,706	58,759	274,465	497,000
Construction Management (owner)	2%	215,706	58,759	274,465	497,000
TOTAL INDIRECT COSTS		431,412	117,518	548,931	994,000
TOTAL PROJECT COST (Excl contingency)		12,665,704	3,120,873	15,786,577	11,384,000
Contingency	14.5%	1,675,551	608,449	2,284,001	2,187,000
TOTAL PROJECT COST (Including contingency)		**14,341,255**	**3,729,323**	**18,070,578**	**13,571,000**

The capital estimate for each area and module may be found at Appendix 11.

19.5.1 Contingency

Capital cost contingency has been calculated based on the estimated accuracy of each element of the cost estimate. The factors used for each element by type are detailed in *Table 16*.

Table 16. Capital Cost Contingency Factors

Type	Basis of Estimate	Factor
A	Firm quotation on letterhead to approved for construction drawings and criteria.	5%
B	Firm quotation on letterhead based on quantities and unit rates.	10%
C	Supplier estimate.	15%
D	Owner estimate based on quotation rates and take-offs from drawings.	15%
E	Owner estimate based on estimated unit rates and take-offs from drawings.	20%
F	Other estimate.	25%

19.6 Capital Implementation Strategy and Schedule

19.6.1 Basis

Using operational and equipment design experience gained in the Kwinana production facility, WAK will provide, with assistance from SF Designs, detailed specifications and data sheets to assist construction implementation and equipment procurement. WAK staff will otherwise manage all the commercial aspects of procurement. WAK will also oversee commissioning of equipment under an approved Commissioning Plan using approved contractors to meet standards required by DMIRS and other relevant authorities.

19.6.2 Milestones

The key stages for the development are as follows:

- Site Preparation and Civil Works
- Building Construction
- Services Installation and Commissioning
- Equipment Installation
- Commissioning of Plant

19.6.3 Construction Accommodation

There will be no construction accommodation provided at the site and all requirements for the Project will be fulfilled in local towns.

19.6.4 Contractor Temporary Facilities

Portable amenities, site construction office and tool store will be established for the construction period as required and removed at the end of construction.

19.6.5 Temporary Services

Water for construction will be trucked to the site and stored in a temporary water storage and distribution system and power will be provided by mobile generating sets. Compressed air for construction will be provided by mobile compressor units.

19.6.6 Construction Materials

Construction materials consist of steel, concrete and metal cladding with foil insulation where required. No timber nor combustible or fibrous construction materials are incorporated in the design.

19.6.7 Procurement and Sub-Contracting Plan

See 19.6.1.

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19.6.8 Logistics Plan

To be included in successful tender's scope.

19.6.9 Project Controls

The Project Team includes the Executive Director and CEO of WAK assisted by the Company's Operations Manager and SF Design's GM. A Project Superintendent will be nominated from this team to monitor the project throughout construction and to report compliance and bring all variation requests, if any to the team for approval.

19.6.10 Construction

Refer to 19.6.6 above. A building contract will be awarded to the selected successful tenderer who will have the responsibility for approvals and compliance to DMIRS and local government standards and the obligation to follow final workshop specifications and drawings that are approved by WAK and engineers SF Design.

19.6.11 Statutory Approvals

The development will be undertaken in a manner consistent with the Works Approval in place. Where required, local government building approvals will also be sought and obtained.

Wickepin Shire has advised that no building permit will be required for this stage of the Project.

19.6.12 Safety

A safety and health plan based on WAK's standards will be developed for the project. The following strategies will apply:

- Safety criteria and systems based on SF Design's best practice site standards and past experience will be developed and implemented for the project;
- Contractual obligations will require minimum acceptable safety and health standards and performance by contractors and subcontractors;
- Measurable safety targets will be established and discussed with all contractors. Contractor performance will be monitored against these;
- Formal strategies will be developed for all phases of the project so that work procedures and personnel attitudes are focused on safety. Strategies will give prominence to establishing safety culture and will not rely solely on policing;
- All safety related incidents and accidents will be reported and investigated. Corrective action will be implemented promptly;
- Regular safety meetings will be held on-site to enhance awareness and to reinforce the individual's responsibility towards safety;
- Regular safety audits and hazard surveys will be conducted throughout the design and construction phases of the project;
- All personnel will receive an induction and, if necessary, instructive training before commencing work on-site. Ongoing training and instruction will be delivered as necessary;
- There will be a Zero tolerance policy towards personnel under the influence of drugs or alcohol and random drug and alcohol testing will be undertaken;

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- The Safety Co-ordinator will manage safety, first aid and fire prevention with respect to all construction work; and
- All personnel will be responsible for their own safety, their co-workers' safety and the safety of capital equipment, in that order of priority.

19.6.13 Training

WAK will develop standard operating procedures for the operational phase of the Project. Specific operating procedures will be developed for the various areas of the process plant and infrastructure areas of the Project.

The personnel will be trained on site utilising WAK personnel, EPCM personnel and equipment vendor personnel. Process plant operator training will commence prior to commission of the plant.

The current plant operators will form part of the commissioning team and will work closely with the EPCM Contractor and equipment vendors.

19.6.14 Implementation Schedule (Initial)

Table 17. Implementation Schedule

Milestone	Start Date	Completion Date
Site Preparation and Civil Works	13th August 2020	7th September 2020
Building Construction	1st October 2020	1st February 2021
Services Installation and Commissioning	1st October 2020	1st March 2021
Equipment Installation	11th January 2021	1st May 2021
Commissioning of Plant	1st May 2021	1st October 2021

19.7 Working Capital

Working capital for the Project is estimated as a factor of the cumulative capital expenditure and is revised annually. The sustaining capital factor has been set at 1.2% pa.

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20. OPERATING COST ESTIMATES

20.1 Operating Cost Summary

This operating cost estimate is presented in Australian dollars (A$) and uses prices obtained in the third quarter of 2019 (Q1 2019). The estimate is considered to have an accuracy of ±10%. In broad terms, the estimate includes all site-related operating costs associated with the production of the K99 kaolin.

The operating cost estimate data includes the use of mass balance numbers based on steady state conditions. That is, the plant has been fully commissioned and ramped up to design parameters.

The K99 production plant at Wickepin consists of a ROM feed rate of 500,000 tpa at an average grade of 40% kaolin, producing an equivalent of 192,000 tpa of K99 kaolin grade.

The average operating costs for the first 12 years of operation are summarised in *Table 18* below. Site based costs comprise labour, maintenance materials along with variable costs such as operating consumables and power. The overhead cost includes the tenement rents, general, corporate, selling and administration costs.

Table 18. Operating Cost Estimate (Average, first 12 years)

Cost Centre	A$ Per Tonne Produced	Annual (/1000)	Percentage of Total Costs
Direct (Site Based)			
Mining (Incl. Royalties)	**32.57**	**4,021.8**	**15%**
Processing			
Employment	18.34	2,264.9	8%
Power	8.89	1,098.1	4%
Gas	20.73	2,559.5	9%
Consumables	0.11	13.7	0%
Reagents	-	-	0%
Packaging (Bags)	16.17	1,997.3	7%
Transport and Handling	53.28	6,579.7	24%
Maintenance	1.77	218.4	1%
Contingency	2.41	297.2	1%
Lab and QA	0.42	51.4	0%
Sub-Total	**122.11**	**15,080.20**	**55%**
Direct (Non-Site Based)			
Freight	47.31	5,842.3	21%
Total Direct Costs	**201.98**	**24,944.26**	**91%**
Indirect (Overheads)			
Tenement Rents	0.59	73.3	0%
Employment - Indirect	8.74	1,079.5	4%
Administration	2.09	257.5	1%
Corporate	5.59	689.9	3%
Sales and Marketing	-	-	0%
Staff Incentives	2.01	247.7	1%
Total Indirect Costs	**19.01**	**2,348.0**	**9%**
Total Operating Cost	**220.99**	**27,292.31**	**100%**

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20.2 Units of Measure

All costs are in A$ and all tonnage rates refer to metric tonnes.

20.3 Basis of Estimate

The operating cost estimate was developed as a matrix of cost type and expenditure area. The following sources were used to arrive at the operating cost estimate:

- WAK Kwinana operating data
- Process design criteria and mass balance (steady state)
- Vendor data and pricing
- Typical industry data
- Benchmarking.

20.4 Exchange Rates

The estimate is expressed in Australia Dollars. Conversions of foreign currencies quotations to A$ have been based on foreign exchange rate of 0.68 A$/US$.

20.5 Escalation

The operating costs have a base date of Q3 2019 with no allowance for escalation. Escalation is however included in the financial modelling, from commencement of operation at 4%pa.

20.6 Contingency

Contingency is included in the operating costs as per *Table 19* below.

Table 19. Operating Cost Contingency

Cost Area	Contingency
Mine site processing contingency	5%
Transport and storage contingency	5%
Administration contingency	5%
Sales and marketing contingency	5%

20.7 Exclusions

The estimate excludes accuracy provisions, project insurances, corporate overhead charges, financing costs or similar imposts, as well as expenditures classified as capital or sustaining capital.

20.8 Mining Operating Costs

The mining cost, including rehandle and rehabilitation, is $32.57 per tonne average, or $4.02M pa.

The work described in this sub-section has been based on the Ore Reserve Estimate prepared by CSA Global. The production schedule provides for the delivery of 500,000 tpa of ore from

the pits to a single ROM pad. For the purposes of preparing the indicative costs it is assumed the production period commences in first quarter of 2020.

The primary SOW requires:

- supply and mobilisation of mining equipment and personnel
- establishment of mining facilities
- preliminary works for clearing, grubbing, topsoil removal and haul road construction
- loading and hauling of ore to the ROM pad stockpiles
- loading and hauling of waste to a waste dump adjacent to the pit
- rehandle of ore from the ROM pad stockpiles to the processing plant
- pit dewatering
- waste dump profiling and topsoiling
- miscellaneous dayworks activities.

The mining will be conducted by a mining contractor and the assessment conducted here is based on this.

The mining costs provided have been generated using a first principles approach with inputs that are considered by CSA Global to be typical and consistent with a mining contractor approach for this type of operation.

20.8.1 Mine Production Quantities

The mining is required to deliver a notional 500,000 tpa of ore as feed to the processing plant for the initial stage of development. As noted in section 11, the ORE has been developed assuming that the process capacity will be doubled in production year 4 and expanded by the same quantity (to a total of 3 times initial capacity) in production year 7 with further expansions up to a total of 5 times initial capacity by production year 10.

This DFS is focused on the initial Project and considers the first of these potential expansions only. The change in cost of sales generated by increasing the processing capacity is minor and consequently, no change to Ore Reserve Inventory is anticipated, regardless of development stage achieved.

20.8.2 Stripping Ratio

The stripping ratio determined for the Project during the development of the ORE was 0.78 t:t waste:ore.

20.8.3 Mining Plant

Mining for the Project will be undertaken using a mining contractor. This methodology has been used for prior mining campaigns and has typically involved a fleet consisting of:

- 2 x 45t excavators
- 1 D8 bulldozer
- 2 x 50t tippers
- 1 x water cart

A mining contract for the Project will be developed during the project implementation phase and costs used in the DFS have been developed from costs experienced in prior mining campaigns.

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20.8.4 Roster & Working Days

The mining operation will be conducted on a 7 day per week, 24-hour per day basis.

Each day will comprise 2 x 12 hour shifts and it has been assumed that public holidays at Christmas and Easter will be observed per year.

20.8.5 Labour Costs

The mine workforce will be predominantly sourced from the local region and the southern wheatbelt in general.

The workforce will work 4 days on with 4 days off via a 4-panel roster, 8-week cycle. All locally sourced labour will be engaged via a Drive In - Drive Out (**DIDO**) approach with employees providing their own transport.

The labour costs used have been constructed using the Mining Industry Award 2010 and typical market rates for the region. These are inclusive of base wages, allowances and provisions for leave, social security, worker's insurance and payroll related tax.

20.8.6 Load & Haul Productivities

The operation will deliver ore to a ROM pad and waste to a single large dump from the open pits.

The dump truck haul profiles have been determined from the supplied pit designs and advised site layout. Based on this the following have been determined:

- Waste to dump: from 1,100 m to 3,270 m one way;
- Ore to ROM pad: from 1,100 m to 3,270 m one way; and
- The gradient of all ramps is 10% (1 in 10).

The truck travel times have been calculated using an average speed per segment method with speeds calibrated using Caterpillar's FPC. A site speed limit of 50 km/h is assumed.

A long-term average, prime machine downtime allowance of 15% (i.e. availability of 85%) has been used.

A standard 50 minutes worked per clock hour has been assumed.

20.8.7 Ore Rehandle

Ore will be delivered from the open pit to stockpiles on the ROM pad. This ore will then be rehandled for process feed using a frontend loader for delivery into the processing plant feed hopper.

The following parameters have been used for this activity:

- Process feed operation to be available 7 days per week, 24 hours per day.
- Process feed rate of 65 tonnes per hour.
- One-way tramming distance between 50 m and 70 m from stockpile to feed hopper.

A Cat 988K FEL or equivalent (6.0 m^3 bucket) is deemed suitable for this requirement. The costing assumes two units will be on site to allow sufficient backup capacity.

20.9 Process Plant Operating Costs

The process plant operating cost is $15.1M per year or $122 per tonne of product.

Transport and handling are the key cost categories representing 24% of the process plant cost. Gas and electricity (energy) constitutes 13% of the process plant cost.

As shown in *Table 18*, the next key cost category is labour at 8%.

20.9.1 Labour

The Process Plant labour cost estimate is calculated using the site organisational structure, labour rates and rosters which were developed by WAK.

Summary of the labour cost estimate is:

- Shift workers work 12 h shifts with 4 days on with 4 days off via a 4-panel roster, 8-week cycle
- Day workers work 8 h shifts, 5 days on, 2 days off

On-cost have been calculated based on the current project operating data at Kwinana, WA.

Table 20 details the labour rates which have been used for this estimate for workers on a weekday roster.

Table 20. Labour Categories and Costs

Processing Plant Labour	Annual Salary[1]	Number of staff[2]	Annual Cost[1]
Day Shift			
Electrician/Instrument Tech	$100,000	0.5	$50,000
Geologist	$140,000	0.4	$56,000
Maintenance Supervisor	$100,000	0.5	$50,000
Mining Engineer	$140,000	0.0	0
Mining Manager	$150,000	1.0	$150,000
Production Supervisors	$85,000	0.5	$42,500
Production Manager	$120,000	1.0	$120,000
Surveyor	$100,000	0.0	0
Rotating Shift, 4 shift groups			
Float	$65,000	2.0	$130,000
Lab Operators	$65,000	4.0	$260,000
Maintenance Fitter	$75,000	2.0	$150,000
Operators & Packaging K99	$65,000	16.0	$1,040,000
Storeman Shipper	$55,000	4.0	$220,000
Total Operating Cost			**$2,268,500**

1. Excluding overtime, shift allowance and on costs
2. Based on 200,000 tpa production (note: causes minor discrepancy with average in *Table 18*)

Table 21 summarises the labour for administration.

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Table 21. Administration Labour Cost Estimate

Administration Labour	Annual Salary[1]	Number of staff[2]	Annual Cost[1]
Accounts Payable	$60,000	0.5	$30,000
Accounts Receivable	$60,000	0.3	$18,000
CEO	$240,000	1.0	$240,000
Ceram. & Spec. Bus. Unit Manager	$130,000	0.5	$65,000
CFO	$220,000	0.5	$110,000
Engineering Manager	$140,000	0.5	$70,000
Export Shipping Coordinator	$60,000	0.5	$30,000
Logistics & Procurement Manager	$110,000	0.5	$55,000
Operations Manager	$240,000	1.0	$240,000
Payroll / Accounts Assistant	$48,412	0.3	$14,524
Projects Engineers	$110,000	0.5	$55,000
Sales Manager	$125,000	1.0	$125,000
Sales Support Staff	$85,000	0.5	$42,500
Secretarial / General Admin	$50,000	0.5	$25,000
Tech Serv. Lab Operators	$65,000	0.3	$19,500
Tech Serv. Lab Supervisor	$75,000	0.5	$37,500
Total Operating Cost			**$1,177,024**

1. Excluding on costs
2. Based on an annual volume of 200,000t

20.9.2 Maintenance Materials

The annual cost of maintenance materials for each plant area has been calculated by applying a factor to the area's installed mechanical costs. The factor is based on actual data from similar sized plants and is between 1% and 8%. The annual cost obtained includes all non-specified maintenance costs, for example lubricants, piping, welding, wear linings, electric cable, screen panels, and conveyor parts. It also includes miscellaneous items such as baghouse filters. *Table 22* below details the maintenance material costs.

Table 22. Maintenance Materials Costs

Area Processing Plant	$k/y	$/t product
Feeding	106	0.53
Kiln	71	0.35
Separation	106	0.53
Bagging	35	0.18
Utilities & Services	35	0.18
TOTAL	**354**	**1.77**

Refer to Section 20.9.1 for the maintenance labour cost estimate.

20.9.3 Process Plant - General and Administration

The general and administration cost for the Process Plant covers:

- Operating supplies: an allowance was made for operating supplies of $2800/month
- Software licenses: estimated at $750 per desk for office type personnel
- Training: $1500 per month was included for non-managerial positions
- Testwork and consultants: an allowance of $36,000 per year
- light vehicles are assumed to be leased at cost of $2,000 per month per vehicle inclusive of maintenance and hire charges.

Table 23 summarizes the Process Plant general and administration costs.

Table 23. General and Administrative Cost Summary – Process Plant

Item	Process Plant	
	$k/y	$/t Product
Operating supplies	34	0.17
Computing Software	34	0.17
Training costs	18	0.09
Consultants and testwork	36	0.18
Motor Vehicles	48	0.24
Lab Materials and Equipment	58	0.29
TOTAL	**228**	**1.14**

20.9.4 Power

The operating power for the dry processing plant is estimated to be 785 kW. This included the plant services such as air compressor, receiver and dryer. A consideration of additional power consumption for lighting, amenities, office, etc 24 hours a day 7 days a week. The consumed power calculated at the feasibility stage was calculated to cost $1.78 million per year.

Assuming the dry processing plant runs 7,656 operating hours pa and the building services (40 kW) such as lighting, amenities, office, etc 8760 operating hours pa, that equates to an operating power consumption of 6 GWh per annum.

20.9.5 General and Administration

The administrative cost for Wickepin, Administration and Corporate has been developed and is detailed in *Table 24* below.

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Table 24. General and Administration Cost Summary – Administration

Item	$/month
Wickepin	
Laboratory Materials and Equipment	$4,200
Computer programs & support	$1,670
Administration	
Site facilities, security	$1,000
Insurance	$5,000
Rates & Land Tax	$8,100
Landholder Payments	$2,200
MV leasing & Operating Admin	$3,000
Telephone costs	$1,300
Office Supplies, Postage & Courier	$1,300
Computer programs/support	$2,500
Human Resources	$2,100
Corporate	
Legal fees	$5,000
Accounting, Audit & Compliance	$5,000
D&O Insurance	$8,000
Corporate Advisor & IR	$20,000
Executive Director	$15,000
Directors Fees	$25,000
Sales and Marketing	
Travel, Accommodation	$6,400
MV leasing & Operating Sales	$2,700
Advertising etc	$4,300
Tech. Service Expenses	$2,000
Samples	$2,000
TOTAL per month	**$127,170**

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21. MARKET ANALYSIS, MARKETING AND PRICE FORECASTS

This section incorporates an industry overview undertaken by Grand View Research for WAK and included in the Company's prospectus. Grand View Research also undertook an earlier, more detailed review of the kaolin market for WAK and these two documents are included as Appendix 9 and Appendix 10 respectively.

21.1 Industry Overview

This section 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; and
- 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.

21.1.1 Overview

Kaolin is a platy white clay derived from the mineral kaolinite, an aluminium silicate represented as Al2O3-2SiO2-2H2O. (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.

21.1.2 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:

21.1.2.1 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.

21.1.2.2 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.

21.1.2.3 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.

21.1.2.4 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.

21.1.2.5 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.

21.1.2.6 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.

21.1.2.7 Pharmaceutical and Medical

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

21.1.2.8 Cosmetics

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

21.2 Kaolin Manufacturing Process – Qualitative Analysis

21.2.1 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; and
- The clay is then filtered and dried to obtain water washed kaolin.

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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.

21.2.2 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.

21.2.3 Calcined

Calcined kaolin is obtained by passing raw kaolin through a rotary kiln where it undergoes calcination. After calcination, 12%-14% of crystalline 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.

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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.

21.2.4 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.

21.3 Regulatory Framework

Kaolin consists of hydrated aluminium silicate. The commercial products of clay (kaolin) contain varying quantities of alkalis and alkaline earth. It is a white to yellowish or greyish 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.

21.3.1 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); and
- Prolonged exposure to the product can cause organic toxicity.

21.3.2 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.

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21.4 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.

21.4.1 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.

21.4.2 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.

21.4.3 Size of Market: Volume

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

Figure 29 represents the global demand for kaolin in terms of revenue (USD Million), on the secondary axis, and volume (kt), on the primary axis, from 2016 to 2027.

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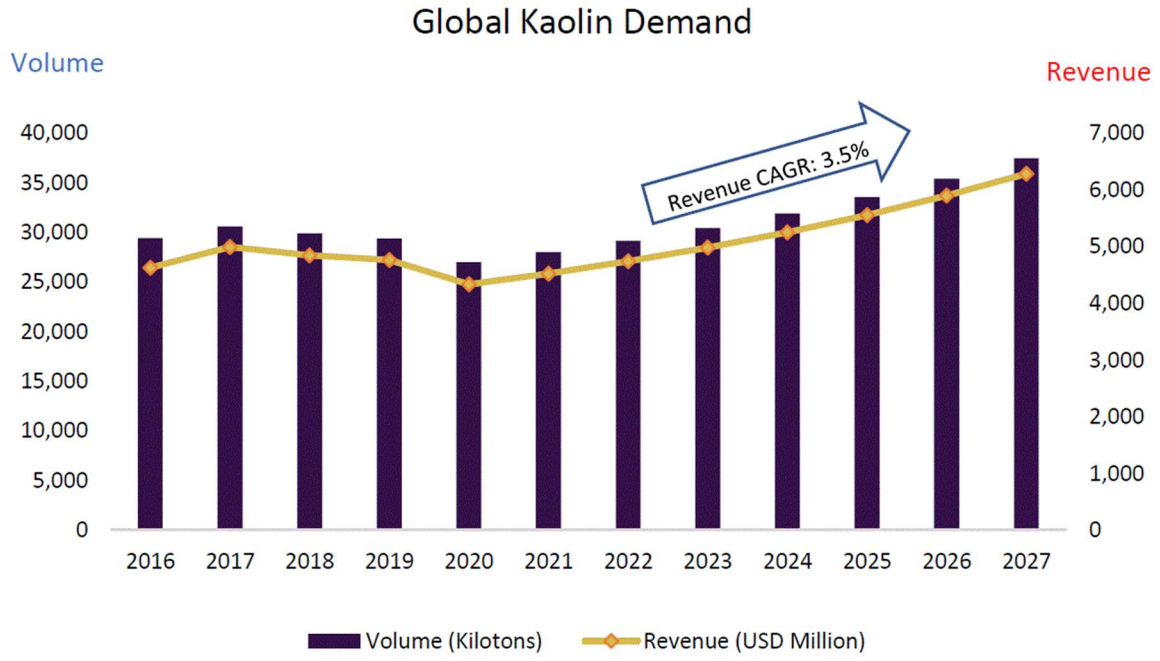
Figure 29. Kaolin Global Demand



21.4.4 Demand

The market demand (see *Figure 30*) 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.

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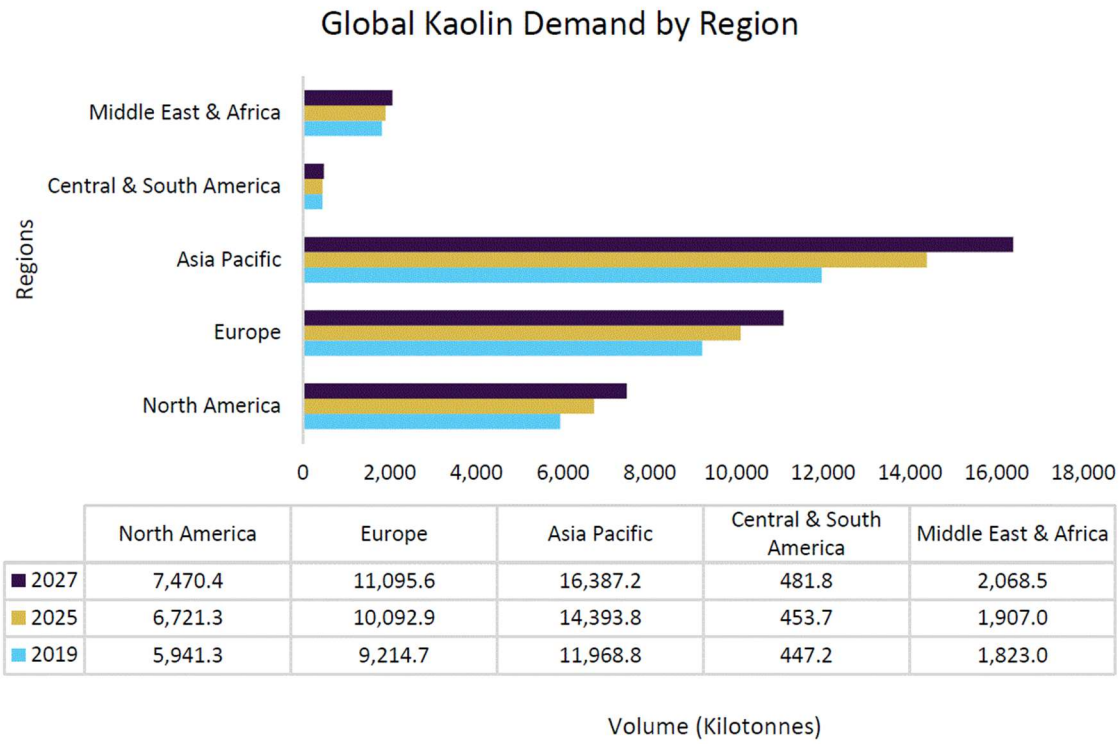
Figure 30. Kaolin Market Demand by Region



	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

21.4.5 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.

21.4.6 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.

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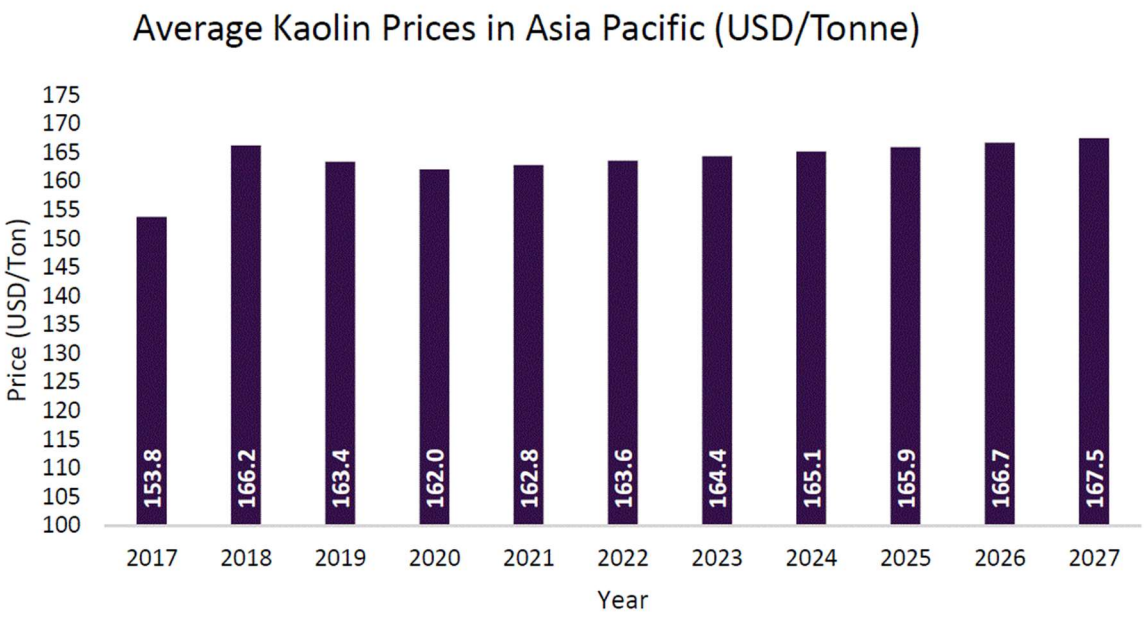
21.4.7 Key Future Catalysts

- 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.

21.4.8 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.

Figure 31. Historical and Forecast Pricing



Source: Primary Research, GVR Analysis

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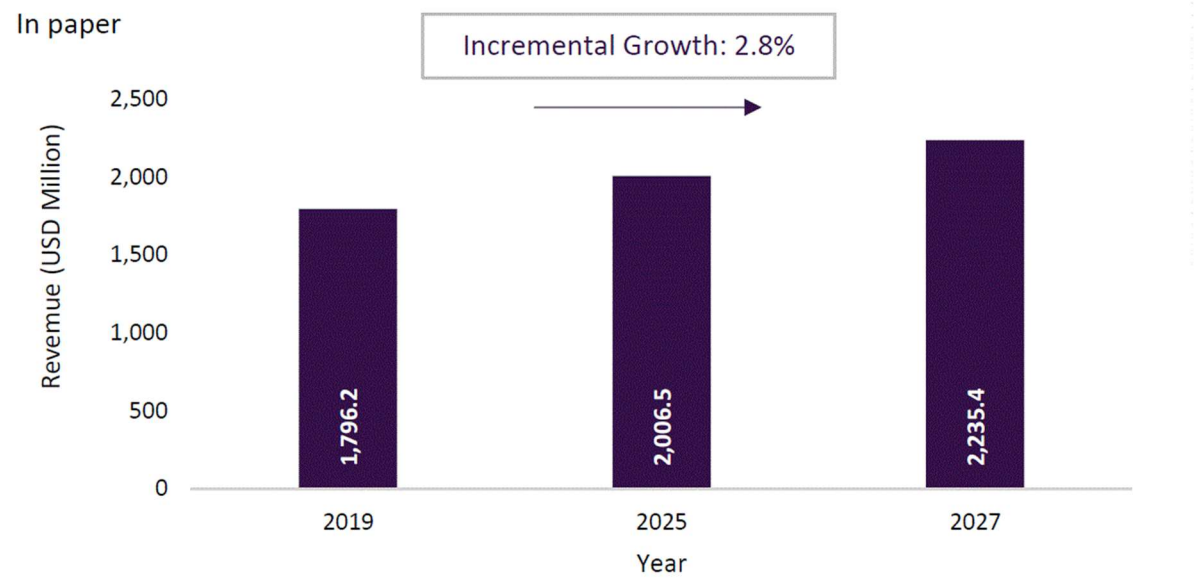
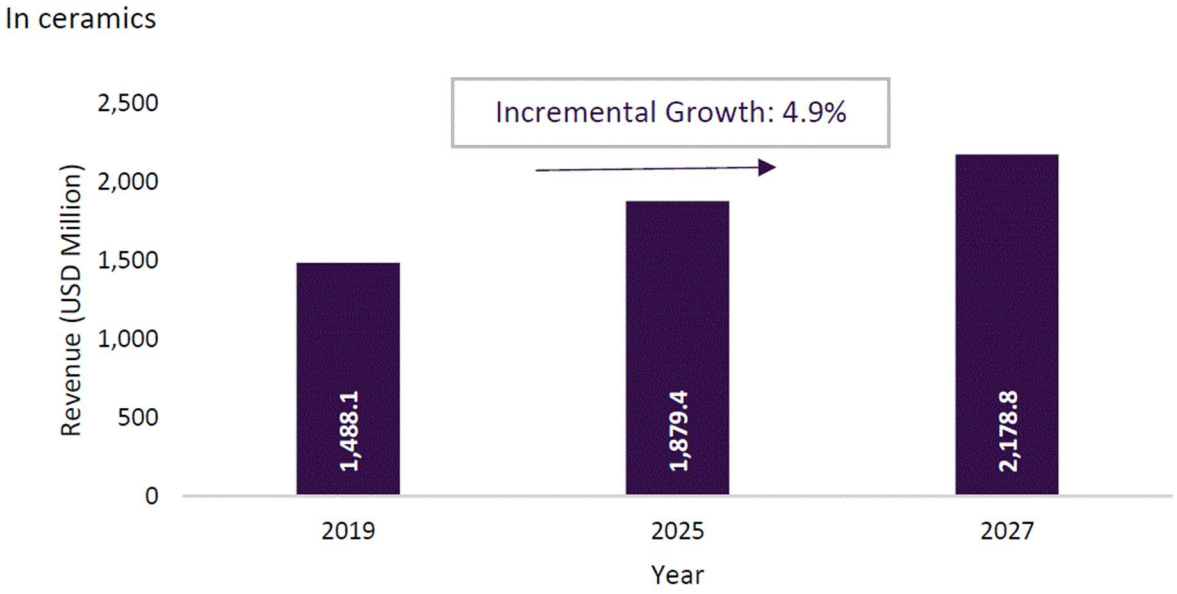
21.4.9 Global kaolin market estimates and forecasts in paper, ceramics and fiberglass 2016 – 2027 (USD Million)





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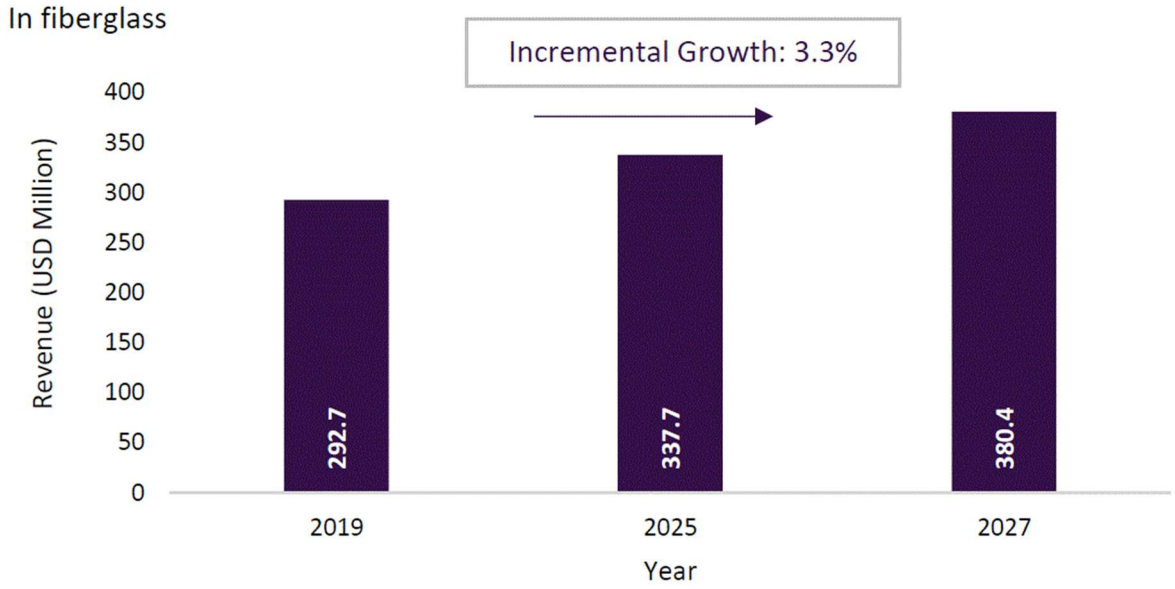

21.4.10 Regional Movement Analysis and Market Share, 2019 and 2027

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.

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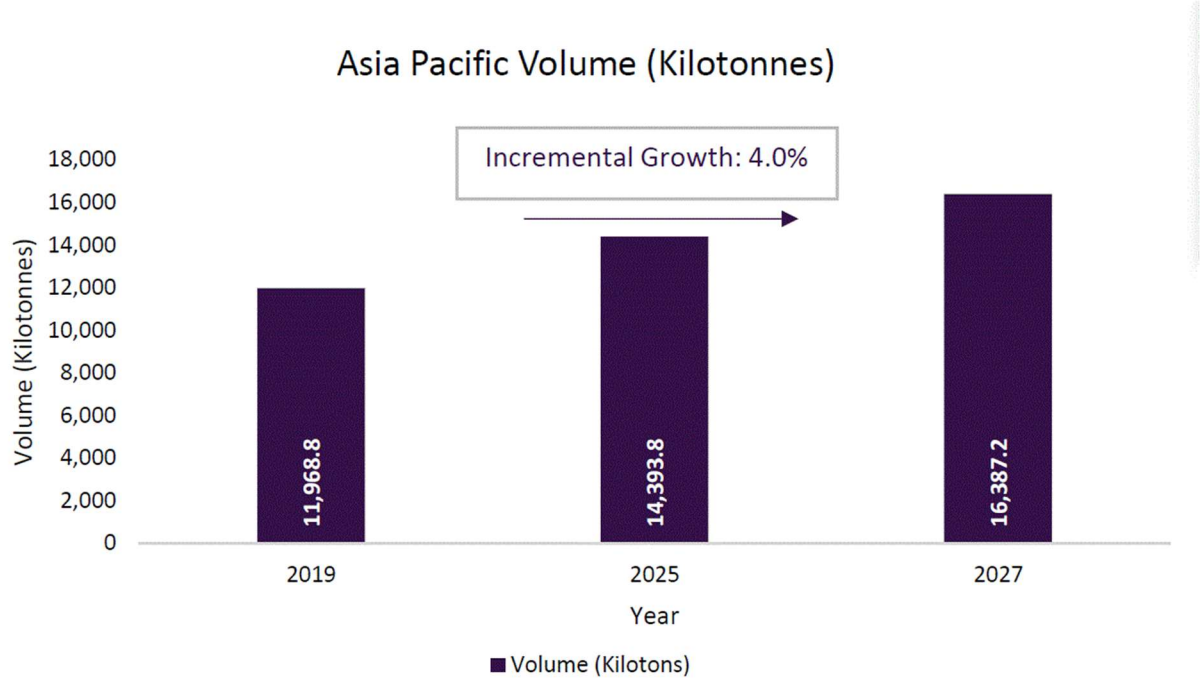
Figure 32. Asia Pacific Volume



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.

21.4.11 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.

21.4.12 Competitor Landscape

21.4.12.1 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

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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.

21.4.12.2 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.

21.4.12.3 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 aluminium silicate.

21.4.12.4 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.

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21.4.12.5 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.

21.4.12.6 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).

21.4.12.7 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.

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22. FINANCIAL MODELLING

Financial modelling of the Project assumes that the initial phase and expansion phase of the Project will be completed as planned, however the Project has also been modelled assuming that the expansion phase is unable to be completed for unknown reason(s) and the results of that modelling are provided in this section also.

The modelling considers the first 12 years of Project operations in detail but determines NPV and IRR based upon the LOM, where LOM assumes complete depletion of the 2020 Ore Reserves as defined in section 11. LOM cashflow has been estimated after the detailed modelling period by assuming the cashflow is flat thereafter and using the year 11 cashflow forecast for all subsequent years. Year 11, rather than year 12 was used for this purpose to avoid the possible distortion caused by inventory movements in year 12 (in the financial model)

22.1 Revenue

The revenue assumption (see *Table 25*) were arrived at through a combination of WAK's sales history of kaolin products into each of the target markets, e.g. ceramics, fibreglass, coatings, rubber, cosmetics and so on. In addition to this direct experience, WAK commissioned a market research report from Grandview Research (Appendix 9) to examine the global historic and forecast sales value and volumes in the various target markets. This data provided information on price escalation and also allowed the overlay of revenue projections onto the market research data to cross check the projected market share.

Table 25. Revenue Assumptions

Revenue (US$'000)					
Year	1	2	3	4	5
WAK Fibreglass	$1,018	$8,501	$12,021	$21,627	$25,760
Asia Market %	0.1%	0.9%	1.1%	1.9%	2.1%
WAK Ceramic	$1,740	$7,106	$10,047	$18,076	$21,530
Asia Market %	0.4%	1.6%	2.0%	3.2%	3.3%
WAK Rubber and Cosmetics	$59	$2,945	$4,165	$7,493	$8,925
Asia Market %	0.1%	2.4%	3.1%	5.1%	5.5%
WAK Plastics, Paint & Pharma.	$347	$6,691	$9,462	$17,023	$20,276
Asia Market %	0.1%	2.5%	3.2%	5.2%	5.6%
Average Selling Price					
WAK A$ per t*	$293	$264	$275	$287	$295
WAK US$ per t	$199	$180	$187	$195	$201
Market Data Asian ASP US$/t	$171	$178	$187	$195	$204
WAK Premium	16%	0%	0%	0%	0%

22.2 Costs

The cost assumptions are generally based on the operating data from the Kwinana pilot plant. The plant has been operating since before 2017 and has produced and sold 3,300t of K99 beneficiated to customers in Australia and Asia. The assumptions on mining cost, transport costs and sea freight costs are based on actual costs incurred in WAK's operations.

The processing costs are also based on current operations in terms of kaolin yield with an allowance for an improvement of energy efficiency of 25% based on the increased scale of the kiln and product collection systems. The energy costs for Wickepin are based on the assumed consumption multiplied by energy costs that have been quoted by suppliers.

The employment costs and Selling & Admin costs have been extrapolated from the exiting cost structure at Kwinana with additional allowances for corporate costs associated with operating WAK in a listed environment.

22.3 Capex, Construction and Commissioning

The capital estimate has been developed in house. The estimate is based on the process flow diagrams, electrical load list and engineering drawings that have been prepared for the Wickepin K99 plant by third party consultants. The capital estimate has a range of contingencies and includes quotes from suppliers, supplier estimates and owners estimates.

The construction and commissioning estimates have been developed as part of a scope of works with our engineering consultant, SF Design.

22.4 Process Technology and Scale-Up

The process technology has been developed by WAK in its Kwinana pilot plant. The plant has graduated to small scale commercial production and is operating on a weekly basis producing K99 products for WAK's existing customer base. The scale up risk has been assessed as minimal due to the scale up factor of only 5 times, from 5tph to 25tph achieved through a modular system whereby the main beneficiation circuit is a combination of 2 x 12.5tph modules (2.5 x scale up factor per module).

22.5 Pricing

The pricing has been based on low-medium blended product prices as specified in the LOIs and spot pricing that WAK has received for its current product.

22.6 Initial Phase Only Analysis

If only the initial phase of the dry processing operation is developed, The Project delivers the key financial parameters detailed in *Table 26* below.

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Table 26. Key Financial Parameters - Initial Phase Only

KEY FINANCIAL PARAMETERS	Value	Average
Kaolin Sold		
t	2,073	173
$k	655,914	54,660
Average $/t	316	
Cost of Sales		
$k (incl freight to Port)	(337,201)	(28,100)
$/t	(163)	
Gross Margin		
$k	318,714	26,559
% of Sales Revenue	49%	
Total Operating Expenses		
$k	(150,004)	(12,500)
$/t	(72)	
EBITDA		
$k	166,510	13,876
Profit Before Tax		
$k	163,529	13,627
% of Sales Revenue	25%	
Profit After Tax		
$k	136,206	11,350
% of Sales Revenue	21%	
Cashflow from Operations	125,801	10,483
$NPV_{(7)}$ LOM*	119,170	
IRR*	39%	

* The NPV and IRR Calculation provided here and elsewhere is a life of mine estimate based on the Ore Reserves available to the Project at the time of the DFS (see section 11)

22.6.1 Cash Flow

The initial phase generates positive EBITDA in the first year of production and becomes cashflow positive in the third year of production. Project $NPV_{(7)}$ is calculated to be $119M, with an IRR of 39%. See *Table 27* for details below.

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Table 27. Project Cash Flow – Initial Phase Only

CASHFLOW STATEMENT ($/1000)	Totals	YR 1	YR 2	YR 3	YR 4	YR 5	YR 6	YR 7	YR 8	YR 9	YR 10	YR 11	YR 12
EBITDA	166,510	(4,048)	6,927	12,355	13,137	13,983	14,865	15,783	16,740	17,737	18,774	19,855	20,399
Working Capital Movements													
Trade Debtors		(363)	(3,732)	(181)	(234)	(151)	(156)	(161)	(166)	(171)	(177)	(183)	0
Stock		(88)	(527)	(11)	(14)	(14)	(15)	(15)	(15)	(16)	(16)	(17)	0
Trade Creditors		(400)	151	10	11	11	12	12	12	12	13	13	0
		(851)	(4,108)	(182)	(237)	(154)	(159)	(164)	(169)	(175)	(181)	(187)	0
Other Movements													
Other Assets	0	0	0	0	0	0	0	0	0	0	0	0	0
Employee Entitlements	(2,265)	(805)	(500)	(286)	(337)	(337)	0	0	0	0	0	0	0
Tax Payable	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Liabilities	0	0	0	0	0	0	0	0	0	0	0	0	0
	(2,265)	(805)	(500)	(286)	(337)	(337)	0	0	0	0	0	0	0
Taxation	(31,879)	0	0	0	0	0	0	(3,536)	(5,024)	(5,349)	(5,689)	(6,043)	(6,238)
Cashflow from Operations	**125,801**	**(5,703)**	**2,319**	**11,888**	**12,563**	**13,493**	**14,706**	**12,084**	**11,547**	**12,213**	**12,905**	**13,625**	**14,161**
Investing Activities													
Fixed Asset Additions	(21,622)	(19,101)	(229)	(229)	(229)	(229)	(229)	(229)	(229)	(229)	(229)	(229)	(229)
Yearly Project Cashflow	**144,888**	**(23,148)**	**6,698**	**12,126**	**12,908**	**13,754**	**14,636**	**15,554**	**16,511**	**17,507**	**18,545**	**19,626**	**20,170**
Cumulative Project Cashflow		**(23,148)**	**(16,450)**	**(4,324)**	**8,584**	**22,338**	**36,974**	**52,528**	**69,039**	**86,547**	**105,092**	**124,718**	**144,888**
$NPV_{(7)}$ LOM	**119,170**												
IRR	**39%**												

22.6.2 Profit and Loss

The P&L for the initial phase only of the Project is detailed in *Table 28* below:

Table 28. Project P&L – Initial Phase Only

PROFIT & LOSS ACCOUNT ($/1000)	Totals	YR 1	YR 2	YR 3	YR 4	YR 5	YR 6	YR 7	YR 8	YR 9	YR 10	YR 11	YR 12
Sales													
kt	2,073	17	141	192	192	192	192	192	192	192	192	192	192
$	655,914	4,893	37,273	52,703	54,666	56,470	58,334	60,259	62,247	64,301	66,423	68,615	69,729
Average Sales Price A$ per tonne	316	293	264	275	285	295	305	315	325	336	347	358	364
Cost of Sales (incl freight to port)	(337,201)	(3,706)	(20,971)	(28,247)	(28,879)	(29,528)	(30,192)	(30,873)	(31,571)	(32,287)	(33,020)	(33,772)	(34,153)
Cost of Sales per tonne	(163)	222	148	147	151	154	158	161	165	169	172	176	178
Gross Margin	**318,714**	**1,188**	**16,302**	**24,456**	**25,787**	**26,942**	**28,141**	**29,385**	**30,676**	**32,014**	**33,403**	**34,843**	**35,576**
	48.6%	24.3%	43.7%	46.4%	47.2%	47.7%	48.2%	48.8%	49.3%	49.8%	50.3%	50.8%	51.0%
Overheads	(29,536)	(985)	(1,930)	(2,349)	(2,452)	(2,510)	(2,570)	(2,632)	(2,695)	(2,759)	(2,826)	(2,894)	(2,934)
Corporate	(12,626)	(810)	(948)	(971)	(996)	(1,021)	(1,046)	(1,072)	(1,099)	(1,127)	(1,155)	(1,184)	(1,198)
Transaction Fees	(2,850)	(2,850)	0	0	0	0	0	0	0	0	0	0	0
Sales & Marketing	(3,317)	(62)	(186)	(264)	(273)	(282)	(292)	(301)	(311)	(322)	(332)	(343)	(349)
Ocean Freight	(101,675)	(708)	(6,131)	(8,477)	(8,689)	(8,906)	(9,128)	(9,357)	(9,591)	(9,830)	(10,076)	(10,328)	(10,455)
Total Operating Expenses	**(150,004)**	**(5,415)**	**(9,194)**	**(12,061)**	**(12,409)**	**(12,719)**	**(13,036)**	**(13,362)**	**(13,696)**	**(14,038)**	**(14,388)**	**(14,748)**	**(14,937)**
R&D Activities	(2,200)	180	(180)	(40)	(240)	(240)	(240)	(240)	(240)	(240)	(240)	(240)	(240)
EBITDA	**166,510**	**(4,048)**	**6,927**	**12,355**	**13,137**	**13,983**	**14,865**	**15,783**	**16,740**	**17,737**	**18,774**	**19,855**	**20,399**
	25.4%	-	18.6%	23.4%	24.0%	24.8%	25.5%	26.2%	26.9%	27.6%	28.3%	28.9%	29.3%
Average EBITDA per tonne	80	0	49	65	69	73	78	82	87	93	98	104	107
Depreciation	(11,608)	(375)	(964)	(975)	(987)	(998)	(1,010)	(1,021)	(1,033)	(1,044)	(1,056)	(1,067)	(1,078)
EBIT	**154,902**	**(4,423)**	**5,963**	**11,380**	**12,151**	**12,985**	**13,855**	**14,762**	**15,708**	**16,693**	**17,719**	**18,788**	**19,321**
	23.6%	-	16.0%	21.6%	22.2%	23.0%	23.8%	24.5%	25.2%	26.0%	26.7%	27.4%	27.7%
Net Interest	8,627	(133)	(384)	(241)	676	642	859	959	1,039	1,138	1,244	1,355	1,473
Profit Before Tax	**163,529**	**(4,556)**	**5,579**	**11,139**	**12,827**	**13,627**	**14,714**	**15,721**	**16,747**	**17,831**	**18,963**	**20,143**	**20,794**
	24.9%	-	15.0%	21.1%	23.5%	24.1%	25.2%	26.1%	26.9%	27.7%	28.5%	29.4%	29.8%
Taxation	(31,879)	0	0	0	0	0	0	(3,536)	(5,024)	(5,349)	(5,689)	(6,043)	(6,238)
Net Profit After Tax	**136,206**	**(4,556)**	**5,579**	**11,139**	**12,827**	**13,627**	**14,714**	**12,186**	**11,723**	**12,481**	**13,274**	**14,100**	**14,556**
	20.8%	-	15.0%	21.1%	23.5%	24.1%	25.2%	20.2%	18.8%	19.4%	20.0%	20.5%	20.9%
Cumulative		**(4,556)**	**1,023**	**12,163**	**24,989**	**38,616**	**53,330**	**65,516**	**77,239**	**89,720**	**102,994**	**117,094**	**131,650**

22.7 Initial Phase plus Expansion Analysis

The project as planned by WAK, with both the initial and expansion phases of the dry processing operation, delivers the key financial parameters detailed in *Table 29* below.

Table 29. Key Financial Parameters - Initial Plus Expansion Phase

KEY FINANCIAL PARAMETERS	Value	Average
Kaolin Sold		
t	3,760	313
$k	1,208,159	100,680
Average $/t	321	
Cost of Sales		
$k (incl freight to Port)	(601,737)	(50,145)
$/t	(160)	
Gross Margin		
$k	606,421	50,535
% of Sales Revenue	50%	
Total Operating Expenses		
$k	(253,628)	(21,136)
$/t	(67)	
EBITDA		
$k	350,594	29,216
Profit Before Tax		
$k	342,200	28,517
% of Sales Revenue	28%	
Profit After Tax		
$k	261,276	21,773
% of Sales Revenue	22%	
Cashflow from Operations	250,423	20,869
$NPV_{(7)}$ LOM*	256,709	
IRR*	47%	

* The NPV and IRR Calculation provided here and elsewhere is a life of mine estimate based on the Ore Reserves available to the Project at the time of the DFS (see section 11)

22.7.1 Cash Flow

With both the initial and expansion phases developed as planned, the Project generates positive EBITDA in the second year and becomes cashflow positive during the fourth year. Project $NPV_{(7)}$ LOM is calculated to be $257M, with an IRR of 47%.

This is detailed in *Table 30* below.

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Table 30. Project Cash Flow – Initial and Expansion Phase

CASHFLOW STATEMENT ($/1000)	Totals	YR 1	YR 2	YR 3	YR 4	YR 5	YR 6	YR 7	YR 8	YR 9	YR 10	YR 11	YR 12
EBITDA	350,594	(4,048)	6,927	12,243	26,804	31,751	33,556	35,478	37,480	39,562	41,730	43,986	45,124
Working Capital Movements													
Trade Debtors		(363)	(3,732)	(181)	(4,809)	(302)	(311)	(322)	(332)	(343)	(355)	(366)	0
Stock		(88)	(527)	(16)	(615)	(28)	(29)	(29)	(30)	(31)	(32)	(32)	0
Trade Creditors		(400)	151	30	492	23	24	24	25	26	26	27	0
		(851)	(4,108)	(167)	(4,932)	(306)	(316)	(327)	(337)	(349)	(360)	(372)	0
Other Movements													
Other Assets	0	0	0	0	0	0	0	0	0	0	0	0	0
Employee Entitlements	(2,265)	(805)	(500)	(286)	(337)	(337)	0	0	0	0	0	0	0
Tax Payable	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Liabilities	0	0	0	0	0	0	0	0	0	0	0	0	0
	(2,265)	(805)	(500)	(286)	(337)	(337)	0	0	0	0	0	0	0
Taxation	(85,480)	0	0	0	0	(3,175)	(9,788)	(10,414)	(11,069)	(11,751)	(12,463)	(13,205)	(13,615)
Cashflow from Operations	**250,423**	**(5,703)**	**2,319**	**11,790**	**21,535**	**27,933**	**23,451**	**24,737**	**26,073**	**27,462**	**28,907**	**30,409**	**31,509**
Investing Activities													
Fixed Asset Additions	(36,691)	(19,101)	(229)	(13,829)	(392)	(392)	(392)	(392)	(392)	(392)	(392)	(392)	(392)
Yearly Project Cashflow	**213,733**	**(24,804)**	**2,090**	**(2,039)**	**21,142**	**27,540**	**23,059**	**24,345**	**25,681**	**27,070**	**28,515**	**30,017**	**31,117**
Cumulative Project Cashflow		**(24,804)**	**(22,714)**	**(24,753)**	**(3,611)**	**23,929**	**46,988**	**71,333**	**97,014**	**124,084**	**152,599**	**182,616**	**213,733**
NPV$_{(7)}$ LOM	**256,709**												
IRR	**47%**												

22.7.2 Profit and Loss

The P&L for the initial and expansion phases of the Project is detailed in *Table 31* below.

Table 31. Project P&L – Initial and Expansion Phase

PROFIT & LOSS ACCOUNT ($/1000)	Totals	YR 1	YR 2	YR 3	YR 4	YR 5	YR 6	YR 7	YR 8	YR 9	YR 10	YR 11	YR 12
Sales													
kt	3,760	17	141	192	347	383	383	383	383	383	383	383	383
$	1,208,159	4,893	37,273	52,703	99,217	113,087	116,819	120,674	124,656	128,770	133,019	137,409	139,639
Average Sales Price A$ per tonne	321	293	264	275	286	295	305	315	325	336	347	359	365
Cost of Sales (incl freight to port)	(601,737)	(3,706)	(20,971)	(28,359)	(51,164)	(57,527)	(58,820)	(60,146)	(61,504)	(62,897)	(64,325)	(65,788)	(66,529)
Cost of Sales per tonne	(160)	222	148	148	148	150	154	157	161	164	168	172	174
Gross Margin	**606,421**	**1,188**	**16,302**	**24,344**	**48,053**	**55,560**	**57,999**	**60,528**	**63,152**	**65,872**	**68,694**	**71,620**	**73,110**
	50.2%	24.3%	43.7%	46.2%	48.4%	49.1%	49.6%	50.2%	50.7%	51.2%	51.6%	52.1%	52.4%
Overheads	(44,406)	(985)	(1,930)	(2,349)	(3,647)	(4,040)	(4,182)	(4,283)	(4,388)	(4,495)	(4,604)	(4,717)	(4,785)
Corporate	(13,894)	(810)	(948)	(971)	(1,123)	(1,151)	(1,180)	(1,210)	(1,240)	(1,271)	(1,303)	(1,335)	(1,352)
Transaction Fees	(2,850)	(2,850)	0	0	0	0	0	0	0	0	0	0	0
Sales & Marketing	(6,078)	(62)	(186)	(264)	(496)	(565)	(584)	(603)	(623)	(644)	(665)	(687)	(698)
Ocean Freight	(186,400)	(708)	(6,131)	(8,477)	(15,743)	(17,811)	(18,257)	(18,713)	(19,181)	(19,661)	(20,152)	(20,656)	(20,911)
Total Operating Expenses	**(253,628)**	**(5,415)**	**(9,194)**	**(12,061)**	**(21,009)**	**(23,569)**	**(24,203)**	**(24,810)**	**(25,432)**	**(26,070)**	**(26,724)**	**(27,395)**	**(27,746)**
R&D Activities	(2,200)	180	(180)	(40)	(240)	(240)	(240)	(240)	(240)	(240)	(240)	(240)	(240)
EBITDA	**350,594**	**(4,048)**	**6,927**	**12,243**	**26,804**	**31,751**	**33,556**	**35,478**	**37,480**	**39,562**	**41,730**	**43,986**	**45,124**
	29.0%	-	18.6%	23.2%	27.0%	28.1%	28.7%	29.4%	30.1%	30.7%	31.4%	32.0%	32.3%
Average EBITDA per tonne	93	0	49	64	77	83	88	93	98	103	109	115	118
Depreciation	(18,310)	(375)	(964)	(1,230)	(1,671)	(1,690)	(1,710)	(1,729)	(1,749)	(1,769)	(1,788)	(1,808)	(1,827)
EBIT	**332,283**	**(4,423)**	**5,963**	**11,013**	**25,133**	**30,061**	**31,846**	**33,749**	**35,731**	**37,794**	**39,942**	**42,178**	**43,297**
	27.5%	-	16.0%	20.9%	25.3%	26.6%	27.3%	28.0%	28.7%	29.3%	30.0%	30.7%	31.0%
Net Interest	9,917	(133)	(384)	(344)	431	532	781	965	1,166	1,378	1,602	1,837	2,086
Profit Before Tax	**342,200**	**(4,556)**	**5,579**	**10,669**	**25,565**	**30,593**	**32,628**	**34,714**	**36,896**	**39,172**	**41,543**	**44,015**	**45,382**
	28.3%	-	15.0%	20.2%	25.8%	27.1%	27.9%	28.8%	29.6%	30.4%	31.2%	32.0%	32.5%
Taxation	(85,480)	0	0	0	0	(3,175)	(9,788)	(10,414)	(11,069)	(11,751)	(12,463)	(13,205)	(13,615)
Net Profit After Tax	**261,276**	**(4,556)**	**5,579**	**10,669**	**25,565**	**27,418**	**22,839**	**24,300**	**25,827**	**27,420**	**29,080**	**30,811**	**31,768**
	21.6%	-	15.0%	20.2%	25.8%	24.2%	19.6%	20.1%	20.7%	21.3%	21.9%	22.4%	22.7%
Cumulative		**(4,556)**	**1,023**	**11,692**	**37,257**	**64,675**	**87,514**	**111,814**	**137,641**	**165,061**	**194,142**	**224,952**	**256,720**

22.8 Sensitivity Analysis

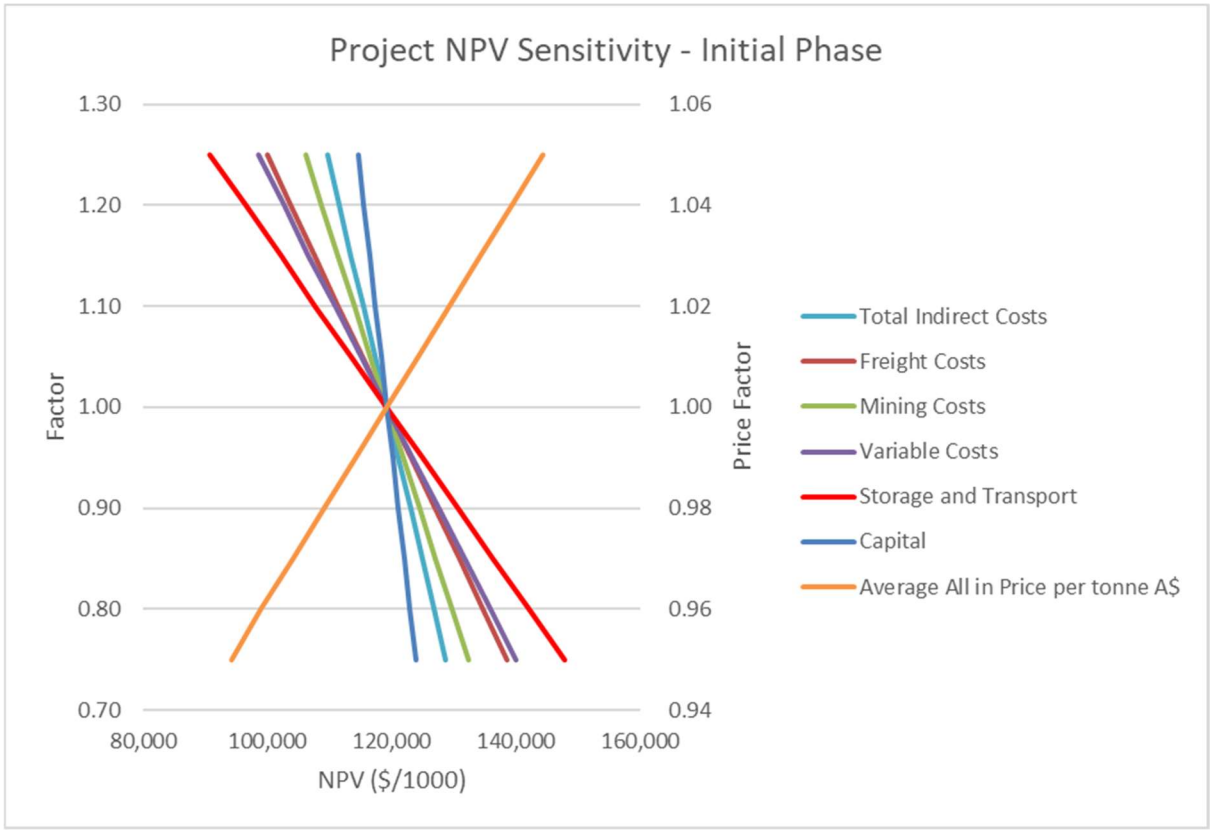
Sensitivity analysis of the Project has been undertaken for both scenarios examined above. The Project was assessed for sensitivity to movements in the following areas:

- Total Indirect Costs;
- Freight Costs;
- Mining Costs;
- Variable Costs;
- Storage and Transport;
- Capital; and
- Average All in Price per tonne A$ (product).

Generally this analysis was undertaken within a ±25% range. In the case of the Average All in Price however, a range of ±5% was tested. This was deemed reasonable given the very low volatility of the kaolin price identified in the market analysis undertaken on behalf of the Company (see Appendix 9 and Appendix 10).

Graph 1 through *Graph 4* below, demonstrate the sensitivity of the Project to movements in these various parameters for both $NPV_{(7)}$ and IRR.

Graph 1. Initial Project NPV Sensitivity



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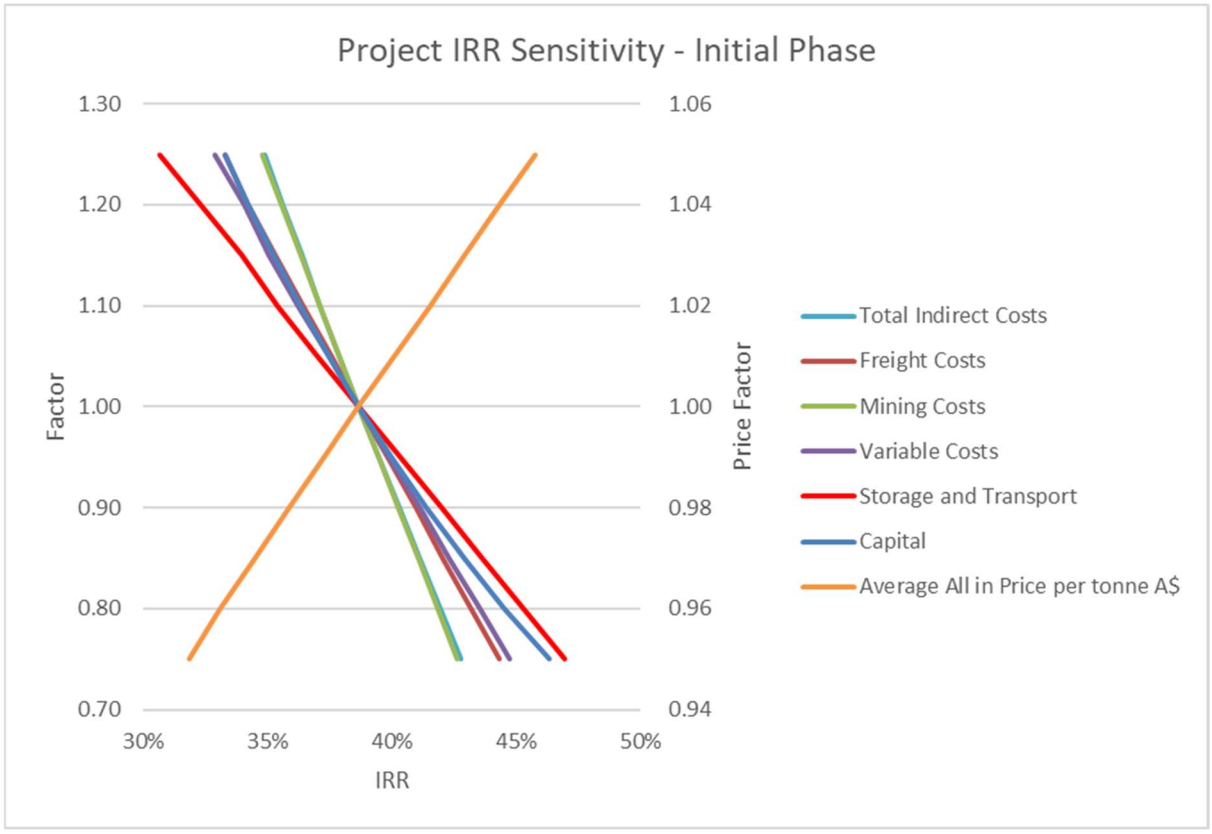
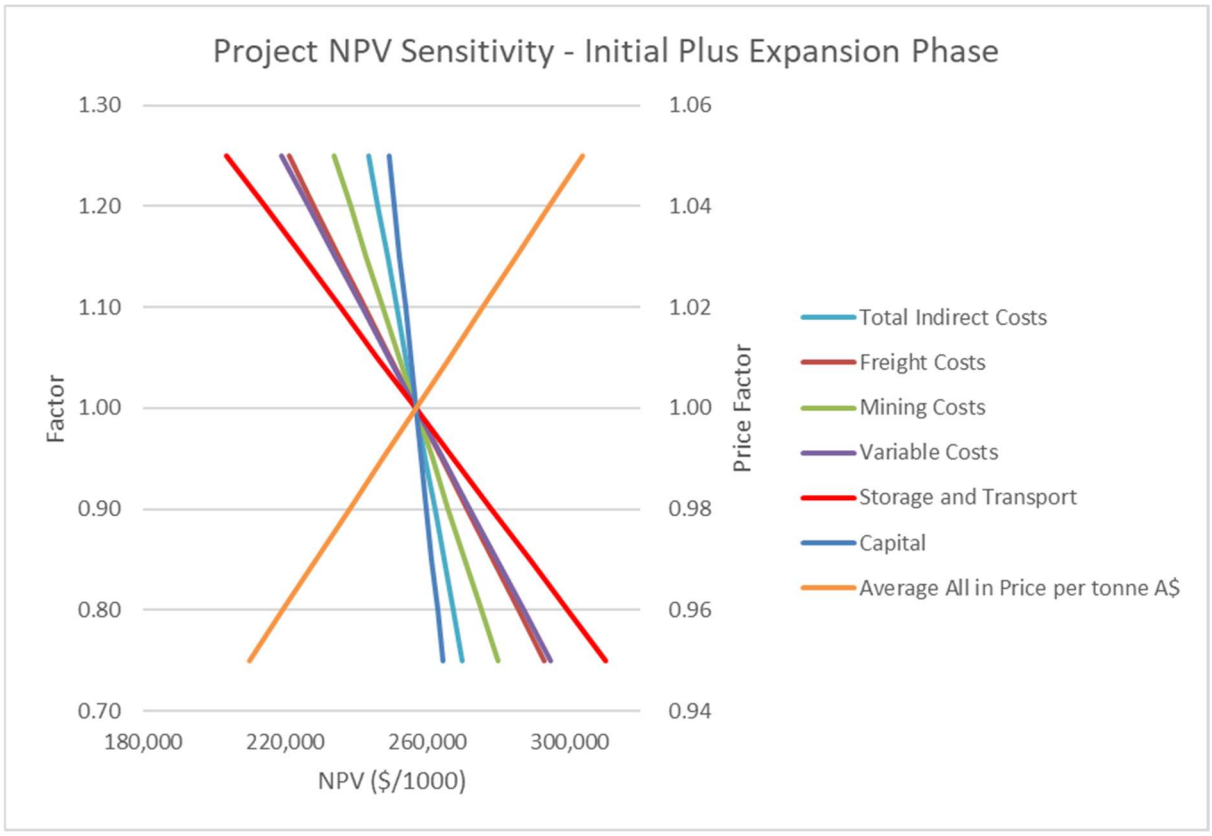
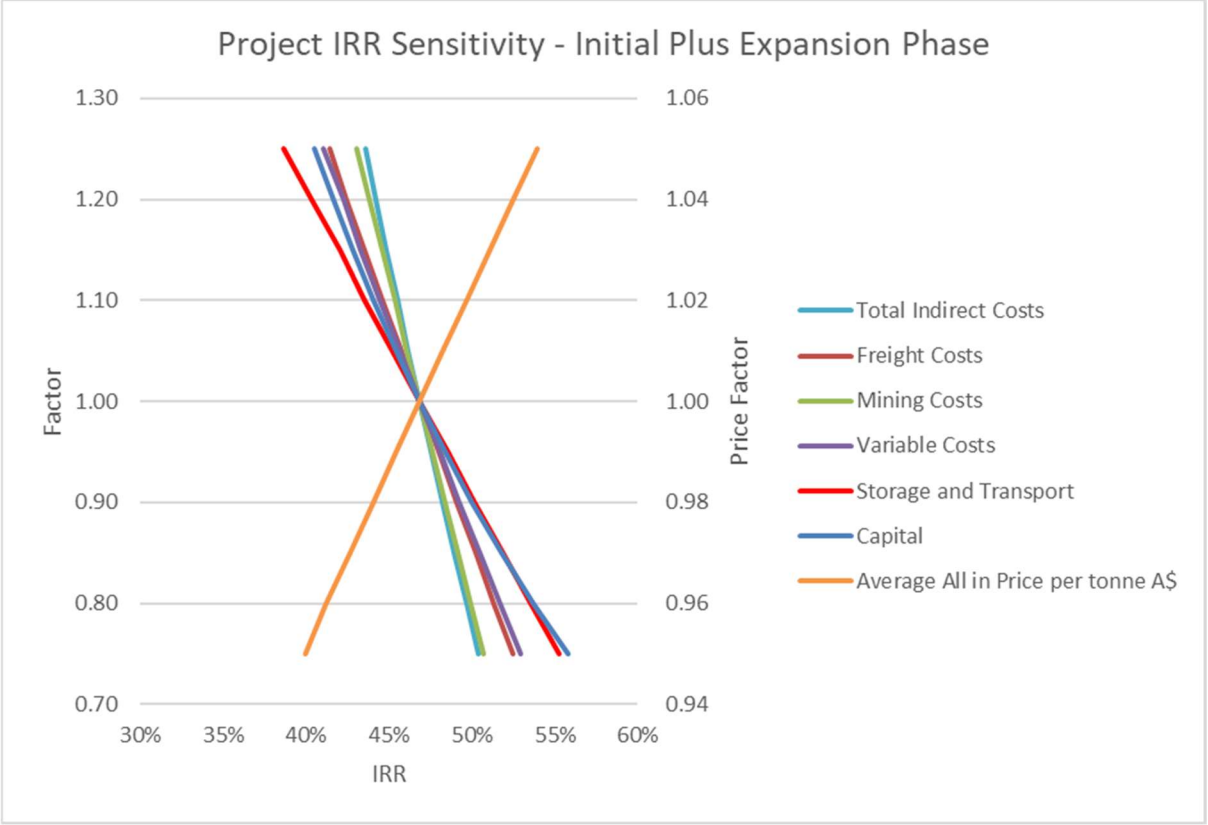
Graph 2. Initial Project IRR Sensitivity



Graph 3. Initial Project plus Expansion NPV Sensitivity



Graph 4. Initial Project plus Expansion IRR Sensitivity



This analysis demonstrates that the Project is, at most, moderately sensitive to kaolin price, Variable costs, freight cost, storage costs and transport costs and relatively insensitive to mining cost, indirect costs and capital cost.

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23. RISK AND RISK MITIGATION

As with any project, this Project involves inherent risk. *Table 32* identifies and ranks those risks that have been examined with respect to the implementation of this Project. These risks have been assessed for the Project at it's current state of development and will be re-assessed and monitored regularly during the life of the Project, with changes made to control measures as required or deemed appropriate.

No risks were assessed as "Very High" and only three risks were assessed as being "High". All other risks assessed were assessed as "Moderate".

Of the risks assessed as "High", all are expected to moderate soon after the establishment of operations.

Table 32. Assessed Project Risk and Mitigation Strategies

Risk	Description	Consequence	Current or Planned Control	Rating
IPO unsuccessful	Adverse impact on capital markets outside WAK control	Project remains unfunded and is unable to develop as planned	IPO documentation and diligence to high standard and a sound working relationship with capital partners. Achieving agreed target dates.	H
Loss of key person	Death, disability or disengagement of a key person to the Project.	Delay to project implementation as replacement capacity is engaged	Maintain sound HR policies to minimise the potential for this outcome, including: work/life balance of individuals; supportive internal networking; safe work practices; and effective reward structures for employees.	H
Operating cost over-run	Inadequate provisions in financial modelling or unforeseen cost centres emerge.	Reduced margin on sales	Cost estimates based on Kwinana pilot plant experience. Act quickly to resolve issues as they emerge. Ensure responsive cost reporting and control mechanisms for whole of Project are established prior to the commencement of operations.	H
Fall in kaolin price	Global market conditions outside WAK control	Reduced margin on sales. Project is moderately sensitive to price, but market analysis shows price is historically stable.	Continued market engagement, maintain quality of product to suit specific customer needs and establish reputation as a reliable supplier of quality product	M
Pandemic	Current pandemic persists or new pandemic arises	Operations and/or markets are negatively impacted.	Maintain watching brief and structure organisation to avoid creating micro-contamination sites	M

Risk	Description	Consequence	Current or Planned Control	Rating
Design throughput not achieved	Design failure or inadequacy, or operational failure.	Elevated unit costs and possible failure to fulfil end user expectation.	Design based on Kwinana pilot plant with low scale-up factor. Utilise engineers and sub-contractors of good standing and professional reputation. Undertake external peer review in all phases.	M
Design recovery not achieved	Design failure or inadequacy, or operational failure.	Elevated unit costs and possible failure to fulfil end user expectation.	Design based on Kwinana pilot plant with low scale-up factor. Utilise engineers and sub-contractors of good standing and professional reputation. Undertake external peer review in all phases.	M
Capital cost over-run	Delay to project implementation or unforeseen requirements that exceed contingency provisions.	Company may need to secure short-term debt, or undertake further (unplanned) capital raising.	Design based on Kwinana pilot plant with low scale-up factor. Utilise engineers and sub-contractors of good standing and professional reputation. Undertake external peer review in all phases.	M

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24. FURTHER WORK

WAK maintains its focus on further process development and innovation. This work is planned to continue during the development and operational phase of this stage of project development. Additionally, the Company remains active in its marketing and market development activities which will drive the rate at which further stages of development may be initiated.

Because of the importance of this project to the local rural community, WAK is also seeking new and additional government support including:

- Renewable Energy for the project and the community;
- Connection to the power grid for standby power;
- Connection to the Water Corporation Scheme;
- Reduction in state government royalty – especially as it relates to the inland freight component; and
- Grants for:
    - Employee Training Schemes;
    - Regional Development Grants;
    - Capital expenditure assistance;
    - Research and Development Grants; and
    - Finance.

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25. DATA SOURCES AND REFERENCE LIST

Date	Reference	Source
2019	CSA Global CSA Report Nº R351.2019	
30 July 2020	WA Kaolin Project June 2020 Statement of Ore Reserves, CSA Global Report Nº R301.2020	WAK
1995	Dames &Moore (1995) South West Kaolin Project Existing Environment. Report for Minenco Pty Limited.	WAK
30 May 2008	Department of Environment and Conservation (DEC) (2008) Letter from Wayne Elliot in relation to Mining Proposal – Sparks Mine, Mining Lease M70/1143.	WAK
21 January 2015	Department of Mines and Petroleum (DMP) (2015). Approval for Mining Proposal with a Mine Closure Plan – WA Kaolin Project on G70/251, L70/156 and M70/1143 Registration ID 50959.	WAK
2 August 2005	Department of Environment (2005a). Environmental Assessment Report. (Pilot Plant East Rockingham.) Works Approval number 4147.	WAK
29 May 2008	Department of Environment (2005b). Registration. Pilot Plant East Rockingham.	WAK
20 February 2014	Department of Environment Regulation (DER) (2014) Works Approval W 5443/2013/1.	WAK
3 March 2020	Department of Mines, Industry, Regulation and Safety (DMIRS) (2020a). Statutory Guidelines for Mine Closure Plans. Version 3.0	WAK
3 March 2020	Department of Mines, Industry, Regulation and Safety (DMIRS) (2020a). Statutory Guidelines for Mine Closure Plans. Version 3.0	WAK
3 March 2020	Department of Mines, Industry, Regulation and Safety (DMIRS) (2020b). Mine Closure Plan Guidance. How to prepare in accordance with Part 1 of the Statutory Guidelines for Mine Closure Plans. Version 3.0	WAK
15 February 2019	Department of Water and Environment Regulation (DWER) (2019) Works Approval W 5443/2013/1 Amendment Notice 1 dated.	WAK
19 April 2007	Shire of Wickepin (2007). Planning Approval – Mineral Extraction – Location 13898& 14941.	WAK
22 May 2008	Shire of Wickepin (2008). Mining Proposal Endorsement – Document 200-XR-001 Mining Lease 70/1143.	WAK
29 April 2010	Shire of Wickepin (2010). Planning Approval – Williams Location 7495.	WAK
15 January 2019	Shire of Wickepin (2019). Approval for Extension to Planning Approval (DAP/14/000685) – WA Kaolin Pyt Ltd Lot 14431 Sparks Road Narrogin.	WAK
28 March 2008	WA Kaolin Holdings Pty Ltd (2008). Mining Proposal Mining Lease 70/1143, 20,000 tpa Sparks Mine Site.	WAK
15 April 2009	WA Kaolin Holdings Pty Ltd (2009). Mining Proposal Mining Lease 70/1143, Sparks Mine Site. Entrance Road Revision. Document 200-XR-001.	WAK
5 January 2015	WA Kaolin Holdings Pty Ltd (2015). Mining Proposal – Revised Version 1	WAK
2015	WA Kaolin Holdings Pty Ltd (2015b). WA Kaolin Project Mine Closure Plan.	WAK

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Appendix 1.

2015 WA KAOLIN PROJECT - MINE CLOSURE PLAN

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WA Kaolin Project

Mine Closure Plan - Revised

Version 1

Document ID: WAK/MCP/1

Date of Submission: 5 January 2015

Mineral Field Number: 70 South West

Company: WA Kaolin Holdings Pty Ltd

Contact: Alf Baker 03 87925212 abaker@wakaolin.com.au

Tenements:

M70/1143 (Mine site and initial process plants)

G70/251 (Final Process Plant)

L70/156 (Pipeline easement between mine site and final process plant)

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Mine Closure Plan Checklist

Q No	Mine Closure Plan (MCP) checklist	Y/N NA		Page No.	Comments
1	Has the Checklist been endorsed by a senior representative within the tenement holder/operating company? (See bottom of Checklist.)	**Y**		**3**	
2	How many copies were submitted to DMP? (See Appendix C for requirements)		Hard copies = 2 Electronic = 1		
	Public Availability				
3	Are you aware that the mine closure plan is publicly available?	**Y**			
4	Is there any information in this mine closure plan that should not be publicly available?	**N**			
5	If "No" to Q4, do you have any problems with the information contained in this mine closure plan being publicly available?	**N**			
6	If "Yes" to Q4, has confidential information been submitted in a separate document/section?	**NA**			
	Cover Page, Table of Contents				
7	Does the cover page include; • Project Title • Company Name • Contact Details (including telephone numbers and email addresses) • Document ID and version number • Date of submission (needs to match the date of this checklist)	**Y**			
	Scope and Project Summary				
8	State why is the MCP is submitted (as part of a Mining Proposal or a reviewed MCP or to fulfil other legal requirements)				As part of Mining Proposal
9	Does the project summary include; • Land ownership details; • Location of the project; • Comprehensive site plan(s); • Background information on the history and status of the project.	**Y**			
	Legal Obligations and Commitments				
10	Has a consolidated summary or register of closure obligations and commitments been included?	**Y**			
	Data Collection and Analysis				
11	Has information relevant to mine closure been collected for each domain or feature (including pre-mining baseline studies, environmental and other data)?	**Y**			
12	Has a gap analysis been conducted to determine if further information is required in relation to closure of each domain or feature?	**Y**			
	Stakeholder Consultation				
13	Have all stakeholders involved in closure been identified?	**Y**			

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Q No	Mine Closure Plan (MCP) checklist	Y/N NA		Page No.	Comments
14	Has a summary or register of stakeholder consultation been provided, with details as to who has been consulted and the outcomes?	Y			
	Final land use(s) and Closure Objectives				
15	Does the MCP include agreed post-mining land use(s), closure objectives and conceptual landform design diagram?	Y			
16	Does the MCP identify all potential (or pre-existing) environmental legacies, which may restrict the post mining land use (including contaminated sites)?	Y			
	Identification and Management of Closure Issues				
17	Does the MCP identify all key issues impacting mine closure objectives and outcomes?	Y			
18	Does the MCP include proposed management or mitigation options to deal with these issues?	Y			
19	Have the process, methodology, and rationale been provided to justify identification and management of the issues?	Y			
	Closure Criteria				
20	Does the MCP include an appropriate set of specific closure criteria and/ closure performance indicators?	Y			
	Closure Financial Provisioning				
21	Does the MCP include costing methodology, assumptions and financial provision to resource closure implementation and monitoring?	Y			
22	Does the MCP include a process for regular review of the financial provision?	Y			
	Closure Implementation				
23	Does the reviewed MCP include a summary of closure implementation strategies and activities for the proposed operations or for the whole site?	Y			
24	Does the MCP include a closure work program for each domain or feature?	Y			
25	Have site layout plans been provided to clearly show each type of disturbance?	Y			
26	Does the MCP contain a schedule of research and trial activities?	Y			
27	Does the MCP contain a schedule of progressive rehabilitation activities?	Y			
28	Does the MCP include details of how unexpected closure and care and maintenance) will be handled?	Y			
29	Does the MCP contain a schedule of decommissioning activities?	Y			

Q No	Mine Closure Plan (MCP) checklist	Y/N NA		Page No.	Comments
30	Does the MCP contain a schedule of closure performance monitoring and maintenance activities?	Y			
	Closure Monitoring and Maintenance				
31	Does the MCP contain a framework, including methodology, quality control and remedial strategy for closure performance monitoring including post-closure monitoring and maintenance?	Y			
	Closure Information and Data Management				
32	Does the mine closure plan contain a description of management strategies including systems, and processes for the retention of mine records?	Y			

Corporate Endorsement:

"I hereby certify that to the best of my knowledge, the information within this Mine Closure Plan and checklist is true and correct and addresses all the requirements of the Guidelines for Preparing Mine Closure Plans approved by the Director General of Mines.

Name: ALF BAKER **Signed:**

Position: Director **Date:** 5 JAN 2015

(NB: The corporate endorsement must be given by tenement holder(s) or a senior representative authorised by the tenement holder(s), such as a Registered Manager or Company Director)

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Table of Contents

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1. Scope and Purpose

This Mine Closure Plan (MCP) is submitted as part of the Mining Proposal for the WA Kaolin Project (Document ID: WAK/MP/1).

The MCP includes a description of the procedures and objectives of restoration and rehabilitation of mine pits, and the ultimate removal of process plant and other equipment associated with the WA Kaolin Project located in the Shire of Wickepin to a condition that will permit sustainable agricultural use.

The Guidelines for Preparing Mine Closure Plans (Government of Western Australia Department of Mines and Petroleum and Environmental Protection Authority, June 2011) state that the level of detail required in a MCP for a long-term proposal (25+years) is as follows:

- Post-mining land use – Provisional targets unless agreed by all key stakeholders as being final
- Identification and management of key environmental issues – High risk components completed
- Closure outcomes – Indicative except for high risk operations
- Closure costings (not to be submitted unless requested by DMP) – Indicative
- Closure implementation and monitoring plans – preliminary except for high risk operations.

WA Kaolin Holdings Pty Ltd has been guided by these requirements in the preparation of this MCP. The WA Kaolin Project does not involve any high risk components or operations.

2. Project Summary

A detailed description of the WA Kaolin Project is provided in the Mining Proposal. The summary of that document is reproduced below.

WA Kaolin Holdings Pty Ltd (WAK) 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, and a processing plant in the Kwinana Industrial zone to provide product for testing and evaluation. Those operations ceased in 2010 when testing was completed. WAK is now seeking approval to operate a mine and process plant with the capacity to produce 360,000t of kaolin each year with initial processing at the mine site and final processing at a location adjacent to the Wedin railway siding, approximately 18km south of the mine-site, rather than at Kwinana. The product will be transported by road and rail to Kwinana for direct loading onto ships.

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. Groundwater will not be intercepted by mining and there is little potential for groundwater contamination. Surface water will be managed by site drainage plans. The nearest houses to the project sites are more than 2.5km away which will assist in the management of noise. Specific noise attenuation measures will be incorporated in the design of the operations and plant if required to ensure compliance with the noise regulations. 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.

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The project will provide a significant boost to local economies and is expected to employ between 60 and 80 people most of who are expected to live either in the Shire of Wickepin or the Shire of Narrogin.

Mining will involve simple digging by excavator as the deposits are close to the surface. Excavation of about 1.25Mtpa of material will be required to yield 360,000tpa of kaolin. The kaolin reserves are sufficient for a mine life in excess of 100 years at the proposed level of production.

The project will produce kaolin of different specifications. Some ore will be processed at the mine-site to produce 100,000tpa of beneficiated 90% kaolin (K90) which will be trucked either directly to Kwinana or to the Wedin site for loading on to trains. The remaining ore will be partially processed at the mine-site to produce 260,000tpa of kaolin in slurry form which will be piped to the Wedin site for further processing, packaging and loading onto trains. The processing at the mine site involves de-gritting with screens and cyclones to separate kaolin of <45 microns from waste 'sand'.

The production of K90 will commence prior to the production from the Wedin plant as it involves less process equipment and time to establish.

At the Wedin site the slurry will pass through classification centrifuges that will separate the fine and coarse clay. These will be de-watered and then the thickened slurries will be rinsed and further de-watered in a cake press. Some of the damp kaolin filter cake will be treated further to optimize particle size and viscosity and then granulated and dried.

Both filter cake and granules will be packaged and stored in bulk bags and ISO shipping containers prior to loading onto rail wagons for haulage to Kwinana. The storage area will hold up to approximately 10,000 tonnes of product.

Fresh process water will be delivered to the Wedin plant by a buried pipeline from an existing Water Corporation main. Water from de-watering and pressing operations will be recycled through a pipeline to the de-gritting plant for use there. Recycling of water will also occur in the de-gritting process line at the mine site.

The project has been granted Works Approval by the Department of Environmental Regulation. It will not involve any significant environmental impacts or non-standard management requirements. The mine-site and the Wedin site have been developed for agriculture for many years. There is little remnant vegetation on the mine-site and only individual plants and small areas will need to be removed for mining to occur. There is a relatively large area of vegetation at the Wedin site but the process plant and other structures will be sited to avoid this area.

The mine site and the Wedin site are within the buffer zones of the Toolibin Reserves Threatened Ecologic Community (TEC). This TEC includes Toolibin Lake which is a wetland of international significance under the RAMSAR Convention, but the operations are distant from this. There is no natural surface run-off from the location of the mine-site and drainage management will ensure that there is no operational run-off. There is a small natural drainage channel at the Wedin site. The aim is to maintain this in its current state, but if there is any requirement to re-position a section this would not alter the present location of discharge from the site or the volume of water discharged. Run-off from buildings and pavements will be collected for use in the process cycle. None of the proposed operations will affect groundwater. Therefore there effectively is no risk that the proposal will affect the TEC.

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The project area is sparsely populated with isolated farm houses. The nearest home to the mine site is 2.8km south-west. The nearest residence to the Wedin site is about 2.8km to the south-east. The noise levels from mining equipment at the mine site have been assessed and this has shown 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 modeled 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. Parts of the operation will operate on a continuous basis.

Noise modelling of the process plants will be commissioned in the detailed design phase of the project and if necessary bund walls and other attenuation measures will be incorporated to ensure acceptable noise levels are achieved at all times.

The project will involve truck transport of the 100,000tpa of beneficiated kaolin from the mine site and periodic delivery of minor process requirements. The beneficiated kaolin will be packaged in bulk bags and placed in shipping containers at the mine site. This product either will be transported by road to the Wedin rail siding for loading onto trains or will be transported by trucks directly to Kwinana. In the latter case, the estimated number of truck movements each day is 5 each way. It is likely however, that the transport will not be continuous but will be timed with ship loading requirements. In this case, the number of loads per day will be more than this average but there will also be periods when there will be no truck movements.

Transport of products from the Wedin site to Kwinana is expected to involve 2 train movements a day (1 arrival and 1 departure) over a period of about 7 days per month.

The mine pit will be back-filled with reject soils and clay, finished with topsoil and returned to cropping on a continuous basis as mining progresses. This process will be completed prior to mine closure and all plant, buildings etc. will be removed from both sites and returned to a condition that allows farming to resume – details are provided in a separate Mine Closure Plan.

3. Closure Obligations and Commitments

WA Kaolin Holdings Pty Ltd has obtained Works Approval from the Department of Environmental Regulation for the WA Kaolin Project. There are no specific conditions in the Works Approval relating to mine closure but there is a general condition that the project will be constructed in accordance with the documents provided with the application for Works Approval.

WA Kaolin Holdings Pty Ltd has made the following commitments that are relevant to mine closure as part of its application for Works Approval.

WAK is committed to establishing mining and processing operations in accordance with current best practices in environmental management, and to minimizing negative impacts on the natural and social environment.

To meet these objectives WAK will:

- Retain all significant areas of remnant vegetation at the Wedin process plant site in accordance with any recommendations of the DER.

- Backfill mined areas with sand and clay discharged from the process line and cover with stockpiled overburden.

- Contour the filled areas to achieve a natural landscape effect
- Rehabilitate the mine site to agricultural use.
- Analyze soils at the mine site to establish baseline soil properties to assist the planning of rehabilitation to agricultural use.
- Analyze soils in rehabilitated areas to ensure that the soil condition is at least equal to non-disturbed soils at the site.

4. Closure Data

4.1 Existing Environment

Environmental data on the locations involved in the WA Kaolin Project are provided in the Mining Proposal. These include information on local climatic and physical conditions, a description of the existing environment, water resources, soil profiles, and social factors.

The primary locations involved in the project (mine-site and Wedin) are currently and for many years have been used for agricultural production (cropping and grazing). Virtually all native vegetation has been removed from the areas that will be disturbed by the project and consequently they do not support any significant flora or fauna habitat. A relatively large area of indigenous vegetation is present at the Wedin process plant site but this will not be affected by the project and will be retained for conservation purposes.

Small areas of remnant vegetation will need to be removed at some places along the pipeline corridor and for the railway siding at Wedin. The total area is estimated to be less than 2 hectares. The areas affected by the pipeline will be revegetated following construction. The railway siding will be revegetated as part of the closure if the area is not required for other purposes (e.g. as a Shire industrial zone).

Groundwater has not been detected in drill holes at the mine site. No drilling has occurred at the Wedin site and it is not known whether any groundwater is present there.

A natural drainage channel is present on the Wedin site which contains intermittent surface flows. This will be retained and pre-existing flow rates into and from the site will be maintained. Therefore there is little potential for contamination of groundwater or surface water.

4.2 Collection of Environmental Data during Project Operations

Environmental data will be collected throughout the life of the project in order to ensure compliance with regulations and conditions, to monitor environmental performance, and to determine the need for, and requirements of, management intervention designed to ensure the achievement of environmental objectives. The data also will assist in the refinement of closure objectives and completion criteria and demonstrate that the closure outcomes and goals are achievable. The type of data that will be collected is described below and additional information is provided in Section 11.

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4.2.1 Geology

Information on the geology of the mine site has been collected during extensive drilling programs to determine the extent and quality of the kaolin deposits and to provide the necessary data for mine planning. Intensive drilling of the deposits on Location 14431 will occur in the early stage of project implementation and drilling of other deposits will occur in the longer term as the project proceeds. This will provide substantial information on the geology, soil profile and groundwater of ML70/1143.

The installation of groundwater monitoring bores at the Wedin site similarly will provide information on the geology at that location.

4.2.2 Waste Rock

No waste rock dumps will remain after mine closure.

There will be no permanent operational waste rock dumps as all waste material will be returned to the mined out pit as part of the rehabilitation works. There also will be no tailings.

There is no risk of acid mine drainage from 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.

The condition of temporary waste rock dumps will be monitored on a continuous basis by visual inspection to determine whether there is any evidence of nuisance dust generation or non-localized run-off. Any such evidence will be documented and reported in the annual environmental report. Immediate corrective action will also be implemented.

4.2.3 Soil Profile

A typical soil profile at the mine site comprises soil and laterite overburden to a depth of 1m then mottled iron stained clays to a depth of 3m. The kaolin deposit extends from 3m to 20m depth and in places to at least 40m. The clay deposits are underlain by saprolite. Further site specific data on the surface soils will be collected during drilling programs for mine planning purposes.

These data will provide input to the development of alternative soil profiles for trial plots that will be established to examine and improve crop productivity following rehabilitation. A consultant agronomist will be employed to design, implement and report on these trials and to assess the actual crop production on rehabilitated areas.

This program will ensure that the agricultural productivity of the mined areas is proven long before mine closure. The program will be continued for a period after mine closure if required but it is anticipated the long term viability of the mined areas will be established many years prior to closure.

4.2.4 Hydrology

Groundwater has not been detected by exploration drilling and excavation at the mine site. There also is no surface water flow in the area of the mine as the surficial sands are highly permeable. A small intermittent stream crosses the Wedin site.

Piezometer bores will be established at the mine-site prior to the commencement of mining. Routine monitoring of the bores for water quality and level will be conducted before, during, and for a period after mining activities. Any surface water sources (e.g. farm dams) which may collect run-off from disturbed areas will also be monitored for water quality before, during and post-mining. Data from bore and surface water monitoring will be reported in Annual Environmental Reports and to the DER.

Prior to commencement of construction activities at Wedin, piezometer bores will be established around the site and along the intermittent watercourse which runs through the location to the south of the proposed plant. Routine monitoring of the bores for water quality and level will be conducted before, during, and for a period after mineral processing operations at the site. Any surface water sources (e.g. farm dams and the intermittent watercourse) which may collect run-off from disturbed areas will also be monitored for water quality before, during and post-mineral processing activities. The intermittent watercourse will be monitored both up-stream and down-stream of the processing plant. Data from bore and surface water monitoring will be reported in Annual Environmental Reports and to the DER.

Any water quality results which are unexpected or outside of the normal range of pre-mining values will be referred to a consultant hydrologist for further investigation.

4.2.5 Climate

Climate data are collected at regional locations (Wickepin and Narrogin). These data will be incorporated in Annual Environmental Reports together with any information on drought and potential climate change that could affect the success of the rehabilitation program. Any decline in average rainfall and increase in average temperatures will have regional implications for agriculture and will not be restricted to the mine site. Any strategy designed to limit the impact of drought or climate change on agriculture in the region, such as the use of new crop strains, will be incorporated in the rehabilitation procedures.

4.2.6 Flora and Fauna

The mine site and the Wedin site have been used for many years for cereal cropping and sheep grazing. There is a small area of disturbed woodland on the mine-site and there also is a Remnant Vegetation Protection Area adjacent to Lot 1443 where the mine site is located. These areas of vegetation will not be affected by the mining operations.

The Wedin site (Lot 8798) includes about 40ha of remnant vegetation that is contiguous with a larger area of vegetation on adjacent locations that include Reserve E11286 for Camping and Water Reserve E19839. The proposed facilities on Lot 8798 will not require clearance of any of the remnant vegetation on the property. This vegetation will be enclosed with a fence to minimize the potential for accidental damage.

The remnant vegetation is the only significant fauna habitat at the sites.

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No monitoring of the remnant vegetation is required in the conditions for the Works Approval as no impacts are foreseeable.

Small, localized areas of vegetation will be cleared to establish the pipeline corridor. These areas will be replanted with indigenous or introduced plant species in consultation with the owners of the affected land. This will ensure that the revegetation objectives (such as wind break, shade and replacement of original species) are achieved. The revegetation will be monitored by inspection, description of condition and standardized photography on an annual basis.

The vegetation will be replaced at closure if there is a requirement to remove the pipelines. The monitoring during mining operations will provide information on the long term viability of the new vegetation post closure.

4.2.7 Social Environment

A noise assessment during commissioning is required as a condition of the Works Approval and compliance with the relevant regulations will be required. Noise monitoring also will occur on a periodic basis during the life of the project and in the event of any complaint.

Light spill and visibility from the closest residences also will be assessed during the first phase of operations.

WA Kaolin also will work with the Shire of Wickepin to ensure that the use of local roads by non-mining related vehicles is not unduly impeded and that no significant road safety conditions occur as a result of mine related traffic.

These are important operational matters but they are not relevant to mine closure and post mining conditions.

4.3 Analysis of Data

The most important objective of the mine closure strategy is the establishment of agricultural uses that have long term viability on all areas that are affected by the project at the mine site and at Wedin. The analysis of data on the growth and productivity of crops that are planted on these sites will be a key component in achieving this objective. A consultant agronomist will be contracted to design, establish, assess and report on this assessment.

The analysis of data on pre-mining and replacement soil profiles, climate and hydrology will support the crop assessments.

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5 Stakeholder Consultation

5.1 General

WA Kaolin Holdings Pty Ltd has obtained Works Approval for this project and has applied for Planning and Development Approvals. These approvals involve consultation with Government agencies and the Shire of Wickepin and public advertisement and review (appeal) periods. No appeals or submissions were received as a result of the Works Approval.

Company representatives have also discussed the project with local landowners on an individual basis both as a courtesy and in order to obtain formal consent for the pipelines easement on their properties, and attended a public meeting organized by the Shire of Wickepin specifically to discuss the project.

The Shire of Wickepin has a relatively small population and WA Kaolin has operated there on a limited scale for several years in the past and has purchased properties in the area. The company believes therefore that its plans are well-known in the district.

5.2 Identification of Stakeholders

WA Kaolin recognises the importance of consulting with stakeholders in the mine closure planning process. A preliminary list of current stakeholders is as follows:

State Government
- Department of Environment Regulation
- Department of Water
- Department of Mines and Petroleum
- Department of Transport

Local Government
- Shire of Wickepin
- Shire of Narrogin
- Town of Narrogin

Non-Government Organisations and Individuals
- WAMCO Industries Group companies and shareholders (owner of the project and properties on which the mine and process plants are located)
- Mine-site
  - Lot 14431 lease tenant (at present Quartermaine)
  - G&D Sims (Lot 14431 currently immediate neighbours)
- Pipeline Route
  - Other existing landowners and occupiers (Easton, Gray, T Bayley, Miller, Thompson, S Bayley)
- Wedin Plant Site
  - Lot 1 and 8798 existing lease tenant and neighbour (Bird)
- Future landowners, tenants and neighbours at the time of closure.

WA Kaolin will consult with the stakeholders during the preparation of the final Mine Closure Plan, which will be prepared at least three years prior to the anticipated date of closure.

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5.3 Consultation Plan

5.3.1 Objectives and Principles

The objective of stakeholder consultation is to ensure that the interests of all stakeholders are considered during the closure planning process.

The principles of stakeholder involvement for the Project will be as follows:

- Identification of stakeholders and interested parties is an important part of the closure process.
- Effective consultation is an inclusive process that encompasses all parties and will occur throughout the life of the Project.
- The communication strategy will reflect the needs of the stakeholders.
- Adequate resources will be allocated to ensure the effectiveness of the consultation process.
- WA Kaolin will work with stakeholders to manage and minimize the potential impacts of mine closure.

5.3.2 Communication Strategy

The objective of stakeholder consultation is to ensure that the interests of all stakeholders are considered during the closure planning process.

The communication strategy for the closure process will include the following:

- WA Kaolin will regularly review the list of stakeholders to ensure that it is up-to-date.
- WA Kaolin will actively consult with stakeholders to develop an understanding of the concerns and issues associated with closure.
- WA Kaolin will maintain responsibility for the outcomes of all consultation performed by company personnel and its consultants.
- Wherever possible, WA Kaolin will maintain continuity in the personnel undertaking the public consultation and interacting with key stakeholders.
- In order to avoid unrealistic demands and expectations from stakeholders, WA Kaolin will be clear and firm in describing the likely or possible outcomes of the closure process.
- WA Kaolin will inform and consult with relevant government agencies regarding the scope of the closure process.
- WA Kaolin will periodically evaluate the consultation process to determine the effectiveness of the process.

5.3.3 Outcomes of Stakeholder Consultation

Over the past 10 years WA Kaolin has periodically updated various stakeholders as to the overall status and plans for the project. This has taken the form of community information sessions, shire council briefings (Wickepin and Narrogin), ministerial level briefings, and individual meetings with affected landowners.

Recent (early 2014) engagement with the Department of Environment Regulation occurred when WA Kaolin lodged (and subsequently was granted) a Works Application.

Other consultation activity in mid-2014 included the preparation and lodgement of Planning and Development Applications with the Shire of Wickepin. This process requires that there be a formal public review and comment open to Wickepin ratepayers. This resulted in several public submissions. The main concerns in the submissions were:

- That regular heavy haulage activity would be taking place on unsealed and narrow shire minor roads.
- Water pressure and flow from existing limited Water Corporation supplies in the Toolibin area may be detrimentally affected.
- Salt evaporation ponds were a risk to the intermittent stream passing to the south of the Wedin plant.
- Tier 3 rail line closure (Narrogin to Toolibin) would put more heavy haulage on Shire roads.

All of these issues have subsequently been addressed by WA Kaolin, both in a formal response to the Shire, and in a community information session held at the Wickepin Shire sports ground in October 2014.

No issues were raised regarding rehabilitation activities.

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6 Post-Mining Land Use and Closure Objectives

The post mining land use will be agricultural production as pasture and/or for cereal cropping. This is the present land use. This objective will be readily achievable with established and conventional restoration and rehabilitation procedures. It is acceptable to key stakeholders (the Department of Environmental Regulation, Shire of Wickepin and adjacent landowners), and is sustainable.

The Closure Objective is to restore the mine site and process plant sites to agricultural use such that they are indistinguishable from surrounding farmlands both visually and in terms of productivity.

6.1 Land Use

The primary objective of closure of disturbed areas and the mine and processing activities in general is, in consultation with relevant landholders, to return the land profile consistent with the surrounding topography and establish either productive agricultural land or native vegetation considering past land uses.

The primary objectives for rehabilitation are to achieve:

- A safe, stable and resilient landforms and soils.
- Appropriate hydrology to support rehabilitated habitats.
- Visual amenity and suitability for agreed land use.
- Broad-acre crops of relevance to the landholder and self-sustaining vegetation comprised of local provenance species and agreed targets for vegetation recovery.

WA Kaolin plans to return disturbed farmland areas to an agricultural use with at least a comparable agricultural value to that before mining.

Any areas of native vegetation disturbed (mainly along the pipeline route) will be re-planted with flora types in accordance with the general pattern and type of growth in the area or other vegetation if preferred by the land owner.

6.2 Closure Objectives

6.2.1 Compliance

- The disturbed mining environment shall be made safe.
- Closure requirements of the regulatory authorities will be met.
- All legally binding conditions and commitments relevant to rehabilitation and closure will be met.

6.2.2 Landforms

- The landform of pit areas after mining and backfilling will be restored to a form similar to that pre-mining, with all areas being graded such that broad-acre cropping is possible with modern large-scale seeding, spraying and harvesting equipment. The landform of process plant and infrastructure areas will be unchanged from its original state as very minimal bulk earthworks are required for plant construction.

- All buried plant tailings and plant closure demolition products buried as part of pit back-fill operations will be non-polluting.
- Any landform depressions which may collect water will be designed as stock dams in consultation with the occupying farmer.
- Final landforms will be stable and no more prone to dust generation than the surrounding farm land.

6.2.3 Revegetation

- Areas of disturbed farmland will be planted as soon as possible with crops such as lupins, in order to stabilise the topsoil and prevent erosion by wind or water. These areas can then re-join adjacent active farming areas in the normal cropping and grazing rotation.
- Consideration will be given to the planting of Tagasaste ('tree lucerne') in farmland locations where visual screening or wind-breaks are required.
- Any areas of native vegetation disturbed (along the pipeline route and rail siding) will be re-planted in consultation with landowners to achieve the owners objectives.
- The rehabilitated land will have equivalent functions and resilience as the pre-mining land.
- Soil properties will be appropriate to support the post mining land use.

6.2.4 Fauna

- The abundance and diversity of fauna will be equivalent to pre mining conditions for agricultural land in this area.

6.2.5 Water

- Backfilled mine areas will have surface and groundwater hydrological flow patterns appropriate for the specified post-mining land use.
- Where there is a backfill volume deficit in rehabilitated mining areas, the resultant lowered landform will be designed to collect any rainfall run-off in a managed way and not result in water-logged cropping areas. Any required low points in the resultant topography will be constructed as shallow farm dams suitable for stock watering and potential aquaculture.
- Areas on which plant and infrastructure were located will be returned to a landform which restores the pre-existing drainage patterns and farm dams.
- Surface and groundwater levels and quality will reflect original levels and water chemistry.
- There will be no long term reduction in the availability of water to meet local environmental values.

6.2.6 Infrastructure and Waste

- During decommissioning and through closure, wastes will be managed consistent with the waste minimisation principles.
- No infrastructure to be left on-site unless agreed to by regulators and post-mining land owners.
- The location and details of any buried hazards will be clearly defined and robust markers will be installed and maintained.

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6.2.7 Pollution

- Achieve a condition where any contaminants at the site are at or below agreed criteria.

6.2.8 Socio-economic Objectives

- Enable all stakeholders to have their interests considered during the mine closure process.
- Ensure that the closure process occurs in an orderly, cost-effective and timely manner.
- Ensure that the cost of closure is adequately represented in Company accounts and that the community is not left with a liability.

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7. Closure Issues

7.1 Identification and Management of Closure Issues

In the original Mine Closure Plan, the project included waste salt evaporation ponds and encapsulation of crystallised salt within lined areas of mined pits. The mineral processing flow-sheet has subsequently been changed and the production of waste salt is no longer part of the proposed project. Therefore the waste salt handling and disposal systems will not be required.

A preliminary identification of potential mine closure issues and the required management actions has been carried out and the results are presented in the following table. As rehabilitation of mined areas will be a progressive activity commencing early in the mine-life, monitoring of rehabilitation performance can commence long before final mine closure. Rehabilitation activities therefore can be modified and refined so that by the time final closure occurs, closure rehabilitation issues, practices and management will be well understood.

ITEM	RISK	CONTROLS DURING OPERATIONS	CLOSURE ACTIONS
Hazardous materials	Toxic or harmful materials remain on site after closure.	Inventory of hazardous materials maintained at all times. Areas where hazardous materials stored and used recorded on site plans. Appropriate hazardous materials storage systems and handling procedures.	Removal of all stored hazardous materials from the site upon closure to an appropriate disposal site. Soil sampling in areas where hazardous materials were stored and used to detect any leakages and ground contamination.
Hazardous and unsafe facilities	Structures or landforms remain after closure which are hazards to people and fauna.	Operations are managed in accordance with the Mines Safety Regulations. No underground operations.	All building structures removed or made safe if remain as a farming asset. Pits all backfilled or batters cut down to angles suitable for agricultural equipment use. Remaining depressions finished as farm dams with appropriate batter angles and fencing. Properties are fenced and gated.

ITEM	RISK	CONTROLS DURING OPERATIONS	CLOSURE ACTIONS
Contaminated sites	Spilt hazardous or non-biodegradable materials remain after closure.	Inventory of potential contaminants maintained at all times. Areas where potential contaminating materials stored and used recorded on site plans. Appropriate materials storage systems and handling procedures. Exploration samples assayed to determine presence of potentially contaminating natural materials (highly unlikely in this geological setting).	Removal of all stored hazardous materials from the site upon closure to an appropriate disposal site. Soil sampling in areas where hazardous materials were stored and used to detect any leakages and ground contamination.
Acid and metalliferous drainage (AMD)	Acid and metalliferous drainage into environment from stockpiles or mined areas after closure.	There is no potential for AMD. Mining area perimeter drain system. Ongoing surface and groundwater monitoring of level and quality.	Removal of all above-ground stockpiles for use as pit backfill. Post-closure ground and surface water monitoring around mined areas.
Radioactivity	Radioactive materials remain where they may have an impact on flora and fauna (incl. humans).	The presence of radioactive materials is extremely unlikely. If required, assays of overburden and ore will be made and a Radiation Management Plan prepared. Controls in accordance with the Radiation Safety Act for the use of radioactive equipment (e.g. density gauges).	Removal and disposal of radioactive equipment in accordance with the Radiation Safety Regulations. Analysis of scale or other potential materials in process equipment where natural radioactive materials may have been concentrated. Disposal in accordance with the Radiation Safety Act.

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ITEM	RISK	CONTROLS DURING OPERATIONS	CLOSURE ACTIONS
Fibrous (incl. asbestos) minerals	Fibrous (incl. asbestos) minerals remain at or close to the surface where they could be disturbed after closure.	Naturally occurring fibrous minerals are extremely unlikely in this geological setting. If required, assays of overburden and ore will be made to verify this and a fibrous minerals management plan will be prepared. Prevention of any fibrous minerals from entering site as components in process equipment.	Deep burial in pit backfill of any naturally occurring fibrous materials in accordance with a fibrous minerals management plan. Conduct a site audit prior to demolition activities to detect any fibrous materials in equipment (e.g. gaskets, insulation).
Non-target metals and target metal residues in mine wastes	Metals and or residues remain in mine wastes where they may oxidize and possibly mobilise after closure.	The presence of naturally occurring metals is extremely unlikely in this geological setting. If required, metal analyses of samples of overburden and ore will be made and a management plan will be prepared.	All temporary above-ground stockpiles are used for backfill in pits. Closure and post-closure soil and water monitoring. This topic is highly unlikely to be an issue due to the geological setting.
Management of mine pit lakes	Potentially unsafe physical environments for humans and poor water quality for flora and fauna remain after closure. Uncontrolled point recharge for groundwater systems.	All mining activities are above the water table. Collected in-pit water from rainfall will be stored and used for dust suppression. Ongoing surface and groundwater monitoring of level and quality. Mining pits are progressively backfilled with plant tailings and overburden.	The final landform will be designed so that any remaining low points which may collect water will be completed as shallow stock (farm) dams, the design and location to be determined in consultation with the occupying farmer. Given the low level of rainfall in the region and lack of catchment area, permanent (year-round) water bodies are unlikely. Point groundwater recharge is also unlikely due to high clay content of the ground. The properties are all fenced and gated. Post-closure surface and ground water monitoring (level and quality).

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ITEM	RISK	CONTROLS DURING OPERATIONS	CLOSURE ACTIONS
Adverse impacts on surface and groundwater quality	Post closure surface and ground water quality is detrimentally affected by previous mining activities.	Mining only takes place above the water table. Mining does not intersect any intermittent streams courses. Undisturbed ground is clay rich and has very low permeability. Collection of direct precipitation in pits and from disturbed areas using perimeter drains. Collected water is stored for dust suppression uses. Ongoing surface and ground water monitoring.	Post-closure surface and ground water monitoring (level and quality).
Dispersive and sodic materials	Water erosion of post-closure landforms.	Design of backfilled pit landforms to control surface water run-off. Timely planting of suitable cover crops. Analysis (testing) for dispersive and sodic materials in top and sub-soil. Creating and monitoring of trial rehabilitation plots to determine if improved soil profiles can be created during backfilling and rehabilitation. Ongoing monitoring for tunnel and gully erosion.	Design of final pit and plant area landforms to control surface water run-off. Post-closure monitoring of landforms for water-based erosion.
Design and maintenance of surface water management structures	Surface water management structures are not robust and fail post-closure.	Surface water management structures are minimal at the site. There are no large dams, stream re-alignments, or mine pit lakes. Permanent above-ground stockpiles ore tailings dams are not required. Surface water management structures during mining consist of temporary small shallow dams and perimeter drains. These are removed during closure.	Post-closure surface water management structures consist of appropriately graded farming land surfaces and small below-ground stock (farm) dams. Post-closure monitoring of surface water management landforms.

ITEM	RISK	CONTROLS DURING OPERATIONS	CLOSURE ACTIONS
Dust emissions	Post-closure landforms and soils are not stable, releasing dust and have susceptibility to wind erosion.	Progressive back-filling and rehabilitation of mined areas. Trial rehabilitation plots to determine if manufactured soil profiles are better than the original poor soils (e.g. clay addition to topsoil, refer "Wind erosion and soil carbon dynamics in south-western Australia", Harper, Gilkes, Hill & Carter, Aeolian Research 2009). Planting of Tagasaste trees as wind-breaks. Water-spreading on roads and active mine areas. Watering (once) or waste clay slurry spraying to create clay crust seals on non-active mining areas. Paper mulch or clay slurry coating of sandy (e.g. topsoil) stockpiles if required. Timely (autumn and winter) collection and spreading of topsoil.	Post-closure monitoring of soil stability, dust emissions and crop performance.
Flora and fauna diversity / threatened species	Flora and fauna diversity and the occurrence of threatened species is reduced post-closure.	Replanting of disturbed native vegetation areas (minimal - only disturbed by pipe-laying). Pre-disturbance site photography. Post-construction planting and on-going monitoring by photographs and surveys.	Pre-mining survey of the area did not discover any threatened species (Dames and Moore, 1995) and flora and fauna diversity in >95% of the disturbed area is extremely low as it is all long-term broad-acre cropping and grazing land.

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ITEM	RISK	CONTROLS DURING OPERATIONS	CLOSURE ACTIONS
Rehabilitation management	Planned rehabilitation activities are not executed or are poorly completed. Planned activities are not updated to reflect experience and trial plot performance.	Prior to commencement of operations, WA Kaolin will document in detail the procedures, responsibilities and management for all rehabilitation activities. This documentation will also define the standards and procedures by which rehabilitation performance is measured. Routine inspections of rehabilitation activities will be carried out. Regular independent review and reporting of rehabilitation practices and performance. Routine regulatory reporting. On-going review and improvement of procedures, responsibilities and management for all rehabilitation activities.	Development of a detailed Post-Closure Monitoring and Maintenance Program prior to project closure. Post-closure monitoring and final reporting activities.
Farming land productivity	The productivity of rehabilitated farming land is at least equal to that prior to mining.	Progressive backfilling and rehabilitation activities. Trial plots for alternative soil profiles and rehabilitation practices. Periodic farmer and agronomist review of rehabilitation areas and trial plot performance.	Post-closure monitoring and reporting (farmer and agronomist consultant) of farming land yields and performance.
Visual amenity	Post-closure landforms and structures detract from the visual amenity of the wider area.	Use of topsoil and temporary overburden stockpiles, natural landforms and screening vegetation plantings to reduce the visibility of the operations from public spaces and neighbours.	All above-ground stockpiles will be used for pit backfill, and all structures will be demolished unless agreed otherwise with the landowner. Final landforms will be similar to the surrounding areas and suitable for broad-acre cropping and grazing. Post-closure monitoring of crop performance, soils, and native vegetation rehabilitation (where applicable).

ITEM	RISK	CONTROLS DURING OPERATIONS	CLOSURE ACTIONS
Social issues	Post-closure social and economic impact on dependent communities.	Pre-closure planning activities to include community and stakeholder engagement, provision of advanced notice prior to closure and consideration of post-closure alternative uses for mine infrastructure and facilities.	Nil.
Heritage issues	Not applicable. No heritage sites in or near the project.	Not applicable.	Not applicable.

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8. Completion Criteria

A preliminary set of completion criteria is provided in the following table. These criteria will be further developed as the project's rehabilitation plan and procedures are prepared. The criteria will be subject to periodic review in consultation with stakeholders. Amendments to the criteria will be subject to regulatory approval.

The aim for all activities on existing farming land is to return those areas to productive broad-acre cropping and grazing paddocks, of the same type as neighbouring lands. The only native vegetation to be disturbed is in very small areas along the pipeline route and at Wedin where the rail siding is constructed. No native vegetation will be disturbed by open pit mining activities.

CRITERIA	MEASURE / TARGET	EVIDENCE	CORRECTIVE ACTION
Farming Land Rehabilitation			
Restore landform as soon as practicable	Soil profile restored within 1 year post-mining	Annual inspection by government agencies	Restore soil profile as soon as practicable
Restore vegetative cover as soon as practicable	Successful crop or pasture re-established within 1 year after completion of backfill	Annual inspection by government agencies	Re-establish crop or pasture as soon as practicable
Mined land will be returned to the pre-mining agricultural productivity	Pre-mining productivity levels achieved and considered sustainable (by independent assessment)	Post-closure agricultural productivity report by consultant agronomist	Review requirements for remedial action in consultation with regulatory agencies
Hydrology	Surface and groundwater quality and flows show no evidence of adverse impact by mining and mineral processing operations	Post-closure hydrology report by independent hydrologist	Review requirements for remedial action in consultation with regulatory agencies
Pollution	No evidence of AMD or other pollution from mining or mineral processing infrastructure areas	Post-closure soil analyses by independent soil or environmental scientist	Review requirements for remedial action in consultation with regulatory agencies
Visual amenity	Final landform and vegetation in keeping with surrounding areas	Photographic monitoring	Review requirements for remedial action in consultation with regulatory agencies
Native Vegetation Rehabilitation			

CRITERIA	MEASURE / TARGET	EVIDENCE	CORRECTIVE ACTION
Achieve a stable, non-eroding landform that can support native vegetation	Soil profile design achieved and after 3 years no significant limitations to native vegetation occur that were not present pre-disturbance	Final post-disturbance report by independent soil scientist	Review requirements for remedial action in consultation with regulatory agencies
The species diversity of native vegetation is comparable with pre-disturbance levels	Targets to be set in Final Mine Closure and Rehabilitation Plan	Photographic monitoring.	Infill plant further species as required.
Weed management	Relative cover of minor weeds is low and stable or preferably declining. Major environmental weeds capable of becoming dominant at the expense of native plants are absent. Declared weeds are managed as required by regulations.	Photographic monitoring, identification of possible weed species.	Weed removal as required.

The Native Vegetation Rehabilitation items in the table above only apply to very small areas of degraded road-side native vegetation along the pipeline route and at Wedin where the rail siding is constructed. The total native vegetation disturbance area for the project is approximately 1.2 ha, in the form of 6 to 10m wide corridors through degraded bushland at the outside edges of paddocks and along road-sides (between road-edge and farm paddock fence).

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9. Financial Provisions for Closure

The ANZMEC/MCA (2000) *Strategic Framework for Mine Closure* states that financial provisioning for closure is required in the company accounts to ensure that there are adequate funds available at the time of closure so that the community is not left with a liability. Australian companies are required to comply with AASB 137 "Provisions, Contingent Liabilities and Contingent Assets" where the rehabilitation and closure costs are recorded as a liability in the company's financial statement (Dept. Industry, Tourism and Resources, 2006).

9.1 Closure Cost Estimate

An estimate of closure costs is presented in the table following. The methodology used for this estimate is based upon the DMP typical rates for financial liability calculations, multiplied by the disturbed areas derived from the preliminary disturbed area calculations in the Mining Proposal. As the project progresses and more detailed engineering design is carried out, greater detail will be applied to the cost break-down structure, quantities will be refined, and more accurate unit rates will be obtained for the activities.

Once the project has been constructed and operated for one year, a detailed closure costing exercise will be carried out using the "as-constructed" quantities, actual disturbed areas, and site specific unit cost input from demolition and rehabilitation contractors or cost estimation specialists.

Preliminary Closure Cost Calculation					
Item	**Description**	**Category**	**Quantity (ha)**	**Unit Rate $ / ha**	**Cost**
	M70/1143				
1.1	Open Pit	C	7.6	$18,000	$136,080
1.2	Tailings facilities		0.0		
1.3	Heap leach pads or vat leach dams		0.0		
1.4	Evaporation ponds		0.0		
1.5	Waste dumps (sulphide present, highly erodable, >25m high)		0.0		
1.6	Waste dumps (lower risk) (temporary)	C	8.8	$18,000	$158,400
1.7	Topsoil stockpiles (temporary)	E	4.1	$2,000	$8,110
1.8	ROM pad	C	2.1	$18,000	$36,900
1.9	Low grade oxide stockpiles (located on areas to be mined in future)	C	4.6	$18,000	$83,475
1.10	Plant site and mining infrastructure including office / workshops	B	7.9	$30,000	$236,094
1.11	Camp site		0.0		
1.12	Strip mining (backfilled mining voids) (rehab in progress)	E	3.8	$2,000	$7,560
1.13	Hypersaline pipeline corridors		0.0		
1.14	Fresh water pipeline corridors	C	0.4	$18,000	$6,340
1.15	Haul roads	C	5.0	$18,000	$90,585
1.16	Access tracks	E	2.3	$2,000	$4,614
1.17	Hardstand areas		0.0		
1.18	Borrow pits		0.0		
1.19	Historical and areas mining by previous operators		0.0		
1.20	Exploration (where clearing takes place)		0.0		
	M70/1143 TOTAL		**46.4**		**$768,158**

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Preliminary Closure Cost Calculation					
Item	Description	Category	Quantity (ha)	Unit Rate $ / ha	Cost
	L70/156				
2.1	Plant site and mining infrastructure including office / workshops		0.0		
2.2	Hypersaline pipeline corridors		0.0		
2.3	Fresh water pipeline corridors	C	10.7	$18,000	$192,240
2.4	Haul roads		0.0		
2.5	Access tracks		0.0		
	L70/156 TOTAL		**10.7**		**$192,240**
	G70/251				
3.1	Open Pit		0.0		
3.2	Tailings facilities		0.0		
3.3	Heap leach pads or vat leach dams		0.0		
3.4	Evaporation ponds		0.0		
3.5	Waste dumps (sulphide present, highly erodable, >25m high)		0.0		
3.6	Waste dumps (lower risk)		0.0		
3.7	ROM pad		0.0		
3.8	Low grade oxide stockpiles		0.0		
3.9	Plant site and mining infrastructure including office / workshops	-	16.9	$50,000	$842,685
3.10	Camp site		0.0		
3.11	Strip mining (backfilled mining voids)		0.0		
3.12	Hypersaline pipeline corridors		0.0		
3.13	Fresh water pipeline corridors		0.0		
3.14	Haul roads		0.6		
3.15	Access tracks		0.0		
3.16	Hardstand areas		0.0		
3.17	Borrow pits		0.0		
	G70/251 TOTAL		**17.5**		**$842,685**
4.1	Environmental Monitoring (for 5 years after closure)		5	$75,000	$375,000
	PROJECT TOTAL		**74.6**		**$2,178,083**

9.2 Review and Update

The closure cost estimate will be revised after the first year of operations. Thereafter, the closure cost estimate document will be updated at regular intervals (every three years), or within 12 months of a major change to mining activities or constructed processing and infrastructure facilities. The regular closure cost estimate updates will take place after completion of that year's annual environmental report, so that current disturbed and rehabilitated area measurements are taken into account.

9.3 Financial Provision

In accordance with AASB 137, the company will establish a provision in the corporate accounts reflecting future expenditure required for mine closure. The value of the provision will be calculated from the closure cost estimate.

9.4 Accounting Standards

Corporate accounts will be operated and maintained in accordance with the requirements of the Australian Accounting Standards Board (AASB).

9.5 Securities

In addition to and separately from financial provisions within the corporate accounts for site closure, the company will pay the Mining Rehabilitation Fund Levy in accordance with the requirements of the Mining Rehabilitation Fund Act 2012.

The Department of Mines and Petroleum has not yet determined if an Unconditional Performance Bond is required for this project.

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10. Closure Implementation

The closure of mining activities and the rehabilitation of mined and backfilled areas on M70/1143 will occur progressively and will be completed shortly after mining ceases.

Closure of the pipeline corridor and Wedin processing and rail-head site (tenements L70/156 and G70/251) are once-only events which will take place upon depletion of economic reserves and closure of the business.

10.1 M70/1143 Mine site

10.1.1 Progressive Pit Rehabilitation

The majority of areas mined will be progressively rehabilitated as part of the normal mining activities. The progressive rehabilitation process is very similar to that used extensively on many mineral sand mining operations, with process plant tailings being used as backfill in an advancing pit, which in turn is covered by overburden stripped from the front of the pit, and final re-shaping and capping of the backfilled pit with topsoil before seeding.

The activities which take place for progressive rehabilitation are:

- Placement of dewatered sand and clay tailings from the process plant into mined areas.
- Placement of overburden (mottled sandy clays) mined from the advancing area of the pit over the sand and clay tailings.
- Cutting-down of pit edges and contouring of the backfilled area if required to set the final landform.
- Spreading of laterite gravel mined from the advancing area of the pit over the mottled sandy clay overburden (at approximately the same thickness as it was mined).
- Covering of the laterite gravel with approximately 300mm of mottled sandy clay overburden to provide a base for the replacement of topsoil. This region naturally has a very thin (often <50 to 100mm) layer of leached quartz sand as the only topsoil directly over laterite gravel or lithified laterite. The addition of a layer of clay rich material between the topsoil and the laterite will prevent laterite gravel and stones being drawn to the surface by farm cultivation equipment. The addition of clay to the leached surface sand is also a recognised method of soil improvement (particularly with respect to water and nutrient retention) in this region, and has been the subject of several Facey Group studies (local agronomy research group).
- Topsoil is spread over the 300mm of mottled sandy clay. Depending upon the time of year, topsoil will either be sourced from stockpiles, or if possible, spread immediately after it is mined from advancing areas of the pit.
- Seeding with a broad-acre crop, likely to be a nitrogen fixing legume such as lupins.
- Any areas of the mining activities which were originally native vegetation or wind-break plantings (e.g. tagasaste) will be replanted to conform with the general pattern and type of growth in that area. These areas are very minimal, and usually only occur in thin strips along property boundaries and internal (paddock) fences.

Spreading of topsoil will be scheduled for autumn or winter when moisture is available to enable germination of a seeded cover crop. During spring and summer progressive rehabilitation will be

temporarily paused after the placement of the 300mm of mottled sandy clay (activity 5 above), as this material can be stabilised by watering for dust management. After wetting, the kaolin in this material dries to form a crust which does not easily release dust if left undisturbed. The final stages of progressive rehabilitation will be resumed as soon as autumn and winter rains are forecast.

WA Kaolin will engage a consultant agronomist to monitor the rehabilitated areas upon completion of this process.

Areas used for haul road and temporary stockpiles will be progressively rehabilitated as they are taken out of service. Once the stockpiled material or road base is removed and used as backfill, activities 5, 6, and 7 in the list will be applied to the area.

The post-rehabilitation monitoring program will commence as soon as these activities are completed for the first time. For progressive rehabilitation areas, monitoring of the rehabilitation performance will be an ongoing activity over the life of the mine, and rehabilitation practices are likely to evolve as various techniques are trialled.

10.1.2 Final Closure and Rehabilitation

The following activities will take place at the end of the project life and cessation of mineral processing activities, to remove process plant and infrastructure, complete the final pit, and rehabilitate these areas within M70/1143. If any components at the site are of ongoing use to the landowner (e.g. sheds, water tanks, dams, roads), these will be exempted from the following activities.

- Disconnection of services (HV power isolation).
- Removal of equipment and materials with second-hand or scrap sale value (e.g. machinery, heavy steel, copper).
- Removal of recyclable materials with no sale value (e.g. steel, plastics).
- Demolition of remaining structures and equipment above foundation or pad level by a licensed demolition contractor. Materials will be transported to an approved landfill site.
- Break-up and excavation of concrete footings, foundations, and pads.
- Deep ripping and excavation of access road base and hardstand areas.
- Placement of clean broken concrete material in the base of the final mining pit. Material deemed to be contaminated in any form will be transported to an approved landfill facility.
- Placement of excavated gravel or sealed road base materials in the base of the final mining pit over broken concrete material.
- Placement of any remaining stockpiles of sand or clay tailings and ore in base of the final mining pit.
- Placement and capping of other placed materials in the final mining pit with clay rich overburden material (minimum of 3m burial).
- Any cutting-down of pit edges and contouring of the pit area required to set the final landform.
- Deep ripping of remaining plant and stockpile areas.
- Grading of ripped plant, hardstand and road areas to suit the surrounding landform, suitable for broad-acre cropping and grazing activities.

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- Spreading of materials excavated from road and hardstand bases (usually laterite gravel) evenly over the contoured pit area.
- Covering of the laterite gravel with approximately 300mm of mottled sandy clay overburden to provide a base for the replacement of topsoil. Overburden material will have been excavated from the pit and stockpiled for this purpose prior to contouring (activity 10).
- Covering of ripped plant, hardstand and road areas with approximately 300mm of mottled sandy clay overburden to provide a base for the replacement of topsoil.
- Stockpiled topsoil is spread over the 300mm of mottled sandy clay on all areas described above.
- Seeding of previously farmed areas with a broad-acre crop, likely to be a nitrogen fixing legume such as lupins.
- Areas of the mine or infrastructure which were originally native vegetation or wind-break plantings (e.g. tagasaste) will be replanted to conform with the general pattern and type of growth in that area.

The final two activities will take place in autumn or winter to ensure that the seeding germinates and grows acceptably. Upon completion of these listed activities, the post-rehabilitation monitoring program will commence.

10.2 L70/156 Pipelines

The HDPE pipelines connecting the de-gritting plant on M70/1143 and the refining plant on G70/251 will be removed at the end of the project life if required. This will involve the following activities in autumn or winter:

- Flushing of pipelines with clean water.
- Draining of the pipelines. Some of this water will have to be discharged along the pipeline length (at low points). This will be planned and carried out in conjunction with the landowner in the area likely to be affected by the water as it is drained from the pipelines.
- For surface-laid pipes, the pipes will be cut into lengths suitable for truck haulage and removed from the site. The piping will either be sold second-hand or sent for recycling.
- For buried sections, a grader will remove topsoil from above where the pipes are buried. An excavator or trenching machine will be used to uncover the pipes, which will be lifted from the trench. The pipes are then cut into lengths suitable for truck haulage and either sold second-hand or sent for recycling.
- The trenches will be backfilled and the topsoil replaced.
- The disturbed areas will be replanted after consultation with the landowners to determine the land use objective.

10.3 G70/251 Wedin

The processing plant and rail siding at Wedin will be demolished and removed at the end of the project life. The following activities will take place:

- Disconnection of services.

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- Removal of equipment and materials with second-hand or scrap sale value (e.g. machinery, heavy steel, copper).
- Removal of recyclable materials with no sale value (e.g. steel, plastics).
- Demolition of remaining structures and equipment above foundation or pad level by a licensed demolition contractor. Materials will be transported to an approved landfill site.
- Break-up and excavation of concrete footings, foundations, and pads.
- Ripping and excavation of access road base and hardstand areas.
- Clean broken concrete will be trucked to the mine-site to be placed in the final mine pit as per the clean bulk materials from the mine-site plant. Clean road-base and bulk fill materials will be used at the Wedin site for re-contouring.
- Deep ripping of remaining plant and stockpile areas.
- Grading of ripped plant, hardstand and road areas to suit the surrounding landform, suitable for broad-acre cropping and grazing activities. This activity will take into account natural drainage patterns and re-instatement of pre-existing farm dams.
- Covering of ripped plant, hardstand and road areas with approximately 300mm of mottled sandy clay overburden (trucked from the mine-site) to provide a base for the replacement of topsoil.
- Stockpiled topsoil will be spread over the 300mm of mottled sandy clay on all areas described above.
- Seeding of all areas with a broad-acre crop, likely to be a nitrogen fixing legume such as lupins.

The final two activities will take place in autumn or winter to ensure that the seeded crop germinates and any plantings grow successfully.

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11 Closure Monitoring and Maintenance / Remedial Actions

The following items are a preliminary plan only, and a more detailed framework for progressive and post-closure monitoring and maintenance detailing the methodology, quality control system and remedial strategies will be developed as the project approaches the execution phase. A detailed Post-Closure Monitoring and Maintenance Program will be developed as the project nears closure.

11.1 Rehabilitation of Farming Land

When WA Kaolin considers that the first area of progressive rehabilitation is complete, the agricultural consultant will be prepare a post-mining agricultural productivity report. This report will integrate the results of monitoring for the aspects described below and will verify whether pre-mining productivity levels have been met and are considered sustainable.

This process of independent consultant review and reporting will be repeated every two years during progressive rehabilitation operations, and one final review and report will be completed three years after mine closure.

11.1.1 Landform

During landform restoration, visual inspections of work in progress will be conducted routinely by rehabilitation staff to ensure the correct procedures are being implemented.

After restoration of the landform, the disturbed area will be surveyed and a map produced showing 0.5m contour intervals. Monitoring points will also be established to enable the assessment of land stability three years after completion.

11.1.2 Soil

During landform restoration, visual inspections of work in progress will be conducted routinely by rehabilitation staff to ensure that soil materials are returned to the correct position.

During the first year of progressive rehabilitation, preliminary soil pits may be excavated to allow early confirmation of the soil profile and identification of any limiting factors such as compaction. Early identification of such factors will allow remedial activities such as ripping to be performed in a timely manner.

Regular (yearly) soil sampling and chemical analysis will be carried out on areas of progressive rehabilitation as a guide to the addition of fertilisers. This activity will be carried out on rehabilitated areas until these areas are demonstrated to have equivalent properties (for cropping and grazing purposes) as the pre-mining soil.

Various trials of soil improvement techniques will be carried out on test-plots during the early phases of progressive rehabilitation. As the areas to be mined often have very thin and highly leached quartz sand topsoil directly over consolidated laterite, trials will take place to identify whether a 'manufactured' soil profile is better suited for cropping and grazing purposes. Suggestions from local

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farmers and agronomists have included deeper burial of the laterite and the use of clay-rich overburden as a sub-soil which is presently missing. The addition of waste clay from processing operations (or clay-rich overburden) as a ploughed-in blend to the topsoil is another option that will be trialled. The design and performance of these trial plots will be managed and assessed by the agricultural consultant and if found to be an improvement over the base case procedure of 'replace as per pre-mining' then the improved practice will be implemented for all ongoing farming land rehabilitation activities, subject to the approval of the occupying farmer.

The final post-mining assessment of the rehabilitated soil profile will be performed by a suitably experienced soil scientist. This assessment will not be performed until approximately three years after rehabilitation is complete, so that crop and pasture root distribution through the soil profile may be assessed.

The results of the soil assessment will be presented to the DMP and DER in a final Post-Mining Soils Assessment Report.

11.1.3 Crop Productivity

Whilst rehabilitated farming land is being maintained by WA Kaolin, visual inspections of crop growth will be conducted routinely by rehabilitation staff to ensure appropriate management of risk factors such as weeds, fungal and insect infestations, wind and water erosion, water-logging, etc.

Crop productivity monitoring practices and activities will be defined and documented prior to the commencement of mining with the assistance of a local consulting agronomist and the occupying farmer. The agronomist's services will be retained for regular inspections of rehabilitation crops, review of the company's monitoring data, and provision of remedial activity advice. Remedial activities may include application of additional or different fertilisers, crop spraying, and varying seeding parameters (depth, density, etc.).

The results of crop monitoring will be presented annually in WA Kaolin's Annual Environmental Report.

11.1.4 Water

Piezometer bores will be established at the mine-site prior to the commencement of mining. Routine monitoring of the bores for water quality and level will be conducted before, during, and after mining activities. Any surface water sources (e.g. farm dams) which may collect run-off from disturbed areas will also be monitored for water quality before, during and post-mining. Data from bore and surface water monitoring will be reported in Annual Environmental Reports and to the DER. Monitoring and reporting will continue for the first three years of rehabilitation for any particular area (taking into account progressive rehabilitation).

At the Wedin site and prior to commencement of construction activities, piezometer bores will be established around the site and along the intermittent watercourse which runs past the site. Routine monitoring of the bores for water quality and level will be conducted before, during, and after mineral processing operations at the site. Any surface water sources (e.g. farm dams and the intermittent watercourse) which may collect run-off from disturbed areas will also be monitored for water quality before, during and post-mineral processing activities. The intermittent watercourse will be monitored both up-stream and down-stream of the mineral processing plant. Data from bore and surface water

monitoring will be reported in Annual Environmental Reports and to the DER. Monitoring and reporting will continue for the first three years of rehabilitation.

Any water quality assays or levels which are unexpected or outside of the normal range of pre-mining values will be referred to a consultant hydrologist for further investigation.

11.2 Native Vegetation

Visual inspections of any areas of native vegetation rehabilitation will be conducted routinely by rehabilitation staff to assess the success of rehabilitation and determine when maintenance activities are required. The only areas of native vegetation expected to be disturbed by the project are narrow areas of road-side remnant vegetation, and wind-break plantings along farm fence lines.

Photographic monitoring sites will be established at the locations where most disturbance is likely to take place. These sites will be established and recorded prior to disturbance, so that evidence of the baseline condition of the sites is recorded.

Photographic monitoring will be conducted annually during spring and will include the recording of native and introduced species present within the photo frames. Evidence of damage by pests will also be recorded.

Monitoring will occur in two phases; during rehabilitation following construction activities (e.g. pipeline laying and rail siding construction), and during rehabilitation following project closure activities. In both cases the monitoring will be conducted annually in the first three years of rehabilitation. Following this, monitoring is likely to be decreased to intervals of 2-3 years or more in consultation with the DER.

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12 Management of Information and Data

The details of company procedures and responsibilities for the management of mine closure information and data collection and storage will be determined during the final project design and execution phase.

The implementation and monitoring of the progressive and final closure rehabilitation of the company's sites and the requirement to provide regular reports on these activities to key stakeholders will necessitate and facilitate regular documentation. Specific personnel within the operational staff will be given the task of collecting and maintaining a range of data sets and ensuring that these can be provided at any time to regulatory authorities if required.

Data sets to be maintained throughout the life of the project will include (but are not limited to):

- Pre-mining topographic surveys
- Pre-mining environmental data (including soil assays and profiles, flora and fauna registers, photographs and plans, hydrology and hydrogeology data, crop yields)
- Drill-hole databases (exploration and mine planning)
- Progressive mine topographic surveys
- Rehabilitated land topographic surveys
- Rehabilitation activities as well as specifics of those activities (topsoil stockpiling, soil spreading, ripping, fertilizing, spraying, seeding or planting, mulching, rehabilitation trial plots)
- Rehabilitation monitoring activities (pre- and post-mining soil profile and assays, crop growth, crop harvesting and yield measurement, weeds, insect and fungal pests, native vegetation growth and diversity, photographic records)
- Atmospheric monitoring (dust, weather)
- Water (surface and sub-surface) level and quality
- Infrastructure location survey data (e.g. buried services)
- Plant emissions (quantity and assay). This applies to streams such as sand and clay rejects going to backfill, diesel consumption in mobile and fixed plant, and exhaust gas streams from mineral dryers.
- Final closure event burial locations for clean bulk materials
- Technical reports (internal and external, including AERs)
- Environmental regulator (e.g. DER, DMP) and other stakeholder correspondence

The data sets will be electronic and divided into areas to enable efficient compiling of data for reporting (e.g., mine pits and backfill, temporary stockpiles, plant and infrastructure, external environment). All data will be linked to a GIS software package. Consideration will be given to the use of commercial software packages such as Outback Ecology's "Progressive Rehabilitation and Closure (PRAC)" GIS system.

Data security (e.g. back-up data sets) will be implemented in accordance with good information technology practices.

Appendix 2.

2020 WA KAOLIN PROJECT - MINE CLOSURE PLAN

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WA Kaolin Project

(Revised) Mine Closure Plan – Revised 2020

Version 1

Document ID: WAK/MCP/2

Date of Submission:17 July 2020

Mineral Field Number: 70 South West

Company: WA Kaolin Ltd

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Tenements:

M70/1143 (Mine site and initial process plants)

G70/251 (Final Process Plant)

L70/156 (Pipeline easement between mine site and final process plant)

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TABLE OF CONTENTS

Page No.

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MINE CLOSURE PLAN (REVISED)
WA KAOLIN PROJECT
WICKEPIN WESTERN AUSTRALIA

1. SCOPE AND PURPOSE

The WA Kaolin Project Mine Closure Plan (MCP) has been prepared in accordance with Mining Lease Tenement M70/1143 Condition 12 which requires the MCP included in the approved 2015 Mining Proposal for the WA Kaolin Project (WA Kaolin, 2015) (Document ID: WAK/MP/1) to be updated and the revised MCP submitted to the Department of Mines, Industry Regulation and Safety (DMIRS) in 2020.

Since 2015 there has been no activity at the WA Kaolin Project site (site) other than three small mining campaigns to extract 4-5000 tonnes(t) of kaolinite ore, each lasting two weeks. These campaigns were conducted in December 2016, July 2017 and June 2019 during which WA Kaolin supervised contractors to extract the ore which was stockpiled on site and was progressively transferred to the Kwinana Pilot Plant facility for processing. In July 2020, a three week campaign commenced with the intent to extract 15,000t kaolinite ore to be stockpiled on site. Due to the small scale, intermittent and infrequent level of activity conducted to date on the Project, there is a lack of additional detail and information available to include in the revised Mine Closure Plan. The MCP will be progressively updated as planning and development in the feasibility of the Project progresses and the revised and updated MCPs will be submitted accordingly.

The DMIRS *Statutory Guidelines for Mine Closure Plans* and the *Mine Closure Plan Guidance-How to Prepare in accordance with Part 1 of the Statutory Guidelines for Mine Closure Plans* (DMIRS, March 2020a;b)) have been followed in the preparation of this Revised MCP to meet regulatory requirements for a project in planning and development phase.

The DMIRS stated objective for rehabilitation and closure is that mining activities are rehabilitated and closed in a manner to make them physically safe to humans and animals, geo technically stable, geo chemically non- polluting/non contaminating, and capable of sustaining and agreed post- mining land use without unacceptable liability to the State (DMIRS, March 2020b).

DMIRS recognises that closure planning is a progressive process and the level of information required is reflective of the stage of mine development. This MCP provides the closure information for the current knowledge for early stage of development of the Project.

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2. GLOSSARY

2.1 DEFINTIONS

Care and Maintenance (Temporary Closure): Phase following temporary cessation of operations when infrastructure remains intact and the site continues to be managed. Operations are suspended and the site is maintained and monitored.

Closure: The process of withdrawing from an operation and meeting business policies, and community and Government obligations associated with ceasing production. It is a whole of mine life process, which typically culminates in the completion of all obligations, under the WA Mining Act 1978, and then tenement relinquishment. Closure includes decommissioning and rehabilitation.

Closure Outcomes: Required outcomes that will allow return of disturbed areas land to a safe, stable, non- polluting/non contaminating landform in an ecologically sustainable manner that is productive and/or self-sustaining and is consistent with the agreed post-mining land use.

Closure Plan: Detailed document that describes the operation's vision for closure and the preferred closure option. The Plan sets out the final land use objectives for the site (or subsets of the site) and the activities required to achieve those objectives.

Closure Planning: Term used to cover all aspects of planning for an operation's closure including undertaking the closure study, defining the closure strategy, and preparing the Mine Closure Plan.

Closure Strategy*:* Conceptual strategy that promotes a consolidated multi-disciplinary approach to decommissioning and closure. The development of the Strategy is a process whereby decommissioning and closure are evaluated and documented. The Closure Strategy is to be endorsed by the business's senior management and used as the basis for closure planning.

Completion: The goal of mine closure, a completed mine has reached the state where mining lease ownership can be relinquished and responsibility accepted by the next land user.

Completion Criteria: an agreed standard or level of performance that demonstrates successful closure of a site.

Decommissioning: A process that begins near, or at, the cessation of mineral production and ends with removal of all unwanted infrastructure and services.

Final (Closure) Land Use: The agreed **post-mining land use** (may be mandated or an agreed land use).

Life of Mine: Expected duration of mining and processing operations.

Objective: overall goal, arising from the policy that an organisation sets itself to achieve, and which is quantified where practicable.

Premature Closure (Unexpected Closure): Early closure of the mine site prior to the completion of the Life of Mine Plan.

Rehabilitation: The return of disturbed land to a safe, stable, non- polluting/non contaminating landform in an ecologically sustainable manner that is productive and/or self-sustaining and is consistent with the agreed post-mining land use.

Relinquishment: surrender of the lease area once completion criteria for the site have been met to the satisfaction of the regulatory authorities.

Risk: the likelihood of a hazard being realised in a given time frame. Usually expressed as the probability of hazard (undesirable outcome), being realised resulting in incidents, injury or impacts. It also often includes the consequences of the specified hazardous event.

Risk Assessment: the detailed evaluation using qualitative and quantitative methods, as appropriate, of risks with the objective of determining risk levels, priorities for risk reduction and effectiveness of risk reduction options.

Stakeholders: A person, group or organisation with an interest in a particular decision , either as individuals or representing a group, with the potential to influence or be affected by the process of, or outcome of, mine closure.

2.2 ACRONYMS

DEC	Department of Environment and Conservation
DMP	Department of Mines and Petroleum
DoE	Department of Environment
DoIR	Department of Industry and Resources
DWER	Department of Water and Environment Regulation
ha	hectare
km	kilometre
MCP	Mine Closure Plan
ML	Mining Lease
PCRA	Preliminary Closure Risk Assessment
t	tonne
TEC	Threatened Ecological Community
tpa	tonnes per annum
WAK	WA Kaolin

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3. PROJECT SUMMARY

WA Kaolin Holdings Pty Ltd (WAK) is proposing to construct and operate a kaolin mine and processing plant, the WA Kaolin Project (project) located in the Shire of Wickepin in the southern wheat-belt of Western Australia (Plate 1). The mine site is located within Mining Lease M70/1143. The Site Plan of the Project and Satellite Imagery of the site is provided in Appendix A.

WAK has operated a small-scale kaolin mine on the lease, and a processing plant in the Kwinana Industrial zone to provide product for testing and evaluation. There are currently two small scale mine pits at the site as shown on Plate 2. The WA Kaolin Project (Project) aims to produce up to 360,000 tonnes(t) of kaolin product per annum (pa).

Plate 1 Regional Location

Plate 2 Imagery of the Curent Small Pits

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The mining process will involve soil stripping by scraper on a campaign basis, and overburden and ore extraction by excavator and articulated mining truck in a box-cut mining operation. No drilling, blasting or crushing will be required to extract the ore. The typical depth of mining will be around 20 to 30m below the surface with a maximum depth of 35m. Mining operations would disturb approximately three hectares (ha) of land each year.

Approximately 1,250,000 tpa of material will be mined to produce up to 360,000 tpa of kaolinite product. The proven ore reserve on ML70/1143 is 112 Mt therefore, the kaolin reserves at the mine site are sufficient for a mine life in excess of 100 years at the proposed level of production. The current mine plan allows for around 31 years of operation. All mining will occur well above the water table and no pit de-watering will be required other than removal of direct rainfall. The natural moisture level of the weathered granite is between 12 and 18% by weight and has a low potential for generating dust.

Haul roads will be constructed using laterite gravel and washed tailings sand to create a well-drained and hard-wearing surface. The roads will be watered regularly and treated with dust suppression agents (binders).

The initial processing of the ore will be conducted at the mine site with further processing conducted at a location adjacent to the Wedin railway siding, approximately 18km south of the mine-site (Figure 3). The process plant site is located on General Purpose Licence G70/251.

The Project will produce kaolin of two different specifications. Around 600,000 tpa of the ore will be de-gritted at the mine site to separate the valuable clay from the host material to produce 99% kaolin. This beneficiated ore will be packaged in bulka bags and trucked either directly to Kwinana or Fremantle for shipping or to the rail siding at Wedin for rail transport. The process plant at the mine site will comprise:

- Stockpiles for approximately 20,000 t of ore.
- Process lines.
- Tanks for storage of recycled water.
- Bunded diesel storage tank and bowser.
- De-gritting plant.
- Store shed and site office.

The remaining 260,000 tpa of kaolin will be pumped at a later date as a low density slurry through an 18km pipeline located on Miscellaneous Licence 70/156 to the Wedin Rail Siding where it will be further processed, packaged, stored and then loaded onto rail.

At the Wedin site the slurry will pass through classification centrifuges that will separate the fine and coarse clay, which will be de-watered and then the thickened slurries rinsed and further de- watered in a cake press. Some of the damp kaolin filter cake will be treated further to optimize particle size and viscosity and then granulated and dried. Both filter cake and granules will be packaged and stored in bulk bags and ISO shipping containers prior to loading onto rail wagons for haulage to Kwinana. The storage area will hold up to approximately 10,000 tonnes of product.

Other facilities at the Wedin site will include:

- A container handling yard.
- Bunded diesel and chemical stores.
- Workshop and spare parts store.
- Storm water run-off collection pond and pump system.
- Administration and amenities buildings.

- Communication tower.

Fresh process water will be delivered to the Wedin plant via a buried pipeline from an existing Water Corporation main located approximately 7 km west of the site. Water from de-watering and pressing operations will be recycled through a pipeline to the de-gritting plant for re use. Water pumped from the mine process plant to the Wedin site is returned for re-use through a second pipeline from the Wedin site

The Project will involve truck transport of the 360,000 tpa of beneficiated kaolin from the mine site and periodic delivery of minor process requirements. The beneficiated kaolin will be packaged in bulk bags and placed in shipping containers at the mine site. This product either will be transported by road to the Wedin rail siding for loading onto trains or will be transported by trucks directly to Kwinana. In the latter case, the estimated number of truck movements each day is 10 to 15 each way. It is likely however, that the transport will not be continuous but will be timed with ship loading requirements. In this case, the number of loads per day will be more than this average but there will also be periods when there will be no truck movements. Transport of products from the Wedin site is expected to involve two train movements a day (one arrival and one departure) over a period of about seven days per month.

Washed sand tails will be returned to the pit and then covered with overburden and topsoil to recreate the original stratigraphy and to allow re-use for agricultural purposes. Some clay rich material will be included in the soil layers to improve retention of water and fertilizer in the rehabilitated areas

The mine pit will be backfilled with reject soils and clay, finished with topsoil and returned to cropping on a continuous basis as mining progresses. This process will be completed prior to mine closure and all plant, buildings and infrastructure will be removed from both sites and returned to a condition that allows farming to resume

The Project area is sparsely populated with isolated farmhouses with the nearest home to the mine site is 2.8km south-west. The nearest residence to the Wedin site is about 2.8km to the south-east.

The project will provide a significant boost to local economies and is expected to employ between 60 and 80 people most of who are expected to live either in the Shire of Wickepin or the Shire of Narrogin.

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4. CLOSURE OBLIGATIONS AND COMMITMENTS

4.1 APPROVALS AND PERMITS

WAKaolin has obtained various approvals to operate a mine and a process plant in the Wickepin area with a capacity to produce 360,000t of kaolin each year. These are shown in Table 1.

Table 1
Summary of Project Approvals

Regulator	Type	Premise Location	Number	Issue Date	Expiry Date
Dept of Environment (DoE)	Works Approval	Pilot Plant East Rockingham	W4147/2005/1	2/8/2005	
Dept of Environment and Conservation (DEC)	Plant Site Registration	Pilot Plant East Rockingham	R1/2008/1	29/5/2008	
DEC	Mining Proposal	Sparks Mine M70/1143 Wickepin	10.1	30/5/2008	
Dept of Environment Regulation (DER)	Works Approval	Kaolin Mine and Process Plan Wickepin	W5443/2013/1	20/2/2014	23/2/2019
Dept of Water Environment Regulation (DWER)	Works Approval Amendment Notice 1 – Expiry Date	Kaolin Mine and Process Plan Wickepin	W5443/2013/1	15/2/2019	15/2/2023
Dept Mines and Petroleum (DMP)	Mining Proposal	20,000tpa Sparks Mine Lease 2008			
DMP	Mining Proposal	20,000tpa Sparks Mine Lease (Entrance Rd Revision) 2009			
DMP	Mining Proposal with MCP	Kaolin Project G70/251 L70/156 M70/1143	ID 50959	21/1/2015	
Dept Mines Industry, Regulation and Safety (DMIRS)	Project Management Plan	Sparks Mine	PM-851-265611		
Shire of Wickepin	Mining Proposal Endorsement	Sparks Mine Site M 70/1143	200-XR-001 File 801	22/5/2008	
Shire of Wickepin	Planning Approval	Mineral Extraction Loc 13898 Loc 14941	File 10.23	19/4/2007	
Shire of Wickepin	Planning Approval	Williams Location 7495	200-GR-993 Ref 700	29/4/2010	29/4/2012
Shire of Wickepin	Extension to Planning Approval	WA Kaolin Lot 14431 Sparks Road Narrogin	DAP/14/000685	15/1/2019	15/1/2021
Darryl Helms	Land Use and Rehabilitation Plan Agreement	Initial Mining Proposal Area	Doc- 200-XR-001	16/6/2008	
Robyn Sparks	Land Access Agreement	Initial Mining Proposal Area		30/6/2008	

The 2019 Shire of Wickepin Planning Approval (DAP/14/000685) for the extension application has included the following conditions in relation to rehabilitation and closure (Shire of Wickepin, 2019):

1. Prior to application for a building permit a landscaping/vegetation plan for each site is to be submitted to and approved by the Shire; the landscaping plan is to be implemented and the landscaping maintained throughout the life of the development to the satisfaction of the Shire.
2. Prior to application for a building permit the applicant is to submit the following for the approval of the Shire:
    a. An environmental management plan for the development to the satisfaction of the Shire; and
    b. A Site Rehabilitation Plan for the subject sites to the satisfaction of the Shire.

Note 8 In regards to conditions 1 and 2 above these documents are to be submitted to the Shire before the end of the planning approval extension period and any further extension will require further consideration by the Shire in fulfilling these conditions prior to the submission of the Building permit.

4.2 WORKS APPROVAL

The Project was granted Works Approval (W5443/2013/1) by the Department of Environment Regulation (DER) under Part V of the *Environmental Protection Act 1986,* originally in February 2014 and most recently by Department of Water and Environment Regulation (DWER) for the Works Approval application submitted in February 2019. The closure related commitments from the 2013 Works Approval Applications are summarised in the closure activities outlined in the Closure Implementation section (Section 10)

There are no conditions specifically relating to closure of the facilities in the Works Approval (W5443/2013/1).

4.3 MINING PROPOSAL

Approval for the Mining Proposals submitted in 208 and 2009 (WA Kaolin, 2008;2009) was initially granted in 2008 2009 by the Department of Mines and Petroleum (DMP) Additional approval was granted following the submission of a revised Mining Proposal to the DMP in January 2015 (WA Kaolin, 2015). The Mining Proposal included descriptions of the mining and associated activities, including rehabilitation and closure, on Mining Lease (M) 70/1143, Miscellaneous Licence (L) 70/156 and General Purpose Lease (G) 70/251. G70/251 relates to the adjacent properties and the railway at the Wedin site. L 70/156 relates to the pipeline corridor on adjacent properties to the Wedin site. The closure related commitments from the 2015 Mining Proposal are summarised in the closure activities outlined in the Closure Implementation section (Section 10)

A Mine Closure Plan was also submitted to the DMP with the 2015 Mining Proposal. WAK was notified by the DMP that these documents satisfied the original approval conditions for M 70/1143, L70/156 and G70/251. Additional conditions were imposed on the tenements following the review of the 2015 Mining Proposal and Mine Closure Plan (DMP, Letter dated 21 January 2015). The current tenement conditions imposed by the current Department Mines Industry Regulation and Safety (DMIRS) specifically relating to Closure are listed in Table 2

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Table 2
DMIRS Tenement Closure Related Conditions

Tenement No.	Condition Number	Closure Related Condition
M 70/1143	3	All costeans and other disturbances to the surface of the land made as a result of exploration, including drill pads, grid lines and access tracks, being backfilled and rehabilitated to the satisfaction of the Environmental Officer, Department of Industry and Resources (DoIR). Backfilling and rehabilitation being required no later than 6 months after excavation unless otherwise approved in writing by the Environmental Officer, DoIR.
	4	All waste materials, rubbish, plastic sample bags, abandoned equipment and temporary buildings being removed from the mining tenement prior to or at the termination of exploration program.
	8	The construction and operation of the project and measures to protect the environment being carried out generally in accordance with the document titled: • "5,000T Ceramics Trial Low Impact Mining Operations (MP20919)" dated 26 November 2008 signed by Michael Ingram and retained on Department of Mines and Petroleum File No. E0046/200901; • (Reg ID 45705) "Wickepin Kaolin Project – Small Operations Mine Closure Plan" dated 19 May 2014 signed by Mr Andrew Sorensen and retained on Department of Mines and Petroleum File No. EARS-MCP-45385; • (MP Reg ID 50959) "Mining Proposal – Revised Version #1 – WA Kaolin Project – Mining of Kaolin Clay and production of 360,000tpa kaolin products at locations in the Shire of Wickepin – 5 January 2015" dated 5 January signed by Alf Baker and retained on Department of Mines and Petroleum File No. EARS-MPMCP-50959 as Doc ID 3358794; • (MCP Reg ID 50959) "WA Kaolin Project – Mining Closure Plan – Revised – Version 1" dated 5 January 2015 signed by Alf Baker and retained on Department of Mines and Petroleum File No. EARS-MPMCP-50959 as Doc ID 3358794. Where a difference exists between the above document(s) and the following conditions, then the following conditions shall prevail.
	9	The development and operation of the project being carried out in such a manner so as to create the minimum practicable disturbance to the existing vegetation and natural landform.
	10	All topsoil being removed ahead of all mining operations from sites such as pit areas, waste disposal areas, ore stockpile areas, pipeline, haul roads and new access roads and being stockpiled for later respreading or immediately respread as rehabilitation progresses.
	12	A Mine Closure Plan is to be submitted in the Annual Environmental Reporting month specified in tenement conditions in the year specified below, unless otherwise directed by an Environmental Officer, DMP. The Mine Closure Plan is to be prepared in accordance with the "Guidelines for Preparing Mine Closure Plans" available on DMP's website: 2020
	14	At the completion of operations, all buildings and structures being removed from site or demolished and buried to the satisfaction of the Executive Director, Environment Division, DMP.
	15	All rubbish and scrap is to be progressively disposed of in a suitable manner.

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Table 2 (Contd)
DMIRS Tenement Closure Related Conditions

M 70/1143	18	On the completion of operations or progressively when possible, all waste dumps, tailings storage facilities, stockpiles or other mining related landforms must be rehabilitated to form safe, stable, non-polluting structures which are integrated with the surrounding landscape and support self sustaining, functional ecosystems comprising suitable, local provenance species or alternative agreed outcome to the satisfaction of the Executive Director, Environment Division, DMP
G 70/251	13	The construction and operation of the project and measures to protect the environment to be carried out in accordance with the document titled: • (MP Reg ID 50959) "Mining Proposal - Revised Version #1 - WA Kaolin Project - Mining of Kaolin Clay and production of 360,000tpa kaolin products at locations in the Shire of Wickepin - 5 January 2015" dated 5 January signed by Alf Baker and retained on Department of Mines and Petroleum File No. EARS-MPMCP-50959 as Doc ID 3358794; • (MCP Reg ID 50959) "WA Kaolin Project - Mining Closure Plan - Revised - Version 1" dated 5 January 2015 signed by Alf Baker and retained on Department of Mines and Petroleum File No. EARS-MPMCP-50959 as Doc ID 3358794. Where a difference exists between the above document(s) and the following conditions, then the following conditions shall prevail.
	15	The development and operation of the project being carried out in such a manner so as to create the minimum practicable disturbance to the existing vegetation and natural landform.
	16	All topsoil and vegetation being removed ahead of all mining operations and being stockpiled for later respreading or immediately respread as rehabilitation progresses.
	17	At the completion of operations, all buildings and structures being removed from site or demolished and buried to the satisfaction of the Executive Director, Environment Division, DMP.
	18	All rubbish and scrap is to be progressively disposed of in a suitable manner.
	21	On the completion of operations or progressively when possible, all waste dumps, tailings storage facilities, stockpiles or other mining related landforms must be rehabilitated to form safe, stable, non-polluting structures which are integrated with the surrounding landscape and support self sustaining, functional ecosystems comprising suitable, local provenance species or alternative agreed outcome to the satisfaction of the Executive Director, Environment Division, DMP.
	22	A Mine Closure Plan is to be submitted in the Annual Environmental Reporting month specified in tenement conditions in the year specified below, unless otherwise directed by an Environmental Officer, DMP. The Mine Closure Plan is to be prepared in accordance with the "Guidelines for Preparing Mine Closure Plans, June 2011" available on DMP's website: 2020 *(Note reference to and date of Guidelines now out of date)*
L70/156	4	All topsoil that may be removed ahead of pipelaying operations to be stockpiled for replacement in accordance with the directions of the Environmental Officer, Department of Mines and Petroleum.

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Table 2 (Contd)
DMIRS Tenement Closure Related Conditions

	6	On the completion of the life of mining operations in connection with this licence the holder shall: • remove all installations constructed pursuant to this licence; and • on such areas cleared of natural growth by the holder or any of its agents, the holder shall plant trees and/or shrubs and/or any other plant as shall conform to the general pattern and type of growth in the area and as directed by the Environmental Officer, Department of Mines and Petroleum and properly maintain same until the Environmental Officer advises regrowth is self supporting; unless the Minister responsible for the Mining Act 1978 orders or consents otherwise.
	16	The construction and operation of the project and measures to protect the environment to be carried out in accordance with the document titled: • (MP Reg ID 50959) "Mining Proposal - Revised Version #1 - WA Kaolin Project - Mining of Kaolin Clay and production of 360,000tpa kaolin products at locations in the Shire of Wickepin - 5 January 2015" dated 5 January signed by Alf Baker and retained on Department of Mines and Petroleum File No. EARS-MPMCP-50959 as Doc ID 3358794; • (MCP Reg ID 50959) "WA Kaolin Project - Mining Closure Plan - Revised - Version 1" dated 5 January 2015 signed by Alf Baker and retained on Department of Mines and Petroleum File No. EARS-MPMCP-50959 as Doc ID 3358794. Where a difference exists between the above document(s) and the following conditions, then the following conditions shall prevail.
	18	The development and operation of the project being carried out in such a manner so as to create the minimum practicable disturbance to the existing vegetation and natural landform.
	19	All topsoil and vegetation being removed ahead of all mining operations and being stockpiled for later respreading or immediately respread as rehabilitation progresses.
	20	At the completion of operations, all buildings and structures being removed from site or demolished and buried to the satisfaction of the Executive Director, Environment Division, DMP.
	21	All rubbish and scrap is to be progressively disposed of in a suitable manner.
	24	On the completion of operations or progressively when possible, all waste dumps, tailings storage facilities, stockpiles or other mining related landforms must be rehabilitated to form safe, stable, non-polluting structures which are integrated with the surrounding landscape and support self sustaining, functional ecosystems comprising suitable, local provenance species or alternative agreed outcome to the satisfaction of the Executive Director, Environment Division, DMP.
	26	A Mine Closure Plan is to be submitted in the Annual Environmental Reporting month specified in tenement conditions in the year specified below, unless otherwise directed by an Environmental Officer, DMP. The Mine Closure Plan is to be prepared in accordance with the "Guidelines for Preparing Mine Closure Plans, June 2011" available on DMP's website: 2020. *(Note reference to and date of DMP Guidelines now out of date)*

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5. STAKEHOLDER CONSULTATION

5.1 GENERAL

During the approval application processes for Mining, Works Approval and Planning and Development Approvals extensive consultation was undertaken with Government agencies, the Shire of Wickepin and through the public review process. Company representatives consult with local landowners on a regular both as a courtesy and in order to obtain formal consent for project infrastructure on their properties. The Company attended a public meeting organized by the Shire of Wickepin specifically to discuss the Project.

5.2 IDENTIFICATION OF STAKEHOLDERS

WAK recognises the importance of consulting with stakeholders in the mine closure planning process. A preliminary list of current stakeholders is as follows:

State Government
- Department of Water and Environment Regulation
- Department of Mines, Industry Regulation and Safety
- Department of Transport

Local Government
- Shire of Wickepin
- Shire of Narrogin
- Town of Narrogin

Non-Government Organisations and Individuals
- WAMCO Industries Group companies and shareholders (owner of the project and properties on which the mine and process plants are located)
- Mine-site
  - Lot 14431 lease tenant (at present Helms)
  - G&D Sims (Lot 14431 currently immediate neighbours)
- Pipeline Route
  - Other existing landowners and occupiers (Easton, Gray, T Bayley, Miller, Thompson, S Bayley)
- Wedin Plant Site
  - Lot 1 and 8798 existing lease tenant and neighbour (Bird)
- Future landowners, tenants and neighbours at the time of closure.

WA Kaolin will consult with the stakeholders during the preparation of the final Mine Closure Plan, which will be prepared at least three years prior to the anticipated date of closure.

5.3 CONSULTATION PLAN

5.3.1 Objectives and Principles

The objective of stakeholder consultation is to ensure that the interests of all stakeholders are considered during the closure planning process.

The principles of stakeholder involvement for the Project will be as follows:

- Identification of stakeholders and interested parties is an important part of the closure process.
- Effective consultation is an inclusive process that encompasses all parties and will occur throughout the life of the Project.

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- The communication strategy will reflect the needs of the stakeholders.
- Adequate resources will be allocated to ensure the effectiveness of the consultation process.
- WA Kaolin will work with stakeholders to manage and minimize the potential impacts of mine closure.

5.3.2 Communication Strategy

The communication strategy for the closure process will include the following:

- WA Kaolin will regularly review the list of stakeholders to ensure that it is up-to-date.
- WA Kaolin will actively consult with stakeholders to develop an understanding of the concerns and issues associated with closure.
- WA Kaolin will maintain responsibility for the outcomes of all consultation performed by company personnel and its consultants.
- Wherever possible, WA Kaolin will maintain continuity in the personnel undertaking the public consultation and interacting with key stakeholders.
- In order to avoid unrealistic demands and expectations from stakeholders, WA Kaolin will be clear and firm in describing the likely or possible outcomes of the closure process.
- WA Kaolin will inform and consult with relevant government agencies regarding the scope of the closure process.
- WA Kaolin will periodically evaluate the consultation process to determine the effectiveness of the process.

5.3.3 Stakeholder Consultation Undertaken and Outcome (Related to Closure)

Over the past 10 years WA Kaolin has periodically updated various stakeholders as to the overall status and plans for the project. This has taken the form of community information sessions, shire council briefings (Wickepin and Narrogin), ministerial level briefings, and individual meetings with affected landowners.

Recent (early 2019) engagement with the Department of Environment Regulation occurred when WA Kaolin lodged (and subsequently was granted) a Works Approval Amendment.

Other consultation activity in mid-2014 included the preparation and lodgement of Planning and Development Applications with the Shire of Wickepin. This process requires that there be a formal public review and comment open to Wickepin ratepayers. No issues were raised regarding rehabilitation and closure activities.

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6. BASELINE AND CLOSURE DATA

6.1 EXISTING ENVIRONMENT

6.1.1 Regional Setting

The Project area is located in the Western Australian Central Whetbealt Region approximately 20km east of Wickepin. The Wedin site is 18km south of the mining area, around 20km east of Wickepin and 7km west of the town of Tincurrin. The Wedin site is adjacent to Line Road and to an existing railway that links to Kwinana.

The Project area is located within the Darling Plateau, which is gently undulating with isolated hills rising to around 50m above the surrounding country. The landform represents a deeply weathered and laterised soil profile which has been eroded into a rolling landscape interrupted by drainage divides that are capped with lateritic soils.

6.1.2 Geology

The kaolin deposits of south west Western Australia are classified as primary deposits formed by *in-situ* weathering of the felsic igneous and metamorphic rocks of the Archaen Yilgarn Shield. The rock types are variable and include coarse porphyritic granite, adamellite, and leucocratic granofels of granitic adamellitic composition.

Much of the region is covered by a lateritic duricrust, which forms a relict peneplain thought to be of Eocene age. The rocks have been deeply weathered, forming an intensely leached, kaolinised zone locate beneath the laterite. Kaolin exposures are common in breakaways around the edges of lateritic uplands and in farm dams. Drilling shows the kaolin zone to vary from Absent to 40m thick with overburden varying from nil to up top 10m thick.

The mineral kaolinite is derived from the alteration of the potash and soda feldspars, and occurs as a matrix between quartz crystals. Textures of the parent rocks are preserved in the kaolin outcrops, showing clearly that the deposits are formed by in situ weathering rather than sedimentation. The depth to granite varies from 15 to 44m,

Information on the geology of the mine site has been collected during extensive drilling programs to determine the extent and quality of the kaolin deposits and to provide the necessary data for mine planning. Intensive drilling of the deposits at the site will occur during project implementation and as the project proceeds, which will provide substantial information on the geology, soil profile and groundwater occurring on ML70/1143.

6.1.3 Soil Profile

A typical soil profile at the mine site comprises soil and laterite overburden to a depth of 1m then mottled iron stained clays to a depth of 3m. The kaolin deposit extends from 3m to 20m depth and in places to at least 40m. The clay deposits are underlain by saprolite. Further site specific data on the surface soils will be collected during drilling programs for mine planning purposes.

These data will provide input to the development of alternative soil profiles for trial plots that will be established to examine and improve crop productivity following rehabilitation. A consultant agronomist will be employed during project operations to design, implement and report on these trials and to assess the actual crop production on rehabilitated areas.

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6.1.4 Hydrogeology

Groundwater in the region occurs within the weathered granite profile in fractured rock and Tertiary paleochannel. Depth to water in the region varies from near ground level to a maximum of around 30m with flow directions generally towards major valleys. Groundwater flow is expected to broadly coincide with the surface water flow divide which is towards the north west in the north of the project area, and to the south west and Lake Tooliban in the south. Groundwater quality is highly variable in the weathered and fractured granite but is generally brackish to saline, and is not considered to be a significant groundwater aquifer source (D&M, 1995).

Groundwater has not been detected during exploration drilling and excavation at the Project mine site. No drilling has occurred at the Wedin site so it is therefore not known whether any groundwater is present.

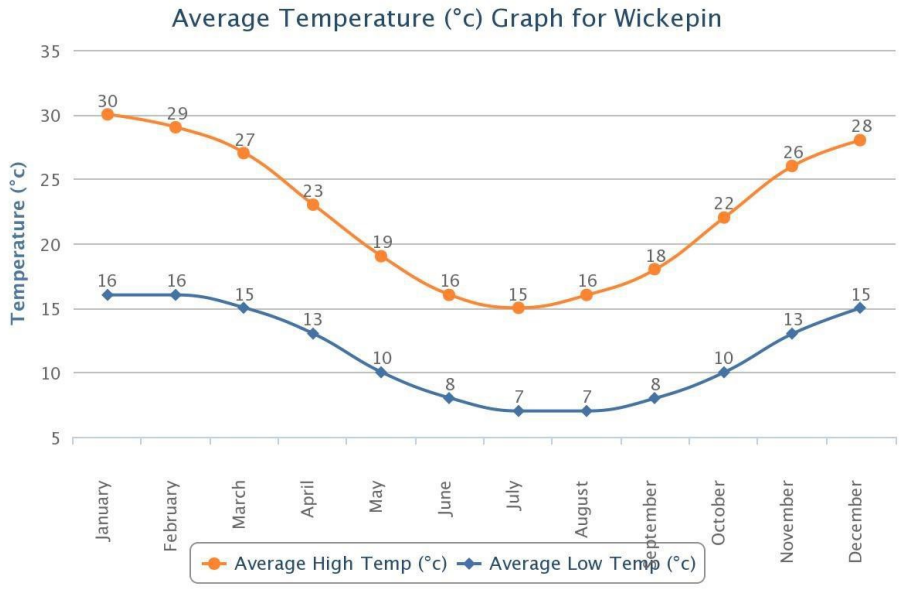
6.1.5 Surface Hydrology

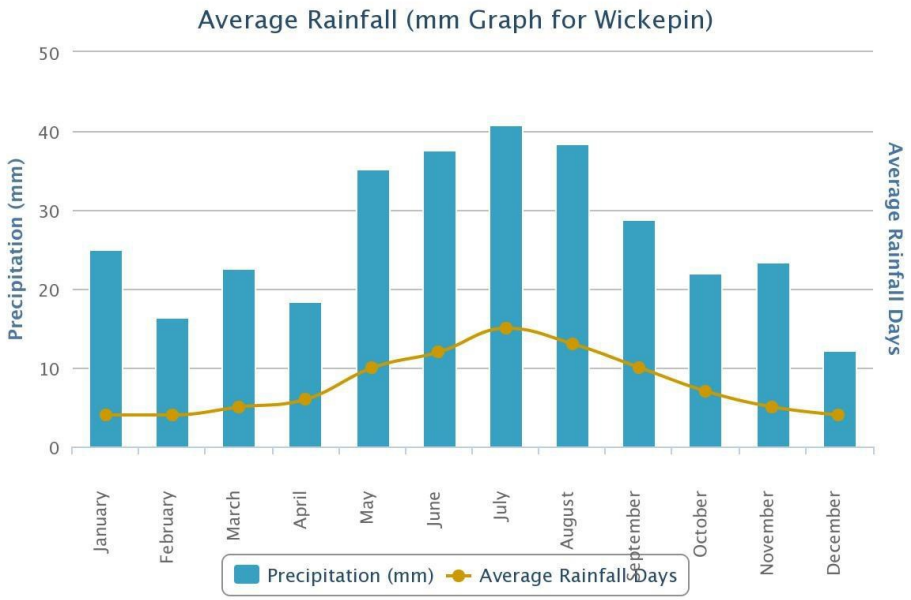
The terrain of the mining area is relatively flat which is drained by a network of intermittent streams. There is no surface water flow in the area of the mine as the surficial sands are highly permeable.

A natural drainage channel is present on the Wedin site which contains intermittent surface flows. This channel will be retained and pre-existing flow rates into and from the site will be maintained.

6.1.6 Climate

Climatic data are collected at the nearby regional locations at Wickepin and Narrogin, with Wickepin being the closest. Typical monthly temperature and rainfall averages for Wickepin are shown in the diagrams below.





6.1.7 Vegetation. Flora and Fauna

The Project area is within the southern portion of the Corrigin Vegetation Systems of the Avon Botanical District within the South West Botanical Province. The Corrigin System has a typical wheatbelt landscape and lies between the Pingelly and Narrogin systems to the west, the Pikaring System to the north, the Hyden and Muntadgin Systems to the east and the Dumbleyung System to the south (D&M, 1995).

The Project areas (mine-site and Wedin) have for many years been used for agricultural production (cropping and grazing). Virtually all native vegetation has been removed from the areas that will be disturbed by the Project and consequently there are no significant flora or fauna habitats. There is a small area of disturbed woodland on the mine-site and there also is a Remnant Vegetation Protection Area adjacent to Lot 1443 where the mine site is located. These areas of vegetation will not be affected by the mining operations.

The Wedin site (Lot 8798) includes about 40ha of remnant vegetation that is contiguous with a larger area of vegetation on adjacent locations that include Reserve E11286 for Camping and Water Reserve E19839. The proposed facilities will not require clearance of any of the remnant vegetation on the property. This vegetation will be enclosed with a fence to minimize the potential for accidental damage.

6.1.8 Nature Reserve

The mine site and the Wedin site are located within the buffer zones of the Toolibin Reserves Threatened Ecologic Community (TEC). This TEC includes Toolibin Lake which is a wetland of international significance under the RAMSAR Convention. However the Project sites are far from the Lake. There is no natural surface run-off from the mine-site and drainage management at the site will ensure that there is no run-off during operations. None of the proposed operations will affect groundwater, therefore there effectively is no risk of the Project affecting the TEC.

6.1.9 Social Environment

The Project area is sparsely populated with isolated farmhouses. The nearest house to the mine site is 1.9km to the north-east, which is owned by WAKaolin. The nearest residence to the Wedin site is about 2.8km to the south-east.

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6.2 COLLECTION OF ENVIRONMENTAL DATA DURING PROJECT OPERATIONS

Environmental data will be collected throughout the life of the Project in order to ensure compliance with regulations and conditions, to monitor environmental performance, and to determine the need for, and requirements of, management intervention designed to ensure the achievement of environmental objectives. The data also will assist in the refinement of closure objectives and completion criteria and demonstrate that the closure outcomes and goals are achievable. The type of data that will be collected is described below and additional information is provided in Section 10.1

6.2.1 Soils

Further site-specific data on the surface soils will be collected during drilling programmes for mine planning purposes. These data will provide input to the development of alternative soil profiles for trial plots that will be established to examine and improve crop productivity following rehabilitation. consultant agronomist will be employed to design, implement and report on these trials and to assess the actual crop production on rehabilitated areas.

This program will ensure that the agricultural productivity of the mined areas is proven long before mine closure. The program will be continued for a period after mine closure if required but it is anticipated the long-term viability of the mined areas will be established many years prior to closure.

6.2.2 Groundwater and Surface Water

Piezometer bores will be established at the mine-site prior to the commencement of mining. Routine monitoring of the bores for water quality and level will be conducted before, during, and for a period after mining activities. Any surface water sources (e.g. farm dams) which may collect run-off from disturbed areas will also be monitored for water quality before, during and post-mining. Data from bore and surface water monitoring will be reported in Annual Environmental Reports to DMIRS and to the DWER.

Prior to commencement of construction activities at Wedin, piezometer bores will be established around the site and along the intermittent watercourse which runs through the location to the south of the proposed plant. Routine monitoring of the bores for water quality and level will be conducted before, during, and for a period after mineral processing operations at the site. Any surface water sources (e.g. farm dams and the intermittent watercourse) which may collect run-off from disturbed areas will also be monitored for water quality before, during and post-mineral processing activities. The intermittent watercourse will be monitored both up-stream and down-stream of the processing plant. Data from bore and surface water monitoring will be reported in Annual Environmental Reports to DMIRS and to the DWER.

6.3 DATA ANALYSES

The most important objective of the mine closure strategy is the establishment of agricultural uses that have long term viability on all areas that are affected by the project at the mine site and at Wedin. The analysis of data on the growth and productivity of crops that are planted on these sites will be a key component in achieving this objective. A consultant agronomist will be contracted during operations to design, establish, assess and report on this assessment. The analysis of data on pre-mining and replacement soil profiles, climate and hydrology will support the crop assessments.

7. POST-MINING LAND USE

The primary objective of closure of disturbed areas and the mine and processing activities in general is, in consultation with relevant landholders, to return the land profile consistent with the surrounding topography and establish either productive agricultural land or native vegetation considering past land uses.

WA Kaolin plans to return disturbed farmland areas to an agricultural use with at least a comparable agricultural value to that before mining. The planned post mining land use will be to pasture and/or for cereal cropping, which is the pre-mining land use. This objective will be readily achievable with established and conventional restoration and rehabilitation procedures. The return to agricultural production land is acceptable to key stakeholders (DER, Shire of Wickepin and adjacent landowners) and is sustainable.

Any areas of native vegetation disturbed (mainly along the pipeline route) will be re-planted with flora types in accordance with the general pattern and type of growth in the area or other vegetation if preferred by the land owner.

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8. CLOSURE RISK ASSESSMENT

8.1 RISK ASSESSMENT PROCESS

The Statutory Guidelines for Mine Closure Plans (DMIRS, 2020a) require reviewed MCPs to contain an environmental closure risk assessment and provide information on the process and methodologies undertaken for the risk assessment.

WAK follows the *Australian Standard Risk Management - Guidelines AS ISO31000:2018* in conducting its risk assessments. WAK agrees with the Standard that managing risks is part of company governance and leadership and is part of all activities and includes interaction with stakeholders. Risk management at WAK is based on the principles, framework and process outlined in the *AS 31000:2018 Guidelines.*

WAK has commenced risk assessments for its business. The risk assessment process will cover all aspects of the project from development, construction through operation to closure. A Preliminary Closure Risk Assessment (PCRA) has been undertaken as part of the Mine Closure Planning Process to identify the specific closure risks and the current controls that have been committed through the statutory submitted documents. The controlled risks were rated in terms of likelihood and consequence using risk management standard matrices and then ranked in terms or risk level. Additional future controls required at closure were also noted in the preliminary risk assessment. The outcome of the Preliminary Closure Risk Assessment is provided in Table 3

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Table 3
Potential Mine Closure Risks and Controls

Area/Category	Risk	Controls (Operation)	Risk Level from PCRA	Future Controls (Closure)
Whole of Project Area				
Hazardous Materials	Toxic or harmful materials remain on site at closure	Inventory of hazardous materials maintained Areas where hazardous materials stored and used recorded on site plans Appropriate hazardous materials storage systems and handling procedures.	Medium	Removal of all stored hazardous materials from the site upon closure to an appropriate disposal site. Soil sampling in areas where hazardous materials were stored and used to detect any leakages and ground contamination.
Hazardous and Unsafe facilities (Infrastructure)	Hazardous structures or landforms remain at closure	Operations, decommissioning and closure are managed in accordance with the Mines Safety Act and Regulations.	Medium	All building structures removed or made safe if remain as a farming asset Pits all backfilled or batters cut down to angles suitable for agricultural equipment use. Remaining depressions finished as farm dams with appropriate batter angles and fencing Properties are fenced and gated.
Contaminated Sites	Spilt hazardous or non-biodegradable contaminants remain on site at closure	Inventory of potential contaminants maintained. Areas where potential contaminating materials stored and used recorded on site plans. Appropriate materials storage systems and handling procedures	Low	Removal of all stored hazardous materials from the site upon closure to an appropriate disposal site Soil sampling in areas where hazardous materials were stored and used to detect any leakages and ground contamination
Surface water management structures	Surface water management structures are not robust and fail post-closure.	Surface water management structures during mining consist of temporary small shallow dams and perimeter drains to collect rainwater	Low	The small shallow dams and perimeter drains removed. Post-closure surface water management structures consist of appropriately graded farming land surfaces and small below- ground stock (farm) dams Post-closure monitoring of surface water management landforms.

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Table 3 (Contd)
Potential Mine Closure Risks and Controls

Area/Category	Risk	Controls (Operation)	Risk Level from PCRA	Future Controls (Closure)
Dust Emissions	Post-closure landforms and soils are not stable, releasing dust and have susceptibility to wind erosion.	Progressive backfilling and rehabilitation of mined areas. Trial rehabilitation plots. Planting of Tagasaste trees as wind-breaks. Water-spreading on roads and active mine areas. Watering or waste clay slurry spraying to create clay crust seals on non-active mining areas. Paper mulch or clay slurry coating of sandy (e.g. topsoil) stockpiles. Timely (autumn and winter) collection and spreading of topsoil.	Low	Detailed Closure Rehabilitation Plan and Procedures. Post-closure monitoring of soil stability, dust emissions and crop performance.
Visual Intrusion	Post-closure landforms and structures detract from the visual amenity of the area.	Use of topsoil and temporary overburden stockpiles, natural landforms and screening vegetation plantings to reduce the visibility of the operations from public spaces and neighbours. Post-closure monitoring of crop performance, soils, and native vegetation rehabilitation	Low	All above-ground stockpiles will be used for pit backfill, and all structures will be demolished and removed unless formally agreed otherwise with the landowner Final landforms will be similar to the surrounding areas and suitable for broad-acre cropping and grazing.
Social Issues	Closure of the mine and associated business opportunities	Pre-closure planning activities to include community and stakeholder engagement, provision of advanced notice prior to closure and consideration of post-closure alternative uses for mine infrastructure and facilities	Low	Stakeholder Consultation
Land Use	Lack of Agreement on Final Land Use	Proposed land use return to agricultural Landowner agreement letter Final Land Use proposed in MCP submitted to DMIRS	Low	

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Table 3 (Contd)
Potential Mine Closure Risks and Controls

Area/Category	Risk	Controls (Operation)	Risk Level from PCRA	Future Controls (Closure)
Mine Site M70/1143				
Site Access	Access to disturbed area/safety of people and animals	Fenced site Mine Pits backfilled Rehabilitated disturbed areas.	Medium	Fenced site Safety signage Mine Pits backfilled Rehabilitated disturbed areas.
Mine Pit	Instability of Mine Pits/Voids	Progressive Backfilling and Rehabilitation design and procedures	Low	Final Rehabilitation Plan and Procedure
	Formation of Mine Pit Void Lakes	All mining activities are above the water table Collected in-pit water from rainfall will be stored and used for dust suppression. Ongoing surface and groundwater monitoring of level and quality Mining pits are progressively backfilled with plant tailings and overburden Low level of rainfall in the region and lack of catchment area, permanent (year-round) water bodies are unlikely. Point groundwater recharge unlikely due to high clay content of the ground	Low	The final landform will be designed so that any remaining low points which may collect water will be completed as shallow stock (farm) dams, the design and location to be determined in consultation with the occupying farmer. The properties are all fenced and gated Post-closure surface and ground water monitoring (level and quality
Waste Rock Dumps/Stockpiles	Instability of Waste Rock Dumps/Stockpiles	All WRD and Stockpiles removed and used for pit backfill, none remain	Low	All temporary above-ground stockpiles used for backfill in pits Closure and post-closure soil and water monitoring.
	WRD/Stockpile runoff and seepage	All WRD and Stockpiles removed and used for pit backfill, none remain	Low	All temporary above-ground stockpiles used for backfill in pits Closure and post-closure soil and water monitoring.

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Table 3 (Contd)
Potential Mine Closure Risks and Controls

Area/Category	Risk	Controls (Operation)	Risk Level from PCRA	Future Controls (Closure)
Mine Site M70/1143				
Surface and Groundwater	Surface and Groundwater Flow Disruption and Contamination	Mining only takes place above the water table Mining does not intersect any intermittent streams courses. Undisturbed ground is clay rich and has very low permeability Collection of direct precipitation in pits and from disturbed areas using perimeter drains. Collected water is stored for dust suppression uses Ongoing surface and ground water monitoring.	Low	Post-closure surface and ground water monitoring (level and quality).
	Dispersive and sodic materials enter water bodies	Design of backfilled pit landforms to control surface water run-off. Timely planting of suitable cover crops Analysis (testing) for dispersive and sodic materials in top and sub-soil. Creating and monitoring of trial rehabilitation plots. Ongoing monitoring for tunnel and gully erosion"	Low	Design of final pit and plant area landforms to control surface water run-off Post-closure monitoring of landforms for water-based erosion
Plant and Building Infrastructure	Contamination from decommissioning of building infrastructure on mine site	Closure implementation activities	Low	Decommissioning Plan Closure Implementation Plan

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Table 3 (Contd)
Potential Mine Closure Risks and Controls

Area/Category	Risk	Controls (Operation)	Risk Level from PCRA	Future Controls (Closure)
Mine Site M70/1143				
Disturbed Areas	Unsuccessful Rehabilitation	Routine inspections of rehabilitation activities. Regular independent review and reporting of rehabilitation practices and performance. On-going review and improvement of procedures, responsibilities and management for all rehabilitation activities	Medium	Development of a detailed Closure Monitoring and Maintenance Programme. Post-closure monitoring and final reporting activities
Farm Land	Unproductive farming land	Progressive backfilling and rehabilitation activities. Trial plots for alternative soil profiles and rehabilitation practices. Periodic farmer and agronomist review of rehabilitation areas and trial plot performance"	Low	Post-closure monitoring and reporting (farmer and agronomist consultant) of farming land yields and performance.
Plant Site 70/251				
Plant Infrastructure	Safety of decommissioned plant infrastructure	Plant will be removed and disposed of safely an appropriately Only infrastructure remain on site is that formally agreed with landowner	Low	Decommissioning Plan Closure Implementation Plan
	Contamination from decommissioning and removal of plant	Closure implementation activities	Low	Decommissioning Plan Closure Implementation Plan
	Contamination of plant site	Closure implementation activities	Low	Decommissioning Plan Closure Implementation Plan
	Contamination from decommissioning of building infrastructure on process plant site	Closure implementation activities	Low	Decommissioning Plan Closure Implementation Plan

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Area/Category	Risk	Controls (Operation)	Risk Level from PCRA	Future Controls (Closure)
Pipeline Corridor L70/156				
Pipeline	Contaminants from the pipeline enter the environment	Closure implementation activities	Low	Decommissioning Plan Closure Implementation Plan

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9. CLOSURE OUTCOME AND COMPLETION CRITERIA

9.1 CLOSURE OBJECTIVES AND OUTCOME

The principal closure objective is to return the mine site and process plant sites to agricultural use such that they are indistinguishable from surrounding farmlands both visually and in terms of productivity.

The primary objectives for rehabilitation and closure are to achieve:

- A safe, stable and resilient landforms and soils.
- Appropriate hydrology to support rehabilitated habitats.
- Visual amenity and suitability for agreed land use.
- Broad-acre crops of relevance to the landholder and self-sustaining vegetation comprised of local provenance species and agreed targets for vegetation recovery.

The key outcomes to achieve for the various components are outlined in the sections below.

9.1.1 Compliance

- The disturbed mining environment shall be made safe.
- Closure requirements of the regulatory authorities will be met.
- All legally binding conditions and commitments relevant to rehabilitation and closure will be met.

9.1.2 Landforms

- The landform of pit areas after mining and backfilling will be restored to a form similar to that pre-mining, with all areas being graded such that broad-acre cropping is possible with modern large-scale seeding, spraying and harvesting equipment.
- All buried plant tailings and plant closure demolition products buried as part of pit back-fill operations will be non-polluting.
- Any landform depressions which may collect water will be designed as stock dams in consultation with the occupying farmer.
- Final landforms will be stable and no more prone to dust generation than the surrounding farm land.

9.1.3 Revegetation

- Areas of disturbed farmland will be planted as soon as possible with crops such as lupins, in order to stabilise the topsoil and prevent erosion by wind or water. These areas can then re-join adjacent active farming areas in the normal cropping and grazing rotation.
- Consideration will be given to the planting of Tagasaste ('tree lucerne') in farmland locations where visual screening or wind-breaks are required.
- Any areas of native vegetation disturbed (along the pipeline route and rail siding) will be re-planted in consultation with landowners to achieve the owners objectives.
- The rehabilitated land will have equivalent functions and resilience as the pre-mining land.
- Soil properties will be appropriate to support the post mining land use.

9.1.4 Fauna

- The abundance and diversity of fauna will be equivalent to pre mining conditions for agricultural land in this area.

9.1.5 Water

- Backfilled mine areas will have surface and groundwater hydrological flow patterns appropriate for the specified post-mining land use.
- Where there is a backfill volume deficit in rehabilitated mining areas, the resultant lowered landform will be designed to collect any rainfall run-off in a managed way and not result in water-logged cropping areas.
- Areas on which plant and infrastructure were located will be returned to a landform which restores the pre-existing drainage patterns and farm dams.
- Surface and groundwater levels and quality will reflect original levels and water chemistry.
- There will be no long term reduction in the availability of water to meet local environmental values.

9.1.6 Infrastructure and Waste

- During decommissioning and through closure, wastes will be managed consistent with the waste minimisation principles.
- No infrastructure to be left on-site unless agreed to by regulators and post-mining land owners.
- The location and details of any buried hazards will be clearly defined and robust markers will be installed and maintained.

9.1.7 Waste Rock

- No waste rock dumps will remain after mine closure.
- No acid mine drainage from water shed from waste rock stockpiles or from other run-off.
- No nuisance dust generation from waste rock dumps.

9.1.8 Pollution

- Achieve a condition where any contaminants at the site are at or below agreed criteria.

9.1.9 Socio-economic

- Enable all stakeholders to have their interests considered during the mine closure process.
- Ensure that the closure process occurs in an orderly, cost-effective and timely manner.
- Ensure that the cost of closure is adequately represented in Company accounts and that the community is not left with a liability.

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9.2 COMPLETION CRITERIA

A preliminary set of completion criteria is provided in Table 4. These criteria will be further developed as the Project's rehabilitation plan and procedures are prepared. The criteria will be subject to periodic review in consultation with stakeholders. Amendments to the criteria will be subject to regulatory approval.

The aim for all activities on existing farming land is to return those areas to productive broad-acre cropping and grazing paddocks, of the same type as neighbouring lands. The only native vegetation to be disturbed is in very small areas along the pipeline route and at Wedin where the rail siding is constructed. No native vegetation will be disturbed by open pit mining activities.

Table 4
Preliminary Completion Criteria

CRITERIA	MEASURE / TARGET	EVIDENCE	CORRECTIVE ACTION
Farming Land Rehabilitation			
Restore landform as soon as practicable	Soil profile restored within 1 year post-mining	Annual inspection by government agencies	Restore soil profile as soon as practicable
Restore vegetative cover as soon as practicable	Successful crop or pasture re-established within 1 year after completion of backfill	Annual inspection by government agencies	Re-establish crop or pasture as soon as practicable
Mined land will be returned to the pre-mining agricultural productivity	Pre-mining productivity levels achieved and considered sustainable (by independent assessment)	Post-closure agricultural productivity report by consultant agronomist	Review requirements for remedial action in consultation with regulatory agencies
Hydrology	Surface and groundwater quality and flows show no evidence of adverse impact by mining and mineral processing operations	Post-closure hydrology report by independent hydrologist	Review requirements for remedial action in consultation with regulatory agencies
Pollution	No evidence of AMD or other pollution from mining or mineral processing infrastructure areas	Post-closure soil analyses by independent soil or environmental scientist	Review requirements for remedial action in consultation with regulatory agencies
Visual amenity	Final landform and vegetation in keeping with surrounding areas	Photographic monitoring	Review requirements for remedial action in consultation with regulatory agencies
Native Vegetation Rehabilitation			

CRITERIA	MEASURE / TARGET	EVIDENCE	CORRECTIVE ACTION
Achieve a stable, non-eroding landform that can support native vegetation	Soil profile design achieved and after 3 years no significant limitations to native vegetation occur that were not present pre-disturbance	Final post-disturbance report by independent soil scientist	Review requirements for remedial action in consultation with regulatory agencies
The species diversity of native vegetation is comparable with pre-disturbance levels	Targets to be set in Final Mine Closure and Rehabilitation Plan	Photographic monitoring.	Infill plant further species as required.
Weed management	Relative cover of minor weeds is low and stable or preferably declining. Major environmental weeds capable of becoming dominant at the expense of native plants are absent. Declared weeds are managed as required by regulations.	Photographic monitoring, identification of possible weed species.	Weed removal as required.

The Native Vegetation Rehabilitation items in the table above only apply to very small areas of degraded road-side native vegetation along the pipeline route and at Wedin where the rail siding is constructed. The total native vegetation disturbance area for the project is approximately 1.2 ha, in the form of 6 to 10m wide corridors through degraded bushland at the outside edges of paddocks and along road-sides (between road-edge and farm paddock fence).

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10. CLOSURE IMPLEMENTATION

WAK is committed to establishing mining and processing operations in accordance with current best practices in environmental management, and to minimising negative impacts on the natural and social environment. The Company will develop comprehensive closure work programmes and implementation plans that will progress in prescriptive detail during its planning and design through development and operations prior to closure. The Mine Closure Plans will be reviewed and revised as the project design, development and implementation matures. The plans will be regularly reviewed and updated through operations as more information is obtained and data analysed.

The following sections provide an overview of the initial rehabilitation and closure activities to be implemented at the site. These activities will form the basis of the rehabilitation and closure work programme which will be expanded and refined as development and operations progress.

It is intended that WAK will:

- Place dewatered sand and clay tailings from the process plant into mined areas.
- Retain all significant areas of remnant vegetation at the Wedin process plant site in accordance with any recommendations of the DWER.
- Backfill mined areas with sand and clay discharged from the process line and cover with stockpiled overburden.
- Contour the filled areas to achieve a natural landscape effect.
- Rehabilitate the mine site to agricultural use.
- Analyse soils at the mine site to establish baseline soil properties to assist the planning of rehabilitation to agricultural use.
- Analyse soils in rehabilitated areas to ensure that the soil condition is at least equal to non-disturbed soils at the site.

The closure of mining activities and the rehabilitation of mined and backfilled areas on M70/1143 will occur progressively and will be completed shortly after mining ceases.

Closure of the pipeline corridor and Wedin processing and rail-head site (tenements L70/156 and G70/251) are once-only events which will take place upon depletion of economic reserves and closure of the business.

10.1 RESEARCH INVESTIGATIONS AND TRIALS

During operations WAK will conduct research and trials to obtain site specific data and information as on various components to assist with the rehabilitation of the site. These include the following:

- Site specific data on the surface soils collected during drilling programs will provide input to the development of alternative soil profiles for trial plots that will be established to examine and improve crop productivity following rehabilitation. A consultant agronomist will be employed to design, implement and report on these trials and to assess the actual crop production on rehabilitated areas.
- During the first year of progressive rehabilitation, preliminary soil pits may be excavated to allow early confirmation of the soil profile and identification of any limiting factors such as compaction. Early identification of such factors will allow remedial activities such as ripping to be performed in a timely manner.
- Regular (yearly) soil sampling and chemical analysis will be carried out on areas of progressive rehabilitation as a guide to the addition of fertilisers. This activity will be carried out on rehabilitated areas until these areas are demonstrated to have equivalent properties (for cropping and grazing purposes) as the pre-mining soil.

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- Various trials of soil improvement techniques will be carried out on test-plots during the early phases of progressive rehabilitation. As the areas to be mined often have very thin and highly leached quartz sand topsoil directly over consolidated laterite, trials will take place to identify whether a 'manufactured' soil profile is better suited for cropping and grazing purposes. The addition of waste clay from processing operations (or clay-rich overburden) as a ploughed-in blend to the topsoil is another option that will be trialled. The design and performance of these trial plots will be managed and assessed by the agricultural consultant and if found to be an improvement over the base case procedure of 'replace as per pre-mining' then the improved practice will be implemented for all ongoing farming land rehabilitation activities, subject to the approval of the occupying farmer.
- The condition of temporary waste rock dumps will be monitored on a continuous basis by visual inspection to determine whether there is any evidence of nuisance dust generation or non-localized run-off.

10.2 M70/1143 MINE SITE

10.2.1 Progressive Pit Rehabilitation

The majority of areas mined will be progressively rehabilitated as part of the normal mining activities. The progressive rehabilitation process is very similar to that used extensively on many mineral sand mining operations, with process plant tailings being used as backfill in an advancing pit, which in turn is covered by overburden stripped from the front of the pit, and final re-shaping and capping of the backfilled pit with topsoil before seeding.

The activities which will take place for progressive rehabilitation include:

- Placement of dewatered sand and clay tailings from the process plant into mined areas.
- Placement of overburden (mottled sandy clays) mined from the advancing area of the pit over the sand and clay tailings.
- Cutting-down of pit edges and contouring of the backfilled area if required to set the final landform.
- Spreading of laterite gravel mined from the advancing area of the pit over the mottled sandy clay overburden (at approximately the same thickness as it was mined).
- Covering of the laterite gravel with approximately 300mm of mottled sandy clay overburden to provide a base for the replacement of topsoil. This region naturally has a very thin (often <50 to 100mm) layer of leached quartz sand as the only topsoil directly over laterite gravel or lithified laterite. The addition of a layer of clay rich material between the topsoil and the laterite will prevent laterite gravel and stones being drawn to the surface by farm cultivation equipment. The addition of clay to the leached surface sand is also a recognised method of soil improvement (particularly with respect to water and nutrient retention) in this region, and has been the subject of several Facey Group studies (local agronomy research group).
- Topsoil is spread over the 300mm of mottled sandy clay. Depending upon the time of year, topsoil will either be sourced from stockpiles, or if possible, spread immediately after it is mined from advancing areas of the pit.
- Seeding with a broad-acre crop, likely to be a nitrogen fixing legume such as lupins.
- Any areas of the mining activities which were originally native vegetation or wind-break plantings (e.g. tagasaste) will be replanted to conform with the general pattern and type of growth in that area. These areas are very minimal, and usually only occur in thin strips along property boundaries and internal (paddock) fences.

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Spreading of topsoil will be scheduled for autumn or winter when moisture is available to enable germination of a seeded cover crop. During spring and summer progressive rehabilitation will be temporarily paused after the placement of the 300mm of mottled sandy clay (activity 5 above), as this material can be stabilised by watering for dust management. After wetting, the kaolin in this material dries to form a crust which does not easily release dust if left undisturbed. The final stages of progressive rehabilitation will be resumed as soon as autumn and winter rains are forecast.

WA Kaolin will engage a consultant agronomist to monitor the rehabilitated areas upon completion of this process.

Areas used for haul road and temporary stockpiles will be progressively rehabilitated as they are taken out of service. Once the stockpiled material or road base is removed and used as backfill, activities 5, 6, and 7 in the list will be applied to the area.

The post-rehabilitation monitoring program will commence as soon as these activities are completed for the first time. For progressive rehabilitation areas, monitoring of the rehabilitation performance will be an ongoing activity over the life of the mine, and rehabilitation practices are likely to evolve as various techniques are trialled.

10.2.2 Final Closure and Rehabilitation

The following activities will take place at the end of the project life and cessation of mineral processing activities, to remove process plant and infrastructure, complete the final pit, and rehabilitate these areas within M70/1143. If any components at the site are of ongoing use to the landowner (e.g. sheds, water tanks, dams, roads), these will be exempted from the following activities.

- Disconnection of services (HV power isolation).
- Removal of equipment and materials with second-hand or scrap sale value (e.g. machinery, heavy steel, copper).
- Removal of recyclable materials with no sale value (e.g. steel, plastics).
- Demolition of remaining structures and equipment above foundation or pad level by a licensed demolition contractor. Materials will be transported to an approved landfill site.
- Break-up and excavation of concrete footings, foundations, and pads.
- Deep ripping and excavation of access road base and hardstand areas.
- Placement of clean broken concrete material in the base of the final mining pit. Material deemed to be contaminated in any form will be transported to an approved landfill facility.
- Placement of excavated gravel or sealed road base materials in the base of the final mining pit over broken concrete material.
- Placement of any remaining stockpiles of sand or clay tailings and ore in base of the final mining pit.
- Placement and capping of other placed materials in the final mining pit with clay rich overburden material (minimum of 3m burial).
- Any cutting-down of pit edges and contouring of the pit area required to set the final landform.
- Deep ripping of remaining plant and stockpile areas.
- Grading of ripped plant, hardstand and road areas to suit the surrounding landform, suitable for broad-acre cropping and grazing activities.
- Spreading of materials excavated from road and hardstand bases (usually laterite gravel) evenly over the contoured pit area.

- Covering of the laterite gravel with approximately 300mm of mottled sandy clay overburden to provide a base for the replacement of topsoil. Overburden material will have been excavated from the pit and stockpiled for this purpose prior to contouring (activity 10).
- Covering of ripped plant, hardstand and road areas with approximately 300mm of mottled sandy clay overburden to provide a base for the replacement of topsoil.
- Stockpiled topsoil is spread over the 300mm of mottled sandy clay on all areas described above.
- Seeding of previously farmed areas with a broad-acre crop, likely to be a nitrogen fixing legume such as lupins.
- Areas of the mine or infrastructure which were originally native vegetation or wind-break plantings (e.g. tagasaste) will be replanted to conform with the general pattern and type of growth in that area.

The final two activities will take place in autumn or winter to ensure that the seeding germinates and grows acceptably. Upon completion of these listed activities, the post-rehabilitation monitoring program will commence.

10.3 L70/156 PIPELINES

Small areas of remnant vegetation will need to be removed at some places along the pipeline corridor and for the railway siding at Wedin. The total area is estimated to be less than 2 hectares. The areas affected by the pipeline will be revegetated following construction. The railway siding will be revegetated as part of the closure if the area is not required for other purposes (e.g. as a Shire industrial zone).

The HDPE pipelines connecting the de-gritting plant on M70/1143 and the refining plant on G70/251 will be removed at the end of the project life if required. This will involve the following activities in autumn or winter:

- Flushing of pipelines with clean water.
- Draining of the pipelines. Some of this water will have to be discharged along the pipeline length (at low points). This will be planned and carried out in conjunction with the landowner in the area likely to be affected by the water as it is drained from the pipelines.
- For surface-laid pipes, the pipes will be cut into lengths suitable for truck haulage and removed from the site. The piping will either be sold second-hand or sent for recycling.
- For buried sections, a grader will remove topsoil from above where the pipes are buried. An excavator or trenching machine will be used to uncover the pipes, which will be lifted from the trench. The pipes are then cut into lengths suitable for truck haulage and either sold second-hand or sent for recycling.
- The trenches will be backfilled and the topsoil replaced.
- The disturbed areas will be replanted after consultation with the landowners to determine the land use objective. The vegetation will be replaced at closure if there is a requirement to remove the pipelines. The monitoring during mining operations will provide information on the long term viability of the new vegetation post closure.

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10.4 G70/251 WEDIN

The processing plant and rail siding at Wedin will be demolished and removed at the end of the Project life. The following activities will take place:

- Disconnection of services.
- Removal of equipment and materials with second-hand or scrap sale value (e.g. machinery, heavy steel, copper).
- Removal of recyclable materials with no sale value (e.g. steel, plastics).
- Demolition of remaining structures and equipment above foundation or pad level by a licensed demolition contractor. Materials will be transported to an approved landfill site.
- Break-up and excavation of concrete footings, foundations, and pads.
- Ripping and excavation of access road base and hardstand areas.
- Clean broken concrete will be trucked to the mine-site to be placed in the final mine pit as per the clean bulk materials from the mine-site plant. Clean road-base and bulk fill materials will be used at the Wedin site for re-contouring.
- Deep ripping of remaining plant and stockpile areas.
- Grading of ripped plant, hardstand and road areas to suit the surrounding landform, suitable for broad-acre cropping and grazing activities. This activity will take into account natural drainage patterns and re-instatement of pre-existing farm dams.
- Covering of ripped plant, hardstand and road areas with approximately 300mm of mottled sandy clay overburden (trucked from the mine-site) to provide a base for the replacement of topsoil.
- Stockpiled topsoil will be spread over the 300mm of mottled sandy clay on all areas described above.
- Seeding of all areas with a broad-acre crop, likely to be a nitrogen fixing legume such as lupins.

The final two activities will take place in autumn or winter to ensure that the seeded crop germinates and any plantings grow successfully.

10.5 DECOMMISIONING AND IMPLEMENTATION PLANS

A Decommissioning Plan sets out the technical and engineering design, procurement and management requirements, and costs of a project aimed at closing the operation. The Decommissioning Plan provides details on the activities required to attain the required closure configuration for each of the operational areas.

Nearing the cessation of operations and as part of closure implementation planning WAK will prepare a detailed Decommissioning Plan which may include the following:

- Detailed discussion with the regulatory authorities and other key stakeholders on decommissioning planning.
- Agreed, detailed completion criteria for each aspect of the Plan.
- Costs to a standard appropriate for submission to the appropriate boards for capital approval.
- A detailed scope of work, estimate preparation, and use of contractors for all decommissioning activities.

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- A detailed schedule of activities to ensure safety and environmental policies and management structures continue to function effectively into the decommissioning phase.
- An employment strategy to ensure that essential personnel are retained.
- A communications strategy to inform affected parties of the closure process and the implications of closure for those affected parties.

A Closure Implementation Plan will also be prepared, near the onset of closure, which will incorporate the physical and manning levels and provide detailed timelines and resourcing requirements for all closure activities.

10.6 PREMATURE OR TEMPORARY CLOSURE/CARE AND MAINTENANCE

If the circumstance occurred where operations at the site were temporarily ceased and the site placed on care and maintenance, a Care and Maintenance Plan would be prepared. The Care and Maintenance Plan would be developed in accordance with the requirements of the DMIRS, and industry standards at that time for such plans. The Care and Maintenance Plan would consider both the potential for the continuation of operations and also document the full site closure rehabilitation programmes.

Whether closure occurs at the planned closure timeframe or as a premature closure, the activities in this MCP will be followed. The infrastructure will be demolished and removed and the site will be rehabilitated to agreed completion criteria upon closure.

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11. CLOSURE MONITORING AND MAINTENANCE

The following items are a preliminary plan only, and a more detailed framework for progressive and post-closure monitoring and maintenance detailing the methodology, quality control system and remedial strategies will be developed as the project approaches the execution phase. A detailed Closure Monitoring and Maintenance Program will be developed during operations and refined as the Project nears closure.

11.1 REHABILITATION OF FARMING LAND

As rehabilitation of mined areas will be a progressive activity commencing early in the mine-life, monitoring of rehabilitation performance can commence long before final mine closure. Rehabilitation activities therefore can be modified and refined so that by the time final closure occurs, closure rehabilitation issues, practices and management will be well understood.

When WA Kaolin considers that the first area of progressive rehabilitation is complete, the agricultural consultant will be prepare a post-mining agricultural productivity report. This report will integrate the results of monitoring for the aspects described below and will verify whether pre-mining productivity levels have been met and are considered sustainable.

This process of independent consultant review and reporting will be repeated every two years during progressive rehabilitation operations, and one final review and report will be completed three years after mine closure.

11.2 LANDFORM

During landform restoration, visual inspections of work in progress will be conducted routinely by rehabilitation staff to ensure the correct procedures are being implemented.

After restoration of the landform, the disturbed area will be surveyed and a map produced showing 0.5m contour intervals. Monitoring points will also be established to enable the assessment of land stability three years after completion.

11.3 SOIL

During landform restoration, visual inspections of work in progress will be conducted routinely by rehabilitation staff to ensure that soil materials are returned to the correct position.

During the first year of progressive rehabilitation, preliminary soil pits may be excavated to allow early confirmation of the soil profile and identification of any limiting factors such as compaction. Early identification of such factors will allow remedial activities such as ripping to be performed in a timely manner.

Regular (yearly) soil sampling and chemical analysis will be carried out on areas of progressive rehabilitation as a guide to the addition of fertilisers. This activity will be carried out on rehabilitated areas until these areas are demonstrated to have equivalent properties (for cropping and grazing purposes) as the pre-mining soil.

Various trials of soil improvement techniques will be carried out on test-plots during the early phases of progressive rehabilitation. As the areas to be mined often have very thin and highly leached quartz sand topsoil directly over consolidated laterite, trials will take place to identify whether a 'manufactured' soil profile is better suited for cropping and grazing purposes. Suggestions from local farmers and agronomists have included deeper burial of the laterite and the use of clay-rich

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overburden as a sub-soil which is presently missing. The addition of waste clay from processing operations (or clay-rich overburden) as a ploughed-in blend to the topsoil is another option that will be trialled. The design and performance of these trial plots will be managed and assessed by the agricultural consultant and if found to be an improvement over the base case procedure of 'replace as per pre-mining' then the improved practice will be implemented for all ongoing farming land rehabilitation activities, subject to the approval of the occupying farmer.

The final post-mining assessment of the rehabilitated soil profile will be performed by a suitably experienced soil scientist. This assessment will not be performed until approximately three years after rehabilitation is complete, so that crop and pasture root distribution through the soil profile may be assessed. The results of the soil assessment will be presented to the DMIRS and DER in a final Post-Mining Soils Assessment Report.

11.4 CROP PRODUCTIVITY

Whilst rehabilitated farming land is being maintained by WA Kaolin, visual inspections of crop growth will be conducted routinely by rehabilitation staff to ensure appropriate management of risk factors such as weeds, fungal and insect infestations, wind and water erosion, water-logging, etc.

Crop productivity monitoring practices and activities will be defined and documented prior to the commencement of mining with the assistance of a local consulting agronomist and the occupying farmer. The agronomist's services will be retained for regular inspections of rehabilitation crops, review of the company's monitoring data, and provision of remedial activity advice. Remedial activities may include application of additional or different fertilisers, crop spraying, and varying seeding parameters (depth, density, etc.).

The results of crop monitoring will be presented annually in WA Kaolin's Annual Environmental Report.

11.5 WATER

Piezometer bores will be established at the mine-site prior to the commencement of mining. Routine monitoring of the bores for water quality and level will be conducted before, during, and after mining activities. Any surface water sources (e.g. farm dams) which may collect run-off from disturbed areas will also be monitored for water quality before, during and post-mining. Data from bore and surface water monitoring will be reported in Annual Environmental Reports and to the DER. Monitoring and reporting will continue for the first three years of rehabilitation for any particular area (taking into account progressive rehabilitation).

At the Wedin site and prior to commencement of construction activities, piezometer bores will be established around the site and along the intermittent watercourse which runs past the site. Routine monitoring of the bores for water quality and level will be conducted before, during, and after mineral processing operations at the site. Any surface water sources (e.g. farm dams and the intermittent watercourse) which may collect run-off from disturbed areas will also be monitored for water quality before, during and post-mineral processing activities. The intermittent watercourse will be monitored both up-stream and down-stream of the mineral processing plant. Data from bore and surface water monitoring will be reported in Annual Environmental Reports and to the DER. Monitoring and reporting will continue for the first three years of rehabilitation.

Any water quality assays or levels which are unexpected or outside of the normal range of pre-mining values will be referred to a consultant hydrologist for further investigation.

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11.6 NATIVE VEGETATION

Visual inspections of any areas of native vegetation rehabilitation will be conducted routinely by rehabilitation staff to assess the success of rehabilitation and determine when maintenance activities are required. The only areas of native vegetation expected to be disturbed by the project are narrow areas of road-side remnant vegetation, and wind-break plantings along farm fence lines.

Photographic monitoring sites will be established at the locations where most disturbance is likely to take place. These sites will be established and recorded prior to disturbance, so that evidence of the baseline condition of the sites is recorded.

Photographic monitoring will be conducted annually during spring and will include the recording of native and introduced species present within the photo frames. Evidence of damage by pests will also be recorded.

Monitoring will occur in two phases; during rehabilitation following construction activities (e.g. pipeline laying and rail siding construction), and during rehabilitation following project closure activities. In both cases the monitoring will be conducted annually in the first three years of rehabilitation. Following this, monitoring is likely to be decreased to intervals of 2-3 years or more in consultation with the DER.

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12. FINANCIAL PROVISIONS FOR CLOSURE

The objective of financial provisioning for closure is to ensure that adequate finds are available at the time of closure and that the community is not left with an unacceptable liability (DMIRS, 2020b).

Australian companies are required to comply with AASB 137 "Provisions, Contingent Liabilities and Contingent Assets" where the rehabilitation and closure costs are recorded as a liability in the company's financial statement (Dept. Industry, Tourism and Resources, 2006).

12.1 CLOSURE COST ESTIMATE

An estimate of closure costs is presented in Table 5. The methodology used for this estimate is based upon the DMIRS typical rates for financial liability calculations, multiplied by the disturbed areas derived from the preliminary disturbed area calculations in the Mining Proposal. As the project progresses and more detailed engineering design is carried out, greater detail will be applied to the cost break-down structure, quantities will be refined, and more accurate unit rates will be obtained for the activities.

Once the project has been constructed and operated for one year, a detailed closure costing exercise will be carried out using the "as-constructed" quantities, actual disturbed areas, and site specific unit cost input from demolition and rehabilitation contractors or cost estimation specialists.

Table 5

Preliminary Closure Cost Calculation					
Item	**Description**	**Category**	**Quantity (ha)**	**Unit Rate $ / ha**	**Cost**
	M70/1143				
1.1	Open Pit	C	7.6	$18,000	$136,080
1.2	Tailings facilities		0.0		
1.3	Heap leach pads or vat leach dams		0.0		
1.4	Evaporation ponds		0.0		
1.5	Waste dumps (sulphide present, highly erodable, >25m high)		0.0		
1.6	Waste dumps (lower risk) (temporary)	C	8.8	$18,000	$158,400
1.7	Topsoil stockpiles (temporary)	E	4.1	$2,000	$8,110
1.8	ROM pad	C	2.1	$18,000	$36,900
1.9	Low grade oxide stockpiles (located on areas to be mined in future)	C	4.6	$18,000	$83,475
1.10	Plant site and mining infrastructure including office / workshops	B	7.9	$30,000	$236,094
1.11	Camp site		0.0		
1.12	Strip mining (backfilled mining voids) (rehab in progress)	E	3.8	$2,000	$7,560
1.13	Hypersaline pipeline corridors		0.0		
1.14	Fresh water pipeline corridors	C	0.4	$18,000	$6,340
1.15	Haul roads	C	5.0	$18,000	$90,585
1.16	Access tracks	E	2.3	$2,000	$4,614
1.17	Hardstand areas		0.0		
1.18	Borrow pits		0.0		
1.19	Historical and areas mining by previous operators		0.0		
1.20	Exploration (where clearing takes place)		0.0		
	M70/1143 TOTAL		**46.4**		**$768,158**

Preliminary Closure Cost Calculation					
Item	**Description**	**Category**	**Quantity (ha)**	**Unit Rate $ / ha**	**Cost**
	L70/156				
2.1	Plant site and mining infrastructure including office / workshops		0.0		
2.2	Hypersaline pipeline corridors		0.0		
2.3	Fresh water pipeline corridors	C	10.7	$18,000	$192,240
2.4	Haul roads		0.0		
2.5	Access tracks		0.0		
	L70/156 TOTAL		**10.7**		**$192,240**
	G70/251				
3.1	Open Pit		0.0		
3.2	Tailings facilities		0.0		
3.3	Heap leach pads or vat leach dams		0.0		
3.4	Evaporation ponds		0.0		
3.5	Waste dumps (sulphide present, highly erodable, >25m high)		0.0		
3.6	Waste dumps (lower risk)		0.0		
3.7	ROM pad		0.0		
3.8	Low grade oxide stockpiles		0.0		
3.9	Plant site and mining infrastructure including office / workshops	-	16.9	$50,000	$842,685
3.10	Camp site		0.0		
3.11	Strip mining (backfilled mining voids)		0.0		
3.12	Hypersaline pipeline corridors		0.0		
3.13	Fresh water pipeline corridors		0.0		
3.14	Haul roads		0.6		
3.15	Access tracks		0.0		
3.16	Hardstand areas		0.0		
3.17	Borrow pits		0.0		
	G70/251 TOTAL		**17.5**		**$842,685**
4.1	Environmental Monitoring (for 5 years after closure)		5	$75,000	$375,000
	PROJECT TOTAL		**74.6**		**$2,178,083**

12.2 COST REVIEW AND UPDATE

The closure cost estimate will be revised after the first year of operations. Thereafter, the closure cost estimate document will be updated at regular intervals (every three years), or within 12 months of a major change to mining activities or constructed processing and infrastructure facilities. The regular closure cost estimate updates will take place after completion of that year's annual environmental report, so that current disturbed and rehabilitated area measurements are taken into account.

12.3 FINANCIAL PROVISION

In accordance with AASB 137, the company will establish a provision in the corporate accounts reflecting future expenditure required for mine closure. The value of the provision will be calculated from the closure cost estimate.

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12.4 ACCOUNTING STANDARDS

Corporate accounts will be operated and maintained in accordance with the requirements of the Australian Accounting Standards Board (AASB).

12.5 SECURITIES

In addition to and separately from financial provisions within the corporate accounts for site closure, the company will pay the Mining Rehabilitation Fund Levy in accordance with the requirements of the Mining Rehabilitation Fund Act 2012.

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13. MANAGEMENT OF INFORMATION AND DATA

The details of company procedures and responsibilities for the management of mine closure information and data collection and storage will be determined during the final project design and execution phase.

The implementation and monitoring of the progressive and final closure rehabilitation of the company's sites and the requirement to provide regular reports on these activities to key stakeholders will necessitate and facilitate regular documentation. Specific personnel within the operational staff will be given the task of collecting and maintaining a range of data sets and ensuring that these can be provided at any time to regulatory authorities if required.

Data sets to be maintained throughout the life of the project will include (but are not limited to):

- Pre-mining topographic surveys
- Pre-mining environmental data (including soil assays and profiles, flora and fauna registers, photographs and plans, hydrology and hydrogeology data, crop yields)
- Drill-hole databases (exploration and mine planning)
- Progressive mine topographic surveys
- Rehabilitated land topographic surveys
- Rehabilitation activities as well as specifics of those activities (topsoil stockpiling, soil spreading, ripping, fertilizing, spraying, seeding or planting, mulching, rehabilitation trial plots)
- Rehabilitation monitoring activities (pre- and post-mining soil profile and assays, crop growth, crop harvesting and yield measurement, weeds, insect and fungal pests, native vegetation growth and diversity, photographic records)
- Atmospheric monitoring (dust, weather)
- Water (surface and sub-surface) level and quality
- Infrastructure location survey data (e.g. buried services)
- Plant emissions (quantity and assay). This applies to streams such as sand and clay rejects going to backfill, diesel consumption in mobile and fixed plant, and exhaust gas streams from mineral dryers.
- Final closure event burial locations for clean bulk materials
- Technical reports (internal and external, including AERs)
- Environmental regulator (e.g. DER, DMP) and other stakeholder correspondence

The data sets will be electronic and divided into areas to enable efficient compiling of data for reporting (e.g., mine pits and backfill, temporary stockpiles, plant and infrastructure, external environment). All data will be linked to a GIS software package. Consideration will be given to the use of commercial software packages such as Outback Ecology's "Progressive Rehabilitation and Closure (PRAC)" GIS system.

Data security (e.g. back-up data sets) will be implemented in accordance with good information technology practices.

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14. MINE CLOSURE PLAN REVIEW PROCESS

The revised 2020 MCP is an update of the 2015 MCP (WAKaolin, 2015). The key revision and updates include the specific requirements as stipulated in the DMP approval for the 2015 Mining Proposal with Mine Closure Plan (DMP, 2015) which were:

Section of the MCP	Comments	Section of 2020 MCP
Identification of Closure Obligations and Commitments	The next revision of the MCP should include and obligations and commitments under State and Federal Legislation, the relevant tenement conditions relating to rehabilitation and closure and specific commitments relating to the project.	**Section 4**
Closure Implementation	The proponent should detail contingencies to make the site safe, secure and non- polluting in the event of temporary closure/care and maintenance.	**Section 10.6**

The 2020 MCP has also been updated to meet the revised DMIRS Mine Closure Plan guidance documents Statutory Guidelines for Mine Closure Plans and the Mine Closure Plan Guidance (DMIRS, 2020 a;b).

However in the last five years there has only been minor activity on site which were three small mining campaigns to extract 4-5000 tonnes(t) of kaolinite ore, each lasting two weeks and one three week campaign with the intent to extract 15,000t kaolinite ore to be stockpiled on site. Due to the small scale, intermittent and infrequent level of activity there is a lack of additional detail and information available to include in the revised Mine Closure Plan. The MCP will be progressively updated as planning and development in the feasibility of the Project progresses and the revised and updated MCPs will be submitted accordingly.

A summary of the changes is provided in Appendix B Mine Closure Plan Checklist.

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15. REFERENCES

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Appendix A
Site Plans

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Appendix B
Mine Closure Plan
Checklist

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