fyi Resources Limited

11 March 2020

FYI Secures A$80m Financing; Delivers Robust DFS for HPA Strategy and Upgrades Cadoux Reserves

Highlights:

- **FYI secures A$80m strategic project development equity financing facility for HPA project**
- **FYI developing innovative Integrated HPA project to produce 8,000 tpa**
- **Outstanding DFS outcome - results within 5% of PFS key metrics**
- **HPA strategy delivering into strong market fundamentals**
- **Project designed to meet demand growth of ~ 17% CAGR**
- **Initial mine life of more than 50 years / DFS is modelled on 25 years project life**
- **Conventional technology and equipment selection**
- **DFS demonstrates projects outstanding financial metrics**
- **Forecast after-tax results:**
    - **NPV (@10%) of US$543m**
    - **IRR 46%**
    - **Project payback of 3.6 years**
- **Total operating cash cost of US$6,217 per tonne HPA produced**
- **Competitively positioned project capex of US$189m or US$23,575/t installed capacity**
- **Pilot plant demonstrates FYI's excellent HPA purity and quality specification**
- **FYI's HPA project is fully integrated and guaranteed provenance of ethical, responsible and sustainable product production**
- **Equity financing facility of A$80m significantly reduces project risk**

The Board of FYI Limited (**FYI or Company**) (**ASX: FYI**) is pleased to provide the results from its Definitive Feasibility Study (**DFS**) and announce a supporting major equity funding facility for the Company's integrated Cadoux kaolin and Kwinana high purity alumina (**HPA**) project in Western Australia, including associated updated Cadoux kaolin Ore Reserve.

Introduction

FYI has the corporate objective of becoming one of the world's leading producers of HPA via the development of a fully integrated business model addressing the growing global demand for this high specification and diverse application product.

The DFS reconfirms FYI's 2018 Project Pre-Feasibility Study (**PFS**) results *(please refer to ASX announcement 25th September 2018)* and demonstrates the quality of the Company's HPA strategy through excellent economic metrics. The DFS outlines the clear pathway forward to developing an integrated HPA business in a favourable operating jurisdiction such as Western Australia.

FYI has arranged an A$80m equity financing facility to progress the Company's HPA development strategy. The equity will provide critical funding for the substantive development stages leading up to, and including, construction through to operation. The funding is a key catalyst for the Company's development objectives and significantly de-risks the project. The funding will also assist in the final investment decision (**FID**) for the project from FYI's Board.

Complementing the DFS, a revised Mineral Resource Estimate (**MRE**) for the Cadoux Kaolin Project (**Project**) for Proven and Probable reserves has been calculated, upon which the study was based. The single source, fully integrated and environmentally low impact kaolin derived feedstock supports the long-life project and was the basis for the metallurgical test work, process design and engineering undertaken over the DFS review period (including pre-feasibility, locked cycle testwork and pilot plant studies).

Key DFS assumptions and outcomes include:

NPV post tax (@10%)	US$543m
IRR	46%
Payback period (years) (post tax) (inc ramp up)	3.6
Assumed exchange rate A$/US$	0.70
Life of Project Reserve (years)	25
Total Sales (initial 25 years) no escalation	US$4.7b
Total Project net operating cash flow (25 years)	US$2.4b
Annual EBITDA (average)	US$133m
Cash flow after finance and tax	US$88m
Shares on issue (as at publication of the DFS)	212,772,654
EPS after tax (per year)	$0.41
Capex (8,000 tpa)	US$198m
Capex/t (US$/t)	US$23,575
Life of Mine C1 costs, FOB Kwinana (US$/t)	US$6,217
Tonnes Processed (initial 25 years) (kt)	198
Production Target (tpa) (initial 25 years)	8,000
Proven + Probable Ore Reserves @ 24.8% Al_2O_3 (kt)	3,205
Ore Reserve life (years)	25
JORC Resources (million tonnes)	11.3

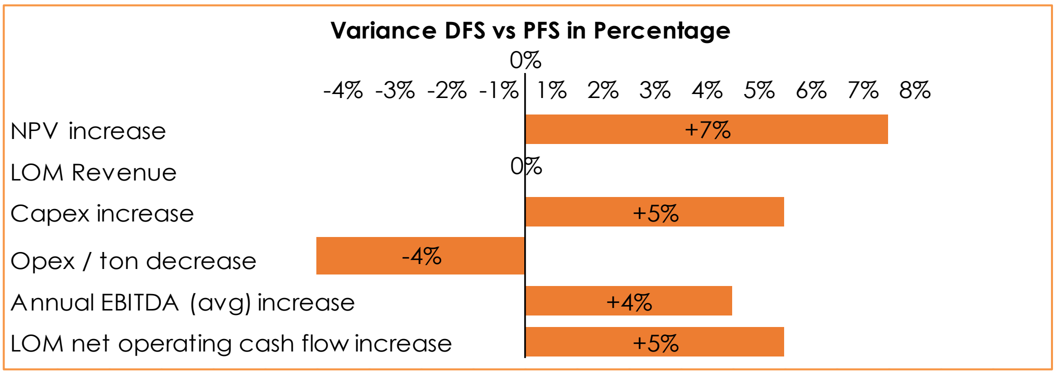
Table -1: DFS highlights

DFS Comparison to PFS Result

The DFS results are a product of detailed and comprehensive research undertaken by a team of expert study managers. As a result, it should be noted that the DFS is more extensive in detail and scope than the previously PFS.

FYI is assured with the quality of the DFS result given the minimal variation between the results of this DFS and the previous PFS outcome. The DFS is considered -5%/+15% accurate, whilst the PFS was in the range of -15%/+25% degree of accuracy.

FYI is particularly pleased with the study outcome, especially with increasing the NPV (by ~A$40m or 7%), limiting the capex increase (5%) and decreasing the opex per ton (2%). The key DFS metrics results compared to the PFS results are shown graphically below:



DFS reconciliation to PFS result

FYI Resources Managing Director Roland Hill said: *"We are very pleased with the DFS outcome presented in this report as well as securing significant equity funding. The DFS results represent a persuasive economic case supported by extensive and technically detailed studies. The extent of diligence in this body of work provides us with assurance in our innovative HPA refining process to be able to deliver a high quality, high purity product in a consistent and reliable manner. The DFS demonstrates that Cadoux has the merit to be developed as one of the sectors lowest capital and operating cost projects.*

We have secured landmark equity financing backing for up to A$80 million which we consider to be an outstanding achievement for the Company. The financing facility assists in de-risking the project by providing access to equity funding at critical development stages. Sufficient equity funding is one of the larger challenges for a junior company; we intend to use this funding package to accelerate our development schedule.

The DFS outcome was within 5% of our project PFS results demonstrating the quality and detail of work accomplished at each study phase. We are delighted with the fact that we have honoured our pre-DFS release promise of delivering a quality study with no major surprise outcomes.

Additionally, FYI have revised the Reserve estimate at Cadoux that covers the entire project life of 25 years. This will provide the Company with a reliable single source supply of feedstock for the duration of the project which is consistent with our quality production objectives.

This DFS result is the culmination of a lot of hard work and demonstrates the dedicated and diligent detailed study work completed by the project team resulting in what is an excellent outcome for the Company. On behalf of FYI, I would like to take the opportunity to thank all the contributors for their outstanding work and effort in producing this excellent DFS outcome".

A$80m Equity Funding Facility

A strategic project development equity financing facility ('Equity Commitment') of up to A$80m has been entered onto between FYI and Luxembourg based private equity group, GEM Global Yield LLC SCS (GEM). The funding provides FYI with capital support for the Company's development of its HPA project, particularly at key funding requirement stages.

GEM was founded in 1991 and is a USD $3.4 billion alternative investment group that manages a diverse set of investment vehicles focused on emerging markets across the world. GEM has completed over 370 transactions in 70 countries. GEM is focused on emerging markets and undervalued or growth opportunities. The Equity Commitment reflects GEM's strong conviction in the robust project metrics of FYI's long life, high quality, high margin HPA project.

The Equity Commitment is primarily directed towards the capital requirements of the HPA project and provides up to 30% of FYI 's forecasted project capital costs of US$189m as outlined in the DFS. The funding also could potentially represent 100% of the equity component required (if the Equity Commitment were to be fully drawn down).

The Company has been actively pursuing a number of financing options, including offtake and project finance, to assemble a syndicated financing solution for the total capital requirements of its HPA project; Therefore it is envisaged that with this Equity Commitment secured, other components of the overall financing needs of the Company will be more accessible.

The Equity Commitment Agreement is a staged facility, at FYI's election, and will enable an accelerated project development schedule. As this facility is not intended to be an on-going working capital facility. It will not preclude FYI from undertaking capital raisings through its shareholders or other investors.

The FYI Board believe the GEM funding facility will be positive and a transformative step for the Company.

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Material terms of the Equity Commitment:

Subject to the terms of the Capital Commitment agreement, the Company may choose to, on one or more occasions within the three year period of the agreement, subject to conditions precedent, draw down on the facility by giving GEM 15 trading days' notice to subscribe for shares in the Company. The number of shares which FYI may draw down under a notice is capped at 1,000% of the average daily number of FYI shares traded on ASX during the 15 trading days prior to that draw down notice, subject to adjustments. If the Company issues a draw down notice, the subscription price of the shares to be issued to GEM (or its nominees) will be 90% of the higher of:

- the average closing bid price of FYI shares as quoted by ASX over the pricing period, being the 15 consecutive trading days after FYI gives the draw down notice to GEM (subject to certain adjustments); or
- a fixed floor price nominated by the Company in its draw down notice.

The issue of shares to GEM pursuant to a draw down notice will be conditional upon obtaining any requisite shareholder approval (if there is insufficient placement capacity under the Listing Rules when FYI issues a draw down notice). The Company has not yet agreed to issue any such shares to GEM. The Company has given to GEM warranties, representations and indemnities that are customary for agreements of this type.

The Company will pay a fee of 2% of the Equity Commitment within 18 months (exclusive of GST) to GEM in connection with the facility. The Company may choose to pay part or all of such fee in shares calculated at 95% of the value weighted average price of FYI shares during the 15 consecutive trading days prior to payment. In addition, FYI will issue to GEM or its nominee 46.7 million options with an exercise price of 15 cents each expiring 5 March 2024. 23 million of the options will be issued immediately under FYI's ASX Listing Rule 7.1 placement capacity with the balance to be issued following shareholder approval which will be sought at a General Meeting.

Feasibility Study Summary

FYI's HPA project has the potential to establish the Company as a material global supplier of high purity alumina. Timing for the development of the project is anticipated to meet the forecast uplift in demand for HPA in the 2022-24 period as a result of projected Electric Vehicle (**EV**) growth.

High purity alumina is an aluminum oxide (**Al_2O_3**) powder with a purity equal to, or greater than, 99.99% and is used in the production of many high-tech products. The category is split into two broad groups. The "Traditional" applications include light-emitting diodes (**LED**), plasma screens, artificial sapphire glass screens (eg TV's, tablets, smartphone screens, electronics and aeronautics). The "Battery" and power storage applications which include use in Lithium-ion batteries, static power cells (power walls) and rechargeable batteries.

FYI's corporate objective is to become a world-class, fully integrated, HPA producer utilising an innovative approach to the processing and refining of the product and to capitalise on the demonstrated capital and operating advantages over current bauxite (direct or waste) derived supply. Our production approach strategy has two main integrated operating components in Western Australia:

1. the mining and beneficiation of kaolin on site at Cadoux to produce high grade aluminous clay feedstock for transportation to Kwinana for refining into HPA; and

2. the processing of the Cadoux feedstock at the proposed Kwinana refining facility to refine the kaolin directly into high purity alumina, all in Western Australia.

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Key points and assumptions

The DFS review assumes 25 years production from a potentially long-term (>50) years mine life. The DFS targets production of HPA commencing in Q2 2022 through a beneficiation plant in Cadoux; and a hydrochloric acid (**HCl**) leach and precipitation plant in Kwinana.

An Ore Reserve, in accordance with the JORC 2012 Code, was estimated for the Cadoux Project. The Ore Reserve estimate is based on the economically mineable portion of the Measured and Indicated Mineral Resource Estimate for the Cadoux kaolin deposit, applying modifying factors including metallurgical test work, processing and engineering designs for the Cadoux and Kwinana plants and their associated infrastructure, cost estimation, marketing and pricing research.

The total Proven + Probable Ore Reserve of **3.2 Mt @ 24.8% Al_2O_3** contained within the area of the Company's Mining Lease and Approved Mining Plan supports a 25 years project.

The Ore Reserve is based on the economically mineable portion of the Measured and Indicated Mineral Resource. The Mineral Resource Estimate is **11.3 Mt @ 22.5% Al_2O_3.**

A total of 18 separate mining stages have been planned for the life of mine schedule. The average life of each stage is 3 years with a total mine life of 51 years. Note, processing of this ore, in the mine plan, continues potentially for another 10 years, through to Year 62.

Through the WA Premier's Department and Cabinet and the Department of Jobs, Tourism, Science and Industry (**JTSI**), the Company is to be provided with Lead Agency support by the Western Australian Government. JITSI, as the Lead Agency, will assist with FYI with project development and the timing of the required approvals.

The Future Batteries Industry Cooperative Research Program (**FBI-CRC**) was established during 2019 and FYI is an associate partner. Membership of the FBI-CRC will provide FYI with access to all novel technology and applications via the associated research partners and assist with government funding applications.

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Key economic assumptions for the DFS are as follows:

Currency	United States dollars Future sales contracts for HPA are usually based in US$. The financial model is prepared in US$. All A$ inputs are converted to US$ based on an exchange rate of A$1.00 = US$0.70.
Project life	25 years
Ore Reserves	Total Proven + Probable Ore Reserve alone supports a 25 years project. Mining will occur solely from the Proven + Probable Ore Reserve during the project life.
Corporate tax rate	30%
Government royalty	2.5%
Depreciation rate	20%
HPA Production	Steady state of production from Proven + Probable Ore Reserves over life of mine, with HPA production in the first year being 5,600 tonnes per year and thereafter 8,000 tonnes per year.
Shares on Issue	212,772,654 (as at time of publication of DFS)
NPV estimation discount rates	Financial modelling has been conducted at 10% discount rate. A lower rate could be used as the current low cost of debt has reduced weighted average cost of capital.
Capital costs	US$189m, estimated at an accuracy of -5%/+15% as per recommended practice 18R-97 for process industries set out by AACE International for Class 3 estimates
Capex contingency	15% of capital cost
Sustaining capex	2% of capital costs, annually
Operating costs	US$6,217/t HPA produced; costs estimates have been developed from first principles with an accuracy of -5%/+15%
Mine closure costs	US$5m as per Mine Closure Plan
Plant maintenance	7.2% of capital costs
Sales price	US$24,000 per dry metric tonne, adopted price dependent on product type, product quality, country, contact terms and sales quantity Revenue is constant based on current prices and ignores any projected growth in commodity price or inflation
Debt financing	Up to 70% of capex (depending on the finance structure)
Borrowing rate	7.5%, tenor 6.5 years and grace period 2 years
Upfront financing cost	8% (assumption)
Working capital	US$5m
Accounts receivable	30 days
Accounts payable	30 days

Table -2 FYI HPA DFS key economic assumptions

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Proven and Probable Ore Reserve

The Proven and Probable Ore Reserve for the project is calculated at **3.2 Mt @ 24.8% Al_2O_3** as reported in accordance with the JORC Code and is all contained within the area of the Company approved Mining Lease (M70/1388).

The Ore Reserve is based on the Mineral Resource Estimate (**MRE**) totaling **11.3 Mt @ 22.5% Al_2O_3** as per table below (please see ASX announcement 29th October 2019). Please see further details below in the DFS Summary section.

Deposit	Resource Category	Volume Cubic Metres	Metric Tonnes (Dry)	Al_2O_3 Grade (%)	Fe2O3 Grade (%)	K_2O Grade (%)
Cadoux	Measured	292,300	480,500	23.56	1.24	1.18
	Indicated	3,501,300	5,742,700	23.36	1.19	1.09
	Inferred	3,111,700	5,045,500	21.45	0.59	0.91
All Categories	**Total**	**6,905,300**	**11,268,700**	**22.51**	**0.92**	**1.02**

Table -3 Mineral Resource Estimate as at 29 October 2018

FYI has completed the requisite work to convert the Measured and Indicated Mineral Resource to Proven and Probable Ore Reserves. A summary of the work undertaken is included in this document, and in the attached JORC Code Table 1 Sections 1 to 4 (annexed to this announcement).

The table below summarises the Proven and Probable Ore Reserve that will be produced from the mining of the Measured and Indicated Mineral Resource and processing in a purpose built, beneficiation plant in Cadoux and refinery in Kwinana.

Category	Ore Kt	Al_2O_3 %	Fe_2O_3 %	K_2O %	TiO_2 %
Proved	290	24.9%	1.1%	0.5%	0.8%
Probable	2,914	24.8%	1.1%	0.6%	0.9%
Total	**3,205**	**24.8%**	**1.1%**	**0.5%**	**0.9%**

Table -4 Updated Ore Reserve

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Stage	Proved Ore		Probable Ore		Waste	Total Mining	Waste Ratio
	kt	Al_2O_3 %	kt	Al_2O_3 %	kt	kt	
1A	63	25.9%	1	25.9%	150	214	2.3
1B	134	24.4%	10	22.4%	142	287	1.0
2	33	24.8%	163	24.7%	378	573	1.9
3	4	26.6%	234	25.0%	204	442	0.9
4	9	24.6%	204	25.2%	174	386	0.8
5	-	-	162	25.1%	369	531	2.3
6	-	-	161	24.1%	364	525	2.3
7	-	-	161	26.9%	163	324	1.0
8	-	-	194	25.1%	226	421	1.2
9	-	-	156	23.5%	161	317	1.0
10	-	-	151	24.4%	334	484	2.2
11	-	-	149	24.8%	324	473	2.2
12	-	-	148	26.0%	341	489	2.3
13	-	-	162	25.2%	374	536	2.3
14	-	-	153	25.2%	385	539	2.5
15	-	-	165	24.1%	468	633	2.8
16	47	24.7%	180	23.9%	474	701	2.1
17	-	-	181	24.2%	447	628	2.5
18	-	-	179	24.2%	351	530	2.0
Total	**290**	**24.9%**	**2,914**	**24.8%**	**5,827**	**9,032**	**1.8**

Table -5 Ore Reserve by Mining Stage

Material Modifying Factors

Mining Factors

The mining method selected for operations at Cadoux is conventional open pit mining. This method was chosen due to the shallow depth of the orebody and is suitable for free digging and hard ripping (i.e. no drilling and blasting). Staged backfilling during operations will minimise the disturbance footprint of the small-scale mining as well as limit the environmental impact at the site. The selected mining method has the following steps;

- Overburden is excavated with trucks and an excavator until the top of the orebody is exposed, with some areas potentially requiring hard ripping;
- Exposed ore is mined by excavator then hauled by trucks either directly to the beneficiation plant or to the Run of Mine (ROM) stockpile for future processing;
- Overburden and rejects are placed back into the previously excavated sections of the pit as soon as they become available for backfilling. (i.e. have enough stand off from the mining face and are completely exposed at the bottom).

Mining operations will be managed by a contractor. A campaign mining methodology is the most suitable scheduling due to the relatively low tonnage quantities required from the proposed mining/loading operation. The mine will be in operation for typically 3 months (a single campaign) with each subsequent campaign separated by a period of 3 years from the preceding one. A single campaign is designed to excavate and stockpile 3 years kaolin supply on the ROM stockpiles. This approach presents significant savings in overhead costs and ensures that adequate efficiencies are maintained.

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The various activities of the mining operation consist of:

- Clearing of vegetation and topsoil stripping and storage;
- Haul road and ramp construction;
- Grade control;
- Establishment of any required pit bunds;
- Excavating and hauling overburden material to surface storage facilities or backfilling of mined out voids wherever ore mining has been completed;
- Ore mining and hauling to ROM stockpiles;
- Rehandling of Cadoux plant rejects, tailings;
- Rehabilitation works and pit dewatering when required.

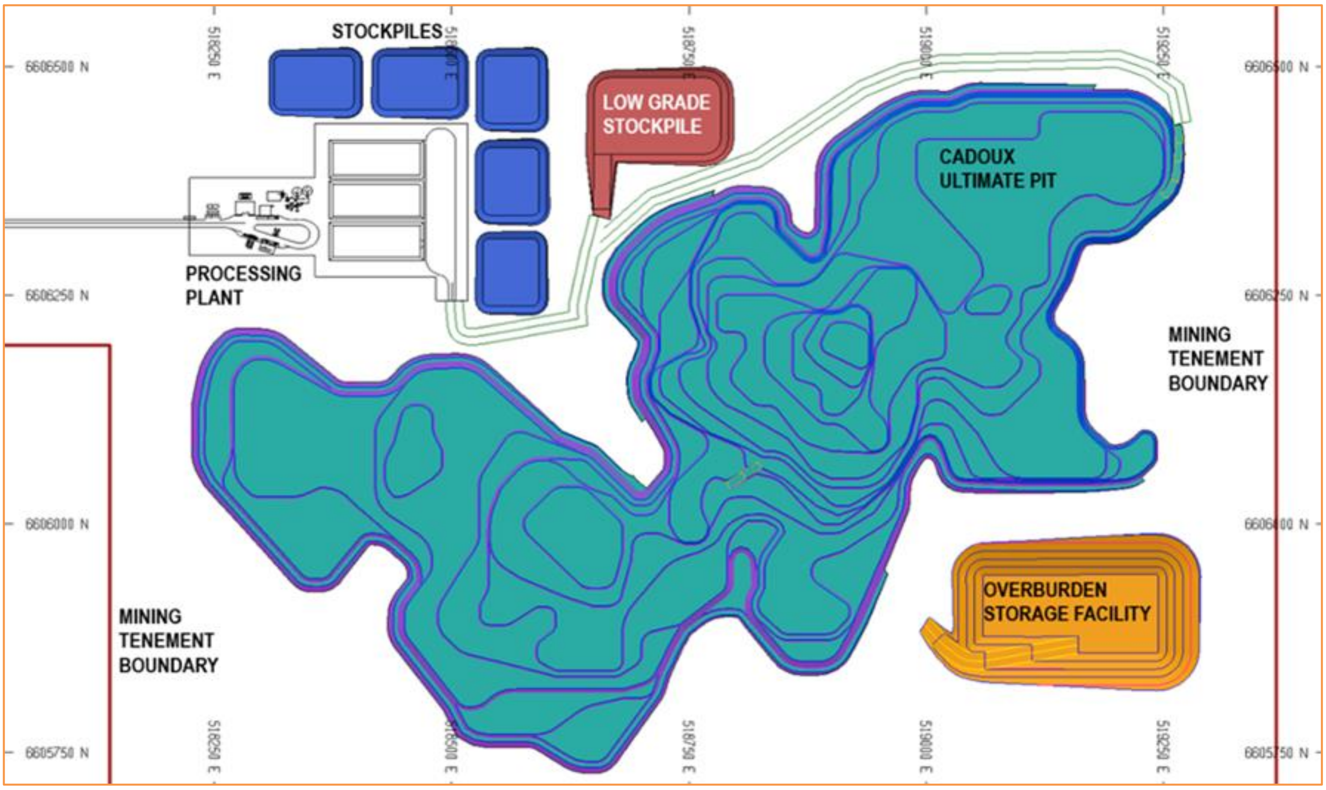

Figure -1: Cadoux site layout with final pit design

Processing & infrastructure

The Company's integrated HPA production consists of two operating sites: one being the mining and beneficiation of feedstock at Cadoux and second the refining of feedstock for HPA production at Kwinana.

The Kwinana refinery process and engineering is designed around the innovation and modification of an existing and proven process flowsheet – for the original purposes of producing aluminium metal, not alumina. FYI's process is adapted to make ultrapure alumina. The redefined and innovative process is designed to utilise reasonably standard "off-the shelf" technologies and equipment. The process emphasis has been directed at achieving and maintaining a high quality, ultra-pure product (> 99.99% Al_2O_3 grade) as well as production process efficiencies, appropriate capital control, environmental sensitivity, safety and quality of product.

This study contemplates an initial 24,500 tpa of beneficiated ore being received from Cadoux through to an output from Kwinana of 8,000 tpa of market-ready HPA. The HPA will then be packaged to specific customer and general market requirements for transportation to Fremantle port for export. It is anticipated that commissioning will take place ahead of commercial production being declared. A three-quarter ramp up period in production is expected until nameplate capacity is achieved. This ramp up is reflected in the Company's financial forecast.

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The HPA refinery is designed to be extremely efficient and provides for increases in capacity through production efficiencies. Any potential production increase is not included in the Company's financial modelling and forecast.

Process Design

The kaolin processing plant has been designed based on the Company's in-house metallurgical testwork results and process flowsheet modelling. The plant will incorporate the latest technologies available, contemporary design practices and procedures.

The intermediate product generated by the Cadoux beneficiation operation is screened Cadoux kaolin clay, produced as feedstock for the downstream HPA Refinery in Kwinana. The final product generated by the Kwinana Refinery will be saleable HPA at 99.99% Al_2O_3.

Metallurgy

FYI's innovative flowsheet design has been the subject of extensive research and development (**R&D**) over two stages of study – being the PFS and DFS. This research confirmed and optimised the process flowsheet based on the outcomes of extensive metallurgical test work. The following test work was completed as input references to the DFS:

- bench scale;
- bench scale variability;
- locked cycle(s);
- pilot plant.

All DFS metallurgical test work was successful with HPA product grades in excess of 99.99% (4N) and ranging up to 99.999% (5N) Al_2O_3 (refer ASX announcements dated 6 November and 11 December 2019).

In terms of validating the process and demonstrating the robustness and effectiveness of FYI's innovative flow process flowsheet, the Company incorporated the following testwork into the DFS as key data references:

The **variability test work** demonstrated robustness and reliability of feedstock consistently producing HPA grades of 99.99% Al_2O_3 or higher. The sample selection was based on the first three years of life of mine ore.

The **locked cycle** test work was critical to the project development as it confirmed the process flow sheet and impurity mass balances. In achieving grades of 99.999% (5N) Al_2O_3 it demonstrated that the flowsheet is efficient and effective.

The bespoke designed and built **pilot plant** was constructed to replicate FYI's innovative HPA process flowsheet in detail. As a result, the test facility was able to demonstrate on a continuous "end to end" basis the materials handling and other efficiencies and effectiveness of actual physical production.

All analytical results of the various test work were verified by independent laboratory services.

As a consequence of the above phases of R&D, all metallurgical testwork steps in the development of the HPA flowsheet were examined, refined and / or improved resulting in a well-designed and efficient flowsheet.

FYI's innovative process flowsheet was demonstrated through the pilot plant operation to provide confidence in the deliverability and operability of the three main processing stages – beneficiation, leach and precipitation / purification. The pilot plant comprehensively validates the operating and design parameters used in this Study.

An Independent peer review, conducted by Dr Leon Lorenzen, concluded that that test work to date is well designed, thoroughly executed and well reported. This report is included in the substantive DFS report.

The results of the metallurgical test work have been used by the engineering contractor to establish the flowsheet, Process Design Criteria (**PDC**) and other operating parameters.

Transport and Logistics

Transport of the beneficiated kaolin from the Cadoux Kaolin mine to the proposed Kwinana refinery will be via the existing road network. The proposed route is via Wongan Hills to utilise the Great Northern Highway onto Roe Highway and through to Kwinana. The round-trip distance is 590 kms.

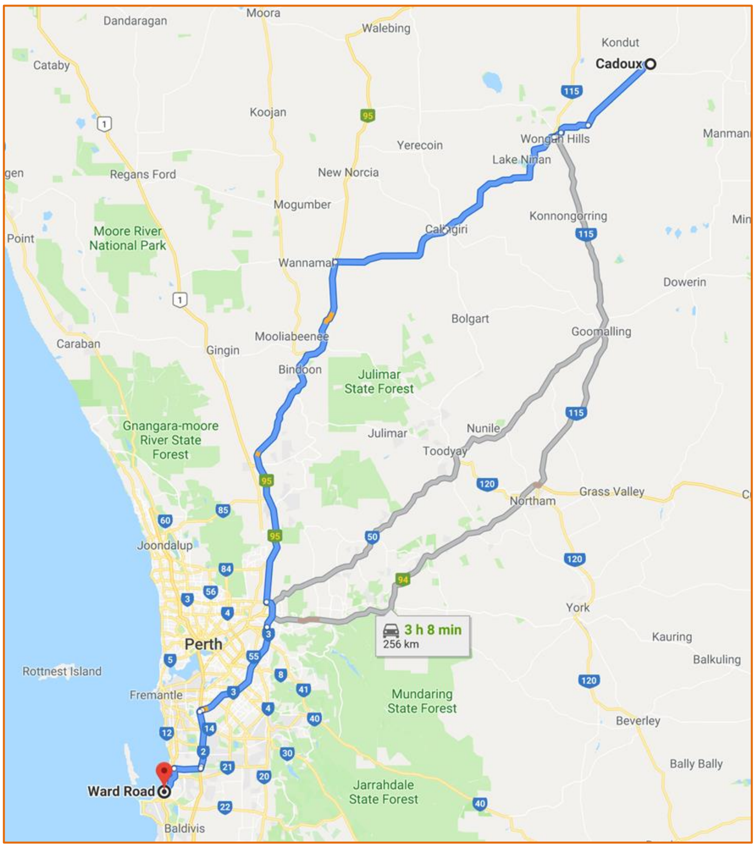

Figure 2 Transport route Cadoux - Kwinana

For transport, a single twin-steer prime mover and pneumatic tank pocket road-train combination capable of hauling 57 tonnes of kaolin is required. For the DFS, a b-double combination with a combined capacity of 68 m3 has been selected.

Operating two 12 hour shifts five days per week will provide total weekly capacity of 570 tonnes, which also provides a suitable amount of redundancy for any unforeseen delays.

For export freighting of the finished product, the bulk density of HPA is light. The study assumes that 593 x 20' and 334 x 40' containers are loaded from Fremantle port annually. This is based on a compacted bulk density of 0.444g/ml. The container costs are based on providing side-loader trailer equipment to drop off and pick up containers on a drop and swap scenario (empty for full). Side-loader trailer equipment removes the need for levelling docks in the refinery and any onsite container handling equipment.

Port service charges are for the use of the Fremantle port. FYI is proposing a dedicated wharf services facility. One of the main benefits is having the ability to stage export containers within the port precinct. Staging enables containers to be ready on time for vessel arrival and handling can be accomplished within off-peak hours.

All sales are based on a Free on Board (**FOB**) basis. However, FYI has studied the freight forwarding costs in order to understand the cost of the total supply chain. If a customer requires the product to be shipped

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Cost Insurance Freight (**CIF**), FYI is able to recover this through an increased sales price to take into account these extra costs. The Company gathered the CIF cost information for the major transport routes into Asia, Europe and America.

Economic

The Project's base case financial projections (**Base Case**) have been modelled with a conservative average sales price of US$24,000 per tonne of HPA produced.

The Project's net present value (**NPV**) is derived on a post-royalty, post-tax, 70% debt and 30% equity-funded, with real cash flows, and a 10% discount rate.

The Base Case analysis incorporates the current reserve and a project life of 25 years. In the first year it is assumed that the Company will produce and sell 70% (5,600t HPA) of the annual capacity.

The Project will generate approximately US$88 million of free cash flow per year after all operating costs, royalties and corporate taxes.

Capital costs estimate

The Project capital cost estimate for the Project is based on an Engineering, Procurement and Construction Management (**EPCM**) execution schedule for the Cadoux mine site and the Kwinana refinery.

The estimates for both the Cadoux plant site and the Kwinana refinery have been compiled in separate estimating spreadsheets. This is due to the geographical differences between the two sites being that one is a remote site and one is located within the Perth metropolitan area. This geographical difference affects labour rates and rosters, mobilisation and demobilisation, productivity, transport and other costs to a lesser effect.

The project estimate has been compiled on an EPCM basis with the project to be executed by a suitable engineering company working in conjunction with the owner's management team.

The estimate includes all costs associated with process engineering, design engineering, drafting, procurement, construction and commissioning of the plant and refinery facilities and associated infrastructure, first fills of plant reagents and consumables, and spare parts to design, procure, construct and commission all of the facilities required to establish the Project.

The estimate pricing was obtained predominantly during the December 2019 quarter. Where pricing was received in a foreign currency, it was converted to A$ at the foreign exchange rates set at 4Q19. The estimate accuracy is -10% / +15% based on the following:

- Utilisation of engineering quantities and design drawings from similar projects;
- Budget quotations obtained for major items and site-based contract works;
- The capital cost estimate was segmented using a conventional work breakdown structure (**WBS**) by process area;
- The capital cost estimate was broken down into commodity components (i.e. equipment, steel, concrete etc.).

In addition to the general maintenance provisions addressed in the operating cost estimate, there is also a requirement for "sustaining" capital expenditure over the life of the Project. The estimated sustaining capital or deferred costs are based on industry experience and are US$4M per annum, or 2.0% of the capital expenditure estimate.

Operating costs estimate

The operating costs for the Project are based on the two Project sites, situated in Cadoux and Kwinana, processing 53,500 tonnes per annum of Cadoux ore feed to produce 8,000 tonnes per annum of HPA.

Mined kaolin will be treated initially by the Cadoux Beneficiation Plant, producing 24,500 tonnes per annum of kaolin clay to feed to the Kwinana HPA Refinery, in turn producing 8,000 tonnes per annum of HPA.

Various utilities and plant infrastructure such as water, air services, fuel, power supply and distribution, roads, communications and site buildings will support the Project.

The operating cost is expressed in Australian dollars and is exclusive of Goods and Services Tax (GST). It is based on costs prevailing in the Australian minerals industry for the 4Q19 and conforms to a Class 4 estimate.

The operating cost reflects of the plant throughput, the process design criteria and steady state mass and energy balance model based on the metallurgy testwork.

Reagent consumption rates have been calculated on the basis of the mass and energy balance model undertaken.

Marketing

Fundamental to the success of Project, is the pricing and marketing of the product. FYI has mandated independent sector and industry research from Commodity Research Unit (**CRU**) and Allied Market Research (**Allied**) as well as undertaken separate in-house marketing studies including "one on one" meetings with customers.

The following marketing highlights are based on independent research groups findings and FYI's internal research:

- HPA has a strong demand outlook with the HPA global market expected to increase from around 35,000t in 2019 to 145,000t in 2026, driven primarily by strong growth in demand for HPA as a lithium-ion battery (**LIB**) separator coating.
- The Company is developing a consistent, high quality product delivered by a reliable quality and assurance process.
- HPA pricing is determined by product purity, the physical characteristics of the products, ability to deliver consistent product quality and the end-use application of the HPA.
- The strong demand outlook and rising cost inputs are expected to place upwards pressure on prices. The main downside risks are increased competition from Chinese producers and changes to technology which reduce HPA intensity in manufacturing processes. Chinese material tends to be of lower quality than that produced by the established companies outside of China.

FYI has been developing positive market engagement with potential customers regarding HPA off-take. The Company has produced sufficient trial samples during the pilot plant program to provide to potential customers for testing and evaluation with a view to securing off-take agreements to support the Project.

Description of High Purity Alumina and key uses

High-purity alumina is a crystalline white powder made from almost pure aluminium oxide (**Al_2O_3**). Commonly, HPA is defined as Al_2O_3 which is >99.99% pure. HPA products are generally classified by purity:

- 99.99% = 4N (equivalent to ≤100ppm impurities)
- 99.999% = 5N (equivalent to ≤10ppm impurities)
- 99.9999% = 6N (equivalent to ≤1ppm)

HPA is produced, as a final product, in powder, pellet or granular form, depending upon the end-use. Various end-use applications have different physical and chemical tolerances and requirements.

HPA is a versatile product with many broad uses. Some of the more common traditional uses include as a ceramic for producing substrates used in LED lighting and electronic applications, high strength scratch-resistant glass, as a fire retardant and as a fine polishing agent.

As HPA becomes more accessible and specifications of certain applications increase – with demands on higher quality, HPA has found uses in new high-tech applications such as batteries and energy storage and high-grade ceramic applications.

Drivers of demand

Market demand	Production process	End-use application	End-use sectors
HPA demand	Synthetic sapphire production	LED & semiconductor substrates Scratch-proof glass	Lighting, automotive, LED signs, electronics, tablets, smart phones, watch faces
	Direct use in manufacturing process	Lithium-ion battery (**LIB**) separator coating	Electric vehicles consumer goods
		Phosphor coating	Fluorescent lighting

HPA market demand drivers

4N HPA accounts for the largest share of the HPA market demand, although more specialist applications, such as high-quality microscope glass, are likely to utilise higher-specification HPA products, such as 5N.

The demand for high-purity alumina has gained traction in recent years and is now forecasted to grow at a CAGR of ~22.0% in terms of volume during the period 2019 - 2026, owing to increase in demand from applications such as LED bulbs, LIB separator coating, electronic displays, automotive, and medical applications. This trend is anticipated to continue with the growth in the adoption of HPA by end users and emerging technological developments. The HPA global market is expected to increase from around 35,000t in 2019 to 145,000t in 2026, (Source: Allied Market Research, October 2019, Global High Purity Alumina Market, Opportunity Analysis and Industry Forecast 2018 – 20126).

Category	High Purity Alumina Market, by Application, 2018–2026 (Ton)									
	2018	2019	2020	2021	2022	2023	2024	2025	2026	CAGR (2018-2026)
LED Bulbs	15,079	17,894	21,404	25,806	31,360	38,407	47,404	58,959	73,892	22.5%
Semiconductor Substrates	4,776	5,635	6,703	8,037	9,712	11,829	14,518	17,957	22,380	21.8%
Li-ion Batteries	2,630	3,253	4,047	5,068	6,386	8,098	10,335	13,275	17,163	26.8%
Optical Lenses	1,788	2,078	2,434	2,872	3,415	4,091	4,938	6,003	7,350	19.8%
Bio-Medical Devices	1,106	1,292	1,522	1,807	2,162	2,608	3,169	3,881	4,788	20.6%
Others	5,042	5,814	6,754	7,901	9,309	11,044	13,191	15,861	19,197	18.6%
Total	**30,420**	**35,966**	**42,864**	**51,492**	**62,344**	**76,076**	**93,554**	**115,935**	**144,770**	**22.0%**

Table -6 HPA market by application, 2018 - 2026

Adopted pricing

FYI has adopted a methodology to establish a conservative and realistic sales price for HPA, which is used in the DFS financial model.

This methodology includes sourcing of price indications from:

- independent price forecasts and price revealing by industry research experts CRU and Allied;
- web-based commodity trading platforms;
- purchasing of product from an established commodity retailer / trader; and
- FYI's own market intelligence studies - having direct face to face meetings with small and large manufacturers and traders in China, Japan and South Korea.

Pricing information used for the DFS was derived from:

- CRU and Allied research reports and presentations including price forecasts for the period 2019 to 2026;
- December 2019 pricing on commodity trading platforms for HPA was evidenced in retail spot prices for 4N ranging from US$53,000/t to US$ 60,000/t;
- Invoiced price for HPA (used in independent metallurgical test work and verification of purity) – US$100,000/t; and
- Canvassing of approximately 30 separate groups indicated the price range for 99.99% HPA was between US$22,000/t (China) and US$37,000/t (South Korea).

In order to calculate the HPA price for the DFS, the Company allowed for an adjustment of spot pricing versus contract, end-user versus trader and applied an error margin to be prudent. These factors, and a projected decline of 10% for the estimated period until the Company sells its first HPA resulted in a price of US$24,000/t HPA being used in the DFS.

This adopted price is in line with the pricing from the Company's market forecasters, which is on average US$24,400/t. The pricing methodology takes in account the price difference of HPA between diverse countries such as China, South Korea/Japan and markets such as end-users versus traders.

Sensitivities

The effects of varying a number of key drivers of cost and revenue have been modeled to assess their effects on the project value.

The Project's sensitivity analysis, at 10% discount rate, and changes to input by +/- 20%, is shown below represented in a Tornado Graph. The Project is highly sensitive to the sales price, throughput and less to Operating and Capital Costs.

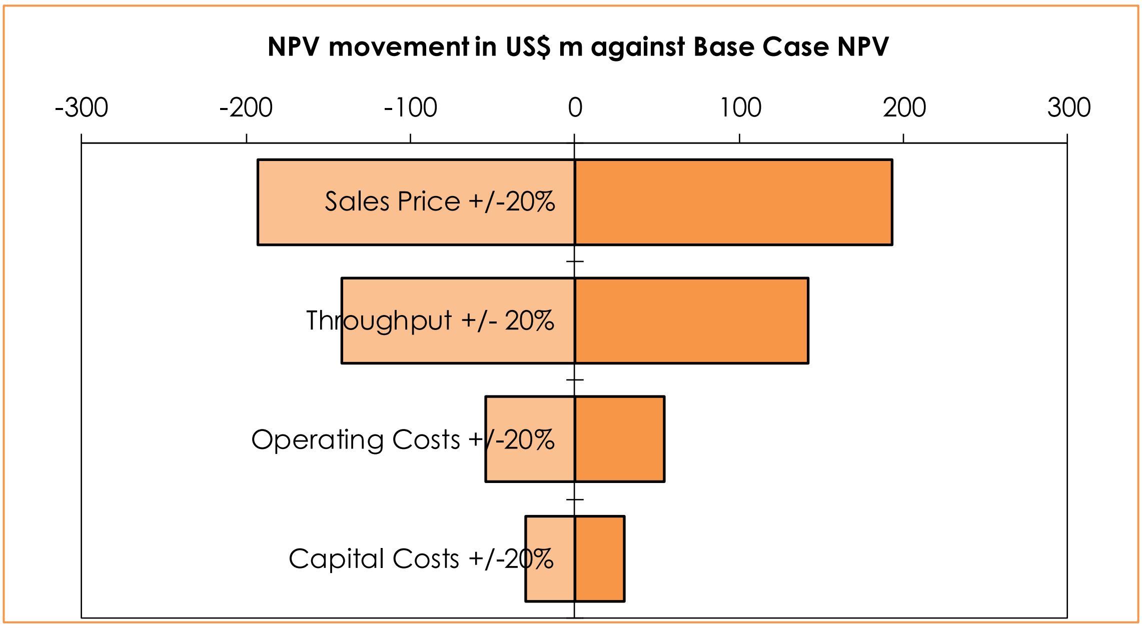

Figure -3 Sensitivity – Tornado graph

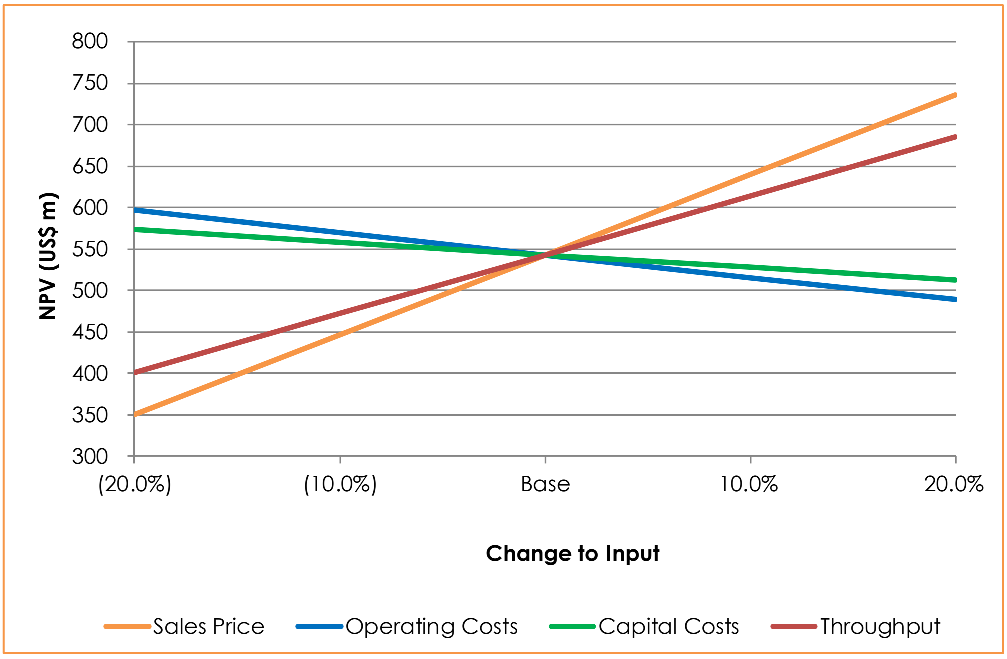

Figure -4: Sensitivity – Spider graph

% Delta	Sales Price	Through put	Capex	Opex
-20%	350	401	573	597
-10%	446	472	558	570
Base	543	543	543	543
10%	639	614	528	516
20%	736	685	513	489

Table -7 Sensitivity Table - Post Tax NPV 10%

Legal

FYI Resources Ltd, listed on the ASX, is the holding company and holds 100% of the shares in the subsidiary Kokardine Kaolin Pty Ltd (**KKPL**). All project activities are executed through KKPL meaning that all assets such as tenements, fixed assets and intellectual property are held in KKPL. Commercial contracts with regard to the development, construction and operation of the project are executed by KKPL. FYI, as a holding company, has a corporate function in managing, provision and allocation of capital, ASX compliance and ownership of its subsidiary including the project.

The ownership of the tenements is presented in the plan below.

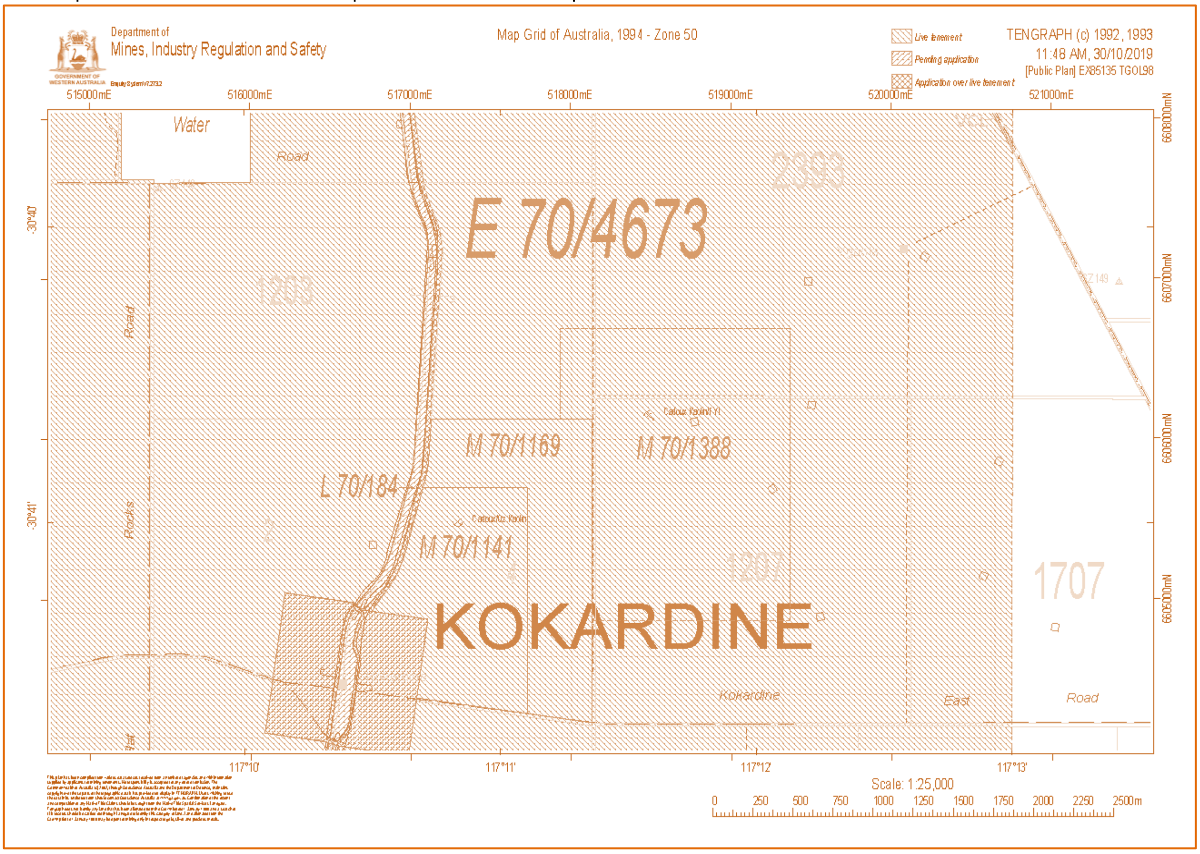

Figure -5 Tenement overview (E70/4673 & M70/1388).
Note: M70/1166 & M70/1141 are not owned by FYI and are not part of the project

Exploration licence E70/4673 and Mining licence M70/1388 are held by KKPL, a 100% wholly owned subsidiary of FYI Resources Ltd.

Environmental

All primary environmental approvals have been obtained and the proposed secondary approvals will be commenced when the project implementation starts. Approvals are targeted to be in place before the commencement of construction. Environmental management plans will be prepared for construction and operational phases of the project

The Company is committed to compliance with statutory requirements, continuous improvement and minimising environmental and social impacts. From a primary approval point of view, with respect to Cadoux, the Mining Proposal (**MP**) including Mine Closure Plan (**MCP**) has been approved. The refinery site in Kwinana is already approved under Ministerial Statement 863 – 2011.05.26 Rockingham Industrial Zone Strategic Environmental Assessment (formerly IP14).

Social

Stakeholder engagement and consultation activities for the Project commenced in 2017 and are ongoing. The Company has identified and met with the following stakeholders: Western Australian Government agencies, local government, Aboriginal organisations, landholders, industry, non-government organisations, traditional owners and adjacent tenement holders. No significant issues have been raised to date and it has been acknowledged by the stakeholders that the project will create local and regional benefits in the Cadoux and Kwinana area.

The mining lease is 100% on freehold land or road reserves which extinguishes native title over the area of the mining lease. However, the mining lease is situated within the area covered by the Ballardong People Indigenous Land Use Agreement (ILUA). As required, by condition 6 of the mining lease, FYI has: (1) signed a Noongar Standard Heritage Agreement with the Ballardong People on the 15th of July 2019; and (2) provided the Department of Mines Industry, Regulations and Safety (DMIRS) with the required Statutory Declaration notifying DMIRS of the signed NSHA. Under the NSHA the Company will need provide the Ballardong People with an Activity Notice pursuant to clause 8.2 of the NSHA agreement before the commencement of mining.

FYI considers the traditional owners as an important stakeholder of the project and has actively been in discussion with the South West Aboriginal Land & Sea Council (**SWALSC**) who acts on behalf of the Ballardong People. FYI intends to keep SWALSC and the traditional owners up to date on the Project and discuss any future employment or business opportunities to maintain and develop this important relationship.

The Company understands that expectations regarding the types and level of stakeholder engagement are not static and will shift according to the Project phase and the social, economic and environmental conditions of the day. To maintain an effective Stakeholder Engagement Strategy and maintain its relevance over the long term, FYI will maintain a Stakeholder Consultation Database and undertake regular review of the strategy as part of its Environmental Management System. FYI aims to remain alert and sensitive to any changes in public perception of the Project and will continue to investigate, define and discuss any issues with relevant stakeholders.

Government

In September 2019, FYI received the support of the Premier of WA, who is also the Minister for State Development, Jobs & Trade, requesting the Department of Jobs, Tourism, Science and Innovation (**JTSI**), to provide lead agency services to the Project. This will assist with Project development and the timing of the required approvals.

Following discussions with DMIRS, the Company was informed that a WA Government royalty rate of 2.5% (instead of 5%) will be applied to the project.

Further Opportunities

FYI has delivered what it believes is an attractive business case as outlined in the DFS. During the DFS study period, the Company identified a number of areas where economies and efficiencies may be gained to improve the overall project metrics. During the next phase of development and leading up to the final engineering design, FYI will concentrate on improving the economics of the project.
Areas identified include:

- Leveraging off the installed infrastructure and services in the Kwinana Industrial Zone (KIZ) for capital and operating cost benefits
- Sourcing cheaper major inputs and consumables
- Refining the EPC cost and delivery function
- Continue developing potential additional revenue streams
- Further investigation on materials handling improvements

Project Funding

FYI intends to finance the project through a combination of funding options including equity, debt, off-take advance or Joint Venture contribution at project level. The final funding package will, in most likely event, be a combination of these options. The Company will seek to minimise shareholder dilution, while taking a prudent and measured approach to the funding options the Company will deploy.

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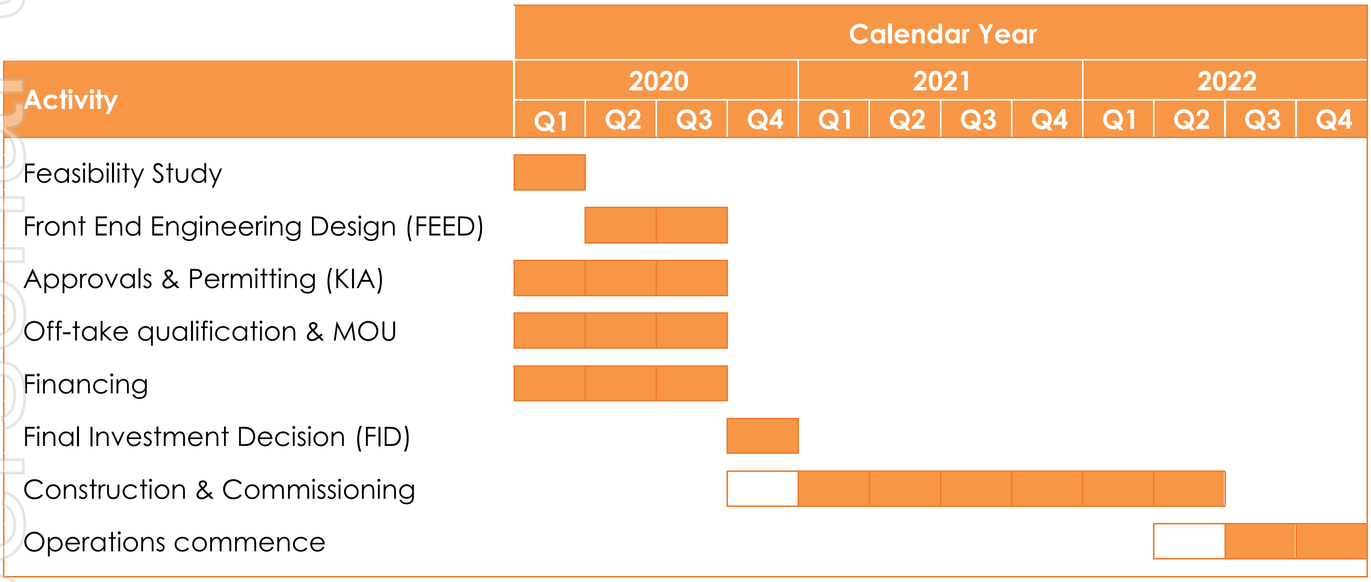
Next Steps

A project implementation schedule has been established in order to maintain the project development timeline. The key items within the critical path to production are included below:

- Continue HPA product qualification, customer discussions and MOU and binding off-take Agreements
- Advance ongoing financing and credit discussions
- Customer lead HPA end product development
- Finalise EPCM structure & award
- Final project approvals completed
- Commence Early Works Construction activities
- Initiate long lead order items to synchronise with the construction timetable
- Continue to assemble the project delivery team



Authorised for release by Roland Hill, Managing Director.

For more information please contact:

Roland Hill
Managing Director
Tel: +61 414 666 178
roland.hill@fyiresources.com.au

Simon Hinsley
Investor & Media Relations
Tel: 0401 809 653
simon@nwrcommunications.com.au

The GEM Equity Commitment was facilitated by BlueMount Capital (WA)
Laurie Ziatas
0418 943 691

About FYI Resources Limited

FYI's is positioning itself to be a significant producer of high purity alumina (HPA or 4N). HPA is a versatile product in various traditional and rapidly developing applications as well as growth markets. The traditional markets of light emitting diode (LED), smartphones, TV and tablet markets continue to demonstrate strong year on year growth. The and phosphor applications as well as the electric vehicle and static power storage markets as well as other associated high-tech product markets.

The foundation of FYI's HPA strategy is the superior quality aluminous clay (kaolin) deposit at Cadoux and positive response that the feedstock has to the Company's innovative and integrated processing flowsheet utilising uncomplicated moderate temperature and atmospheric pressure technologies. The strategy's quality attributes combine resulting in world class HPA project potential.

Cautionary Statements

Substance of DFS

The DFS referred to in this announcement is a study of the potential viability of the Cadoux Kaolin Project. It has been undertaken to understand the technical and economic viability of the Project.

The DFS assumes as a 25 year Project life based only on Proved and Probable Ore Reserves (100%).

The DFS is based on the material assumptions outlined elsewhere in this announcement and the appended summary of the DFS. These include assumptions about the availability of funding. While the Company considers all of the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by this DFS will be achieved.

To achieve the range of outcomes indicated in the DFS, funding in the order of A$189 million will likely be required. Investors should note that there is no certainty that the Company will be able to raise the amount of funding when needed. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of the Company's existing shares.

It is also possible that the Company could pursue other "value realisation" strategies such as a sale, partial sale or joint venture of the Project. If it does, this could materially reduce the Company's proportionate ownership of the Project.

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General and forward-looking statements

The contents of this announcement reflect various technical and economic conditions, assumptions and contingencies which are based on interpretations of current market conditions at the time of writing. Given the nature of the resources industry, these conditions can change significantly and without notice over relatively short periods of time. Consequently, actual results may vary from those detailed in this announcement.

Some statements in this announcement regarding estimates or future events are forward-looking statements. They include indications of, and guidance on, future earnings, cash flow, costs and financial performance. Such forward-looking statements are provided as a general guide only and should not be relied on as a guarantee of future performance. When used in this announcement, words such as, but are not limited to, "could", "planned", "estimated", "expect", "intend", "may", "potential", "should", "projected", "scheduled", "anticipates", "believes", "predict", "foresee", "proposed", "aim", "target", "opportunity", "nominal", "conceptual" and similar expressions are forward-looking statements.

Although the Company believes that the expectations reflected in these forward-looking statements are reasonable, such statements involve risks and uncertainties, and no assurance can be given that actual results will be consistent with these forward-looking statements.

The contents of this release are also subject to significant risks and uncertainties that include but are not limited those inherent in mine development and production, geological, mining, metallurgical and processing technical problems, the inability to obtain and maintain mine licences, permits and other regulatory approvals required in connection with mining and processing operations, competition for among other things, capital, acquisitions of reserves, undeveloped lands and skilled personnel, incorrect assessments of the value of projects and acquisitions, changes in commodity prices and exchange rates, currency and interest rate fluctuations and other adverse economic conditions, the potential inability to market and sell products, various events which could disrupt operations and/or the transportation of mineral products, including labour stoppages and severe weather conditions, the demand for and availability of transportation services, environmental, native title, heritage, taxation and other legal problems, the potential inability to secure adequate financing and management's potential inability to anticipate and manage the foregoing factors and risks.

All persons should consider seeking appropriate professional legal, financial and taxation advice in reviewing this announcement and all other information with respect to the Company and evaluating the business, financial performance and operations of the Company. Neither the provision of this announcement nor any information contained in this announcement or subsequently communicated to any person in connection with this announcement is, or should be taken as, constituting the giving of investment or financial advice to any person. This announcement does not take into account the individual investment objective, financial or tax situation or particular needs of any person.

Competent Persons Statements

Ore Reserves

The information in this report that relates to Ore Reserves is based on information compiled by Mr. Steve Craig, who is a Fellow of the Australasian Institute of Mining and Metallurgy. Steve Craig is a full-time employee of Orelogy Consulting Pty Ltd and has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". The information is extracted from the Ore Reserve announcement released 29 October 2018 and is available to view on the Company's website at www.fyiresources.com.au .

Mineral Resources

The information in this report that relates to Mineral Resources is based on information compiled by Mr Grant Louw, under the direction and supervision of Dr Andrew Scogings, who are both full-time employees of CSA Global. Dr Scogings is a Member of the Australasian Institute of Mining and Metallurgy and a Member of the Australian Institute of Geoscientists. He is a Registered Professional Geologist in Industrial Minerals. Dr Scogings has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as Competent Person as defined in the 2012 Edition of the "Australasian Code for the Reporting of Exploration Results, Mineral Resources, and Ore Reserves". The information is extracted from the PFS announcement dated 25 September 2018 and is available to view on the Company's website at www.fyiresources.com.au .

Metallurgy

The information in this report that relates to metallurgy and metallurgical test work is based on information reviewed and compiled by Mr Daryl Evans, a Competent Person who is a Fellow of the Australian Institute of Mining and Metallurgy (AusIMM). Mr Evans is an employee of Independent Metallurgical Operations Pty Ltd, and is a contractor to FYI. Mr Evans has sufficient experience that is relevant to this style of processing and type of deposit under consideration, and to the activity that he has undertaken to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves". Announcements in respect to metallurgical results are available to view on the Company's website at www.fyiresources.com.au .

APPENDIX A - JORC Table

JORC 2012 – Table 1

Sections 1 and 2 include information from previous drilling programs by FYI on the Cadoux Project.

(Criteria in this section apply to all succeeding sections.)

Section 1: Sampling Techniques and Data

Criteria	Commentary
Sampling techniques	Aircore (AC) samples were collected at 1 m intervals from a rig mounted riffle or cone splitter. 75% of each metre sample was collected in a 900 mm x 600 mm green plastic bag, and the remaining 25% (split sample) was collected in a 610 mm x 405 mm green plastic bag. The split samples were collected directly from the cyclone because the samples for assay were to be collected in plastic rather than calico bags (% moisture needs to be measured, and fine dust (red) can get into the calico). Reverse circulation (RC) chip samples were collected at 1 m intervals from a cone splitter mounted on the side of the RC rig. 75% of the sample volume from each drilled metre was collected in a 900 mm x 600 mm green plastic bag, and the remaining 25% of volume is used to generate a split sample which is collected in a 200 mm x 150 mm calico bag and then placed into a green plastic bag and sealed to retain sample moisture. The split samples were collected directly from the cyclone/splitter because the samples for assay are also measured for in situ moisture. The samples were composited into 2 m samples (generated from the drill rig cone splitter) and sent to Intertek for sampling analysis + moisture testing. For the new 'Geostatistical L' RC test program pattern samples were collected at 1.0m intervals from a cone splitter on the RC rig where approximately 75% of the sample was collected in plastic bags and the remaining 25% in pre-numbered calico sample bags. Following the geological logging of the drill samples the relevant 1.0m split samples were collected and bagged for submission to the assaying laboratory. A number of selected holes and drill intervals were also sampled separately for moisture measurement determined by the "Loss on Drying" – LOD – method.
Drilling techniques	AC drilling using a Mantis 100 drill rig with an NQ AC sand bit. The RC drilling program used a 450 Schramm drill rig with KL rod handler, auto maker/breaker slips table, rig-mounted cone sampling system and with hammer and blade bit capabilities. Both hammer and blade drilling were employed on various selected holes to gauge variability and quality of sample return as well as to compare with repeat holes from previous drilling. For the new 'Geostatistical L' RC test program the drill rig was the same drill rig that was used in the previous drill program that is referred to in the above paragraph. All holes were completed using a hammer bit.
Drill sample recovery	Actual recoveries from AC drilling were measured and averaged approximately 80-90%; it is considered that samples of each hole were even sized and reported as acceptable standard. Sample recoveries from the RC drilling were weighed and measured and sizes recorded demonstrating that sample recovery from all holes was of an acceptable standard. Photos of separate chip (cuttings) trays were also taken to demonstrate the lithology profile of the hole. Selected samples were also tested for moisture content – allowing a greater confidence in sample return quality and for specific gravity testing. For the new 'Geostatistical L' RC test program sample recoveries were assessed and logged for each 1.0m interval. Excepting for the surface 0-2m interval all drilling achieved sample recoveries >90% and were of a size and quantity that are of an acceptable standard.
Logging	AC: Chip tray samples were taken along with usual logging and the chip tray samples were non-sieved and dry. All holes were field logged by 1 m intervals by a qualified geologist for geological characteristics. RC: Chip tray samples were taken along with normal logging procedures and protocols. Two sets of logging and sample correlation was conducted on site during the drilling and sampling

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Criteria	Commentary
	program. The chip tray samples were non-sieved and dry and photographed on a whole hole basis. All holes were field logged by 1 m intervals by a qualified geologist for a variety of geological qualities, characteristics and definition. For the new 'Geostatistical L' RC test program sample logging was undertaken at 1.0m intervals with non-sieved chip samples collected from each meter. Chip samples were logged by a qualified geologist and photographed.
Subsampling techniques and sample preparation	All sampling procedures for the AC, RC and DDH drilling has been reviewed by a qualified geologist and is considered to be of a high standard. AC drilling procedure was 1 m samples split using a rig mounted cone splitter and collected in marked plastic bags. 1–2 kg was collected in small green plastic bags and 4–6 kg was collected in large green plastic bags. All samples were dry. 1–2 kg samples were brought back to Perth and sorted into composites. Composite samples were made up from the mineralized kaolin intercepted material. The composites were made using a spear making sure equal amounts were collected from each metre, thus giving a homogeneous of each metre amount in the composites. Samples were submitted to ALS laboratories or Intertek laboratories in Perth (using ICP analysis methods), Western Australia. Also using a spear technique, bulk samples were taken of the Kaolin material intercepted and samples were sent to the Bureau Veritas Australia Laboratories for x-ray fluorescence (XRF) analysis on a range of elements and kaolin parameters. The quality assurance and quality control (QAQC) information of the laboratory was used to determine the QAQC of the samples because commercial standards for kaolin are not readily available. All sampling procedures for the RC drilling have been reviewed by a qualified geologist and is considered to be of a high standard. The RC drilling sampling procedure was 1 m samples split using a rig mounted cone splitter and collected in marked plastic bags. A 2 m composite sample was generated from 1–2 kg collected in small calico bags which were then placed in small green plastic bags. These were marked with corresponding sample numbers. At regular and ad-hoc intervals, repeat samples were taken and noted as well as interspersed standard samples of quartz (blank) and kaolin (standard) were also included at a 1:9 interval as sample checks for QAQC. All samples were sent to Perth to Intertek for laboratory sampling interspersed with the RC drilling program samples. Larger (5–10 kg) samples were collected in large green plastic bags on a 1 m sample basis and sent to Independent Metallurgical Operations (IMO) for further metallurgical testwork purposes. All samples were dry. Total sample returns were measured by weighing and estimating return volume percentages. All samples were "dry" other than the occasional sample that may have been affected by water introduced by the driller to remove pipe blockages. The 2 m composite samples were generated from the rig mounted cone splitter ensuring equal amounts were collected from each metre, thus giving a homogeneous volume for each metre in the composites. Samples were submitted to Intertek laboratories in Perth, Western Australia for XRF analysis methods on a range of elements and kaolin parameters as well as testing for in-situ moisture. For the new 'Geostatistical L' RC test program samples were processes and assayed using Intertek Genalysis laboratory in Perth. The analytical technique used for all elements was XRF.
Quality of analytical data and laboratory tests	AC: Analysis for sizing, SiO_2, Al_2O_3, Fe_2O_3, TiO_2, CaO, MgO, K_2O, Na_2O, P_2O_5, Mn_3O_4, V_2O_5, Cr_2O_3, BaO, ZrO_2, ZnO, SrO and LOI, was completed using XRF. Majority of duplicates are within tolerance of the original assay and without bias. RC: Analysis for sizing, SiO_2, Al_2O_3, Fe_2O_3, TiO_2, CaO, MgO, K_2O, Na_2O, P_2O_5, Mn_3O_4, Cr_2O_3 and LOI, was completed using XRF methods in a globally recognized analysis laboratory. All the inserted repeat samples, duplicates, blanks and standards are within tolerance of the original assay and without significant bias. Selected RC samples were also tested for moisture (LOD) by Intertek Laboratories. The internal standard, blank and duplicate results are within acceptable limits and indicate that the field and laboratory sample preparation was under control. Both ALS and Intertek employ their own internal blank and standard testing regimes for additional QA/QC.

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Criteria	Commentary
Verification of sampling and analyses	AC: Geological personnel supervised the sampling, and infill drill holes were completed. Primary data are captured on paper in the field and then re-entered into spreadsheet format by the supervising geologist, to then be loaded into the company's database. No adjustments are made to any assay data. The RC drilling program also included verification drilling and sampling of the previous AC drilling program that was completed in May 2017. The verification included six repeat RC holes against the previous AC holes. Analysis of the chemical analysis results indicated that there was minimal bias between the two drilling types and mean grades are very similar indicating that the previous AC drilling could reasonably be used in a Mineral Resource estimate (MRE). Sample information is recorded at the time of sampling on field logging sheets using standard logging codes and then re-entered into spreadsheet format for loading to the company's database. The March/April 2019 RC and DDH drilling was also used to confirm and support the drilling of results of the previous AC and RC campaigns – with the results being regarded as very consistent. The new 'Geostatistical L' RC test program was centred on previous RC drill hole CXRC045. The test program was designed to test close range mineralization variability immediately north of and also immediately east of this hole. The N-S drill-line part of the program assisted with the verification of nearby holes CXR057 and CXR065 drilled previously.
Location of data points	All drill holes (AC, RC and DDH) have been accurately surveyed by a licensed contract surveyor (±10 cm accuracy). The collar locations were also checked by the site geologist using a Garmin GPS at site. All holes are drilled up to a maximum of 36 m and were followed up with downhole surveying by Surtech Geophysical Services. For the new 'Geostatistical L' RC test program drill-hole collars were surveyed by a Licensed Mine surveyor using a differential GPS system with an accuracy of approximately 10cm.
Data spacing and distribution	AC: 98 AC drill holes for 1,840.5 m, with hole depths ranged from 6 m to 36 m depending on the depth of kaolin and granite weathering. The drilling generated 27 bulk samples and 220 samples ranging intervals from 1 m to 6 m. Hole spacing ranges from a 100 m x 50 m to 200 m x 200 m grid spacing. RC: 75 drill holes in total drilled in approximately 50 m spacings or 100 m spacing between the previous AC drilling. This resulted in a generally 50 m x 50 m coverage of the northern main deposit area which is considered sufficient for classification of Inferred and/or Indicated Mineral Resources in terms of establishing confidence in geological, grade and quality continuity. RC sampling is a 2 m interval composite from individual 1 m sample intervals. The March/April 2019 RC drilling totalled 18 holes and was completed on a 5m linear spacing in a specially selected area of the designated first phase of mining (first 3 years) – thus providing close spaced definition of the orebody. The Diamond Drill Hole (DDH) portion of this program included 4 PQ triple tube holes angled at -70 degrees with various azimuths. This drilling was used to support the previous drilling campaigns and to provide core for both geotechnical and metallurgical characterization studies. The new 'Geostatistical L' RC test program used sample spacing of 5m along the E-W section and 5m extending out to 10m and 15m along the N-S section line.
Orientation of data in relation to geological structure	AC and RC drill holes were vertical given the horizontal nature of deposit. The risk of sample bias is considered to be low. The DD holes were drilled at -70 degrees at various azimuths For the new 'Geostatistical L' RC test program drill-hole orientation were also vertical, optimally oriented to intersect the horizontal nature of mineralization profile.
Sample security	All samples were under supervision from the rig to the laboratory. All residual sample material is stored securely in sealed bags. For the new 'Geostatistical L' RC test program samples were secured in polypropylene bags, cable tied and transported to the Perth laboratory by a local freight company.
Audits or reviews	Representatives of the Competent Person (CP) from CSA Global, Orelogy, HGMC were responsible for the execution of the AC, RC and DDH drilling programs. The CP's representative examined the mineralisation occurrence and were responsible for logging of the RC drilling intervals. The geological data is deemed fit for use in the MRE. CSA Global, Orelogy and HGMC has respectively reviewed the data internally.

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Section 2: Reporting of Exploration Results

Criteria	Commentary
Mineral tenement and land tenure status	The granted exploration licence 70/4673 in Western Australia, covering an area of 59 km^2.
Exploration done by other parties	White Kaolinite Kaolin (WGK) carried out all the previous prospecting and drilling work that is on the tenement EL 70/4673. The AC drilling comprises of 47 drill holes for 824 m. The exploration work was carried out from 2011 to 2014.
Geology	The project area is underlain by weathered granitoid Archaean rock of the Yilgarn Granites is the likely parent material for the kaolin. Here, deep weathering of the feldspathic and ferromagnesian minerals within the metamorphosed granitic has resulted in the formation of kaolinite. There is no outcrop but recognizable granitoid fragmental rocks are sometimes present just below surface. The crust of the overburden comprises gravel and sands over reddish to off-white clay. White kaolin underlies the overburden followed by weathered, partial oxidized and then fresh granitoids at depth. The recent drilling at the property has revealed a weathering profile which is very common in Western Australia with the granitoid rocks, deeply weathered forming a leached, kaolinized zone under a lateritic crust. Analysis at the Laboratory shows particle size distributions are typical of "primary style" kaolin clays produced from weathered granites. The crust of overburden comprises gravel and sands over reddish to off-white clay to an average depth of 5 m. White kaolin then averages approximately 16 m before orange to yellow sandy and mottled clays are intersected which are followed by recognisable rounded granitoid material. The thickness of the kaolin profile varies from less than 1 m to a maximum of 22 m. Fresh granitoids are found at depths of between 10 m and 30 m. All kaolin resources are within 4 m to 11 m of the surface. 47 AC drill holes were completed with a total of 824 m drilled in May 2017 with a further RC drilling program conducted in April 2018 consisting of 75 RC drill holes totalling 1,613 m resulting in 715 2 m composite samples. All holes were drilled vertically. Intersected kaolin thickness ranged from 1 m to 28 m. The new 'Geostatistical L' RC test program geological logging has confirmed pre-existing interpretations of the kaolinite clay profile. It is noted that the closer spaced drilling has revealed some variation in logged material colour which reflects the clay type composition variability and mineralization variability as shown by new assay analytical results …
Drill hole information	Not relevant. Exploration results are not being reported. Mineral Resources are being disclosed (see Section 3). Sample and drill hole coordinates are provided in previous market announcements.
Data aggregation methods	Not relevant. Exploration results are not being reported. Mineral Resources are being disclosed (see Section 3).
Relationship between mineralisation widths and intercept lengths	Not relevant. Exploration results are not being reported. Mineral Resources are being disclosed (see Section 3).
Diagrams	Refer to figures within the main body of this report.
Balanced reporting	Not relevant. Exploration results are not being reported. Mineral Resources are being disclosed (see Section 3).
Other substantive exploration data	Nothing material to report.
Further work	Metallurgical testwork is continuing to optimize the HPA refining processes.

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Section 3: Estimation and Reporting of Mineral Resources

Criteria	Commentary
Database integrity	Data used in the MRE is sourced from a Microsoft Access database files in conjunction with appended Excel spread-sheet data for the new 'Geostatistical L' RC test program. All data was exported from these primary database sources into 'comma delimited' ASCII format to load into a mining software package used by HGMC. Validation of the data imported comprises checks for overlapping intervals, missing survey data, missing analytical data, missing lithological data, and missing collars.
Site visits	Representatives and CP's from FYI Resources, CSA Global, Orelogy and HGMC were responsible for the execution of the early Air-Core and RC and DDH drilling programs and the recent geostatistical verification RC drilling program. The CP responsible to the most recent resource modelling and resource estimation, Stephen Hyland, visited the Cadoux site on April 10th 2019. The CP examined the location and extent of mineralisation occurrence and included close inspection of selected RC samples from the new 'Geostatistical L' test work program. The CP also viewed the drilling and logging in progress for DDH PQ hole CXGT02 and the locations of 4 additional (RC) water bore test holes. The geological data is deemed fit for use in the MRE.
Geological interpretation	The geology and mineral distribution of the system appears to be reasonably consistent, though affected by variable depths/thicknesses of kaolinisation. The very close spaced 5m and 10 drill holes from the recent 'Geostatistical L' drill program demonstrate that there are not significant variations to be expected with respect to the current mineralization volume defined at Cadoux From the new higher density drilling it is observed that the thickness and consistency of the kaolinite zone is very close to the mineralization interpretation that based on the previously available drilling data-set. The new 'Geostatistical L' RC test program has confirmed the mineral distribution; however the closer spaced drilling has revealed some local internal variability. The high-quality white kaolin zone is interpreted to extend through a fully kaolinised low K_2O upper zone (K2OCD=1), to a higher K_2O less fully kaolinised lower zone (K2OCD=2) with higher K_2O with the cut-off between the two zones defined at a nominal 1% K_2O cut-off. The higher K_2O content in the lower part of the kaolinised material is interpreted, based on the 'normative' mineralogy study, to represent a feldspathic component that has not fully weathered to kaolinite. Drill hole intercept logging, chip tray and sample pile photographs, chemical analysis results and normative mineralogy calculations have formed the basis for the mineralisation domain interpretations. Assumptions have been made on the extents of the mineralisation based on drilling information including the most recent water-bore drilling which has allowed the extension of the kaolinite mineralization domain, particularly to the east and south of the 'main zone'. Approximately 10% of the modelled mineralisation zones can be considered to be 'extrapolated'. The extents of the modelled zones are constrained by the information obtained from the AC and RC drilling campaigns. Alternative interpretations are considered unlikely to have a significant influence on the global MRE. The white kaolin mineralisation has been interpreted based on the geological logging of white kaolin in conjunction with a nominal lower Al_2O_3 cut-off grade of 15% and with reference to the normative mineralogy segregated into two individual layers based on a nominal cut-off of 1% K_2O. Normative mineralogy was calculated from total fusion XRF major element data using a least squares' method (MINSQ). The normative calculations were compared to x-ray diffraction (XRD) quantitative mineralogy from nine composite samples analysed in 2017, as well as semi-quantitative XRD mineralogy from an additional 29 sample pulps selected from five representative drill holes and analysed in 2018. Normative estimates of kaolinite are similar to those obtained in the original nine quantitative XRD results. This assumes the amorphous material (probably a kaolinite phase) identified using an internal standard for XRD analysis in those samples, and which range from between 12% and 24%, is included as kaolinite. A linear correlation also exists between the Al_2O_3 content of these samples and the amount of kaolinite plus amorphous material.

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Criteria	Commentary
	There is less agreement between the normative estimates of kaolinite and the 2018 semi-quantitative XRD estimates as these analyses do not include an estimate of the amount of amorphous material in the samples. This potentially leads to an over-estimation of the kaolinite in the sample where the amount of amorphous material is significant (i.e. >10%). The normative calculations over-estimates the amount of kaolinite compared to the XRD estimates for kaolinite contents of <50%, and under-estimates the amount of kaolinite compared to the XRD estimates for kaolinite contents of >50%. This suggests that there may be a significant component of amorphous material in samples with >50% kaolinite. The calculation of normative mineralogy using major element geochemistry was only possible for those samples analysed by XRF. Kaolinite was estimated using the relationship between Al_2O_3 and kaolinite established from the XRD data in those samples for which only four-acid digestion data were available. The new 'Geostatistical L' RC test program has confirmed the continuity of geology and grade between drill holes according to both visual and geochemical characteristics. There are zones of local variability identified by the new drilling however the Confidence in the grade and geological continuity is such that some increase in Mineral Resource classification is possible for a small area in close proximity to the 'Geostatistical L' test work area.
Dimensions	The upper low K2O zone (K2OCD= 1) is generally thicker up to roughly 20 m than the lower zone ('high' K2O – K2OCD=2) which is up to approximately 10 m thick. The mineralisation is close to horizontal, dipping on average about 1° towards 070°. The strike extent is roughly 1 km and across strike width is roughly 500 m for the bulk northern/central part of the deposit, with the total north south dimension being ~1.4 km including the un-mineralised central/south portion (see plan view diagram in body of report). The combined thickness of the mineralisation zones is greatest in the north-eastern part of the deposit (~15 m to 25 m), thinning to the northwest (~4m) and southwest (~4 m to 12 m).
Estimation and modelling techniques	Ordinary Kriging (OK) was the selected interpolation method, using updated variogram and spatial distribution parameters based on all drill-hole assay and composite data – including data from the most recent 'Geostatistical L' RC drilling and water-bore drilling. Grade estimation was carried out at the full block ('parent cell') scale, with no sub-blocks but a 3D assigned block proportion percentage based on the amount of the block encapsulated by the mineralization wireframe. Grade estimation was carried out using 'soft' boundaries between the two 'high' and 'low' K_2O zones. Statistical analysis on the 2m downhole composited drill hole was carried out data to check grade population distributions using histograms, probability plots. Tabulated summary statistics were also generated to examine standard deviation and the co-efficient of variation characteristics for the main mineralization domains and for a range of different element grade variables. The checks showed there were no significant outlier grades in the interpreted mineralisation Zones that required top-cutting however a small restriction of the influence of these outlier grades was applied during interpolation. The restriction was applied on a distance basis to approximately '2 times the average observed 'down-hole variogram range' which was typically in the order of 20m. In addition to Al_2O_3, the element items CaO, K_2O, Fe_2O_3, MgO, Na_2O, SiO_2 and TiO_2 were also estimated into the model to assist in test-work related to downstream mine planning and production scheduling work. A regular (uniform block size) block model was constructed and constrained by the topography, mineralisation zones and selected model limiting surfaces such as the 1% K_2O boundary as well as 'solid' wireframes for the geology / material type coding (ROCK Item). Analysis of the drill spacing shows that the nominal average drill section spacing is 50 m to 100 m with drill holes nominally between 50 m and 100 m apart on each section over majority of the modelled area with the exception being the recently drilled 'Geostatistical L' pattern in the central part of the 'Main Zone' with the greatest drill density is in the north-eastern part of the deposit area. Spatial (variogram) analysis was completed on Al_2O_3 using 2m drill composite samples (including those available from the recent 'Geostatistical L' drill program0 with most reliance put upon the composites contained within the upper "low" K_2O zone as this zone has the most contained composites. For the primary Al2O3 item the modelled semi-variograms were 'spherical' type were not strongly disposed, showing relatively high nugget values compared

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Criteria	Commentary
	to the sill. The modelled orientations were predominantly horizontal with no clear preferred strike, or dip direction. The range of the modelled variogram structures were estimated to be approximately 150m in both the X and Y axis directions. An additional set of complete set of variogram parameters were modelled and obtained for the CaO, K_2O, Fe_2O_3, MgO, Na_2O, SiO_2 and TiO_2 elements items. There were also applied to the interpolations for all block model grade variables in both the 'high' and 'low' K_2O zones separately. Based on the sample spacing and in consideration of future modelling and mining studies a new block size of 10 m(E) x 10 m(N) x 2 m(RL) or nominally one quarter to one fifth the average drill section spacing was implemented to better describe mineralization geometry. The search ellipse orientations were defined as being close to horizontal. This was based on the overall mineralization geometry observations and with reference to the variogram modelling studies. The average search ellipse dimensions for the Al_2O_3 item interpolation as well as the other ancillary elements was 150m x 150m x 10m. The nugget and sill parameters for interpolation were additionally calibrated by detailed review of the spatial distribution geostatistics and variography associated with the close spaced 'Geostatistical L' RC drill-holes. The Variogram ranges for Al_2O_3 using the "Geostatistical L" data were modelled at between 10m and 15m with low to moderate nugget values observed (25%-65%) compared to the sill. The search ellipsoids used during Ordinary Kriging Interpolation required a minimum of 1 composite and up to a maximum of 24 to estimate block grades within the different mineralization zone domains. A maximum number of 3 composites from any drill hole within the search ellipsoid were allowed. Limiting of very high grade 'outlier' composites was applied at approximately the 99th percentile based on analysis the Log Probability plots of domained composites. Model validation was carried out visually and graphically using swath plots (by bench) and statistically using decluster analysis to ensure that the block model grade reasonably represents the drill hole data. Cross sections, long sections and plan views were initially examined visually to ensure that the model grades honour the local composite drill hole grade trends. These visual checks confirm the model reflects the trends of grades in the drill holes, including statistical comparisons of the mean drill hole grades with the block model grades and by comparing grade population distributions observed on histograms and probability plots. These detailed reviews showed similar distributions with some expected smoothing effects observed from the Ordinary Kriging estimation method used. No reconciliation data is available as no mining has taken place.
Moisture	Moisture of in-situ kaolin has been tested by Intertek utilizing the LOD methodology.
Cut-off parameters	Visual analysis of the drill analytical results demonstrated that the grade cut-off interpretation of 1% K_2O defining the upper and lower zones corresponds to natural break in the grade population distribution. Analysis of the chip photographs compared to the analytical grade results indicate that a slightly more granular appearance of the chips can generally be detected above the nominal 1% K_2O cut-off.
Mining factors or assumptions	It has been assumed that these deposits will be amenable to open cut mining methods due to mineralization being in very close proximity to the topographic surface and are considered economic to exploit to the depths currently modelled. No assumptions regarding minimum mining widths and dilution have been made in preparing the MRE. No mining has yet taken place.
Metallurgical factors or assumptions	FYI reported the results of precipitation and calcination testwork on 3 September 2018, indicating that a purity of 99.997% Al_2O_3 could be achieved. This was considered to confirm the "amenability of the Cadoux kaolin project for HPA extraction." The process comprised pre-beneficiation by attritioning and screening to reject coarse silica (quartz), activation by calcining at 700°C for one hour. Hydrochloric acid leaching initially at autogenous reaction temperature with the temperature controlled and maintained at 80°C for a leach duration of 180 minutes resulting in an Al-rich liquor. Precipitation of aluminium chloride by sparging (gas flushing) with hydrogen chloride gas to recover aluminium chloride.

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Criteria	Commentary
	Calcination of the dried aluminium chloride at 1,200°C for four hours. The final product was analysed via XRF and laser ablation reporting a final grade of 99.997% Al_2O_3.
Environmental factors or assumptions	No assumptions regarding waste and process residue disposal options have been made. It is assumed that such disposal will not present a significant hurdle to exploitation of the deposit and that any disposal and potential environmental impacts would be correctly managed as required under the regulatory permitting conditions.
Bulk density	For the previous resource estimation program, bulk density measurements were obtained by means of a downhole wireline geophysics survey of 45 holes using a Century 0032 density instrument capable of short-spaced and long-spaced density fitted with a Caesium Cs-137 gamma ray source from which compensated density log (CDL) data has been obtained for analysis. Raw data was filtered to remove zero values and data 'out of bounds' readings based on calliper measured drill diameters and outlier values. A total filtered data set containing 25,753 records was used for mineralisation zones analysis and bulk density assignment. The mean CDL density for mineralised material measured was 2.0 t/m^3 with a moisture correction factor of 15% applied to give a mean dry in-situ bulk density value of 1.7 t/m^3 which is applied to all mineralised material. A conservative density value of 2.1 t/m^3 was also applied at the time for the waste material. As a part of the recent Geotechnical drilling program a total of 6 test samples were selected for and bulk density determination using Archimedes methods. The range of dry bulk densities measured ranged from 1.79 to 2.15. Using the newly developed Geology / Material type wireframe modelling the following bulks densities were applied to each particular material type in the block model: GEOL = 1 – 1.95 tonnes / cubic metre – (Basement / Saprolite). GEOL = 2 – 1.91 tonnes / cubic metre – (Kaolinite). GEOL = 3 – 2.15 tonnes / cubic metre – (Undifferentiated Clay - Silicified). GEOL = 4 – 1.80 tonnes / cubic metre – (Overburden).
Classification	Classification of the MRE was carried out accounting for the level of geological understanding of the deposit, quality of samples, density data and drill-hole spacing. The classification criteria have employed multiple 'ancillary' interpolation parameters from the block model including 'distance of composite to model block' (DIST1), 'number of composite available within the search ellipsoid' (COMP1) for each block interpolation and the local kriging variance' (KERR1) for each block. The DIST1, COMP1 and KERR1 item values are 'condensed into a 'quality of estimate' (QLTY) which is the used a guide to refine a 'resource category' (RCAT) item used to assist with final resource reporting. This is designated as RCAT=1 ('Measured') for that part of the kaolinite mineralization in close proximity the 'Geostatistical L' area and RCAT=2 or RCAT=3 for resources classified as 'Indicated' and 'Inferred' respectively. Classification of the resource has been assigned by the Competent Person in accordance with the JORC Code (2012 Edition) using a qualitative approach based on selected underlying kriging interpolation parameters in conjunction with other known 'modifying' factors. All factors that have been considered have been adequately communicated in Section 1 and Section 3 of this Table. Overall the mineralisation trends are consistent over the majority of drill sections.
Audits or reviews	Previous resource estimation work carried out by CSA Global has been subjected to Internal audit. to verify the technical inputs, methodology, parameters and results of the estimate. HGMC has also carried out a selected audit of the previous CSA Global resource estimation work and have not identified any significant technical concerns.
Discussion of relative accuracy/ confidence	The relative accuracy of the MRE is reflected in the reporting of the Mineral Resource as per the guidelines of the JORC Code (2012). The Mineral Resource statement relates to global estimates of *in situ* tonnes and grade based on a cut-off specific to the Al_2O_3% block model estimate item

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Section 4 - Estimation and Reporting of Ore Reserves

Criteria	JORC Code Explanation	Commentary
Mineral Resource estimate for conversion to Ore Reserves	*Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.* *Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.*	The Mineral Resource Estimate used as a basis for the conversion to the Ore Reserve was provided on 20th April 2019 with Mr Stephen Hyland, employee of Hyland Geological and Mining Consultants, as the Competent Person. At a 15.0% Al_2O_3 cut-off grade, this total Mineral Resource includes 11.3Mt of Measured, Indicated and Inferred materials with an average grade of 22.51% Al_2O_3. The Mineral Resources are reported inclusive of the Ore Reserves.
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* *If no site visits have been undertaken indicate why this is the case.*	The Competent Person (Mr Steve Craig) has visited the proposed mining site of the project in September 2018. The following observations were incorporated: • The mining area is in the Wheatbelt region approximately 220km North East of Perth, accessible from Perth by well-maintained bitumen roads. • The mining area is located approximately 10km north-northeast of the township of Cadoux, Western Australia. Cadoux is a small township in the north-eastern Wheatbelt region, within the Shire of Wongan-Ballidu. • The population density in the region is low with the population of Cadoux estimated (2016) at 67. • The mining area is located on private, freehold, cleared, farmland currently used for growing crops. • There are no buildings or structures within the mining area. • Differences in elevation are moderate without steep slopes. Hence no difficulties are expected in developing site access or site establishment. • There are no power or water access points within the mining area, there is a power line immediately to the west of the mining area and a water pipeline is within 1km of the site.
Study status	*The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.* *The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that*	A Definitive Feasibility Study (DFS) for the Cadoux High Purity Alumina (HPA) project was the basis for the conversion of Resources to Reserves. The study, which indicates that the project is technically achievable and economically viable, was compiled with input from specialist consultants: • GR Engineering Pty Ltd • Hyland Geological and Mining Consultants • Orelogy Consulting Pty Ltd

Criteria	JORC Code Explanation	Commentary
	material Modifying Factors have been considered	• Botanica Consulting. • Independent Metallurgical Operations Pty. Ltd. • Peter O'Bryan & Associates • AQ2 Pty Ltd • Allied Market Research • CRU • Toll Group • Cravern Group • McMahon Mining Title Services Pty Ltd The DFS was underpinned by a mine plan. The mine plan produces high-grade alumina material for on-site beneficiation. An intermediate concentrate is transported to the HPA processing plant in Kwinana. The Al_2O_3 grade and the mining rate of the ore are in line with the feed requirements of the beneficiation and HPA processing plants. The mine planning activities included final and interim stage pit designs, mine scheduling including backfilling of overburden and plant rejects, and mining cost estimations. Modifying factors considered during the mine planning process included slope design criteria, dewatering, mining dilution and ore loss. The activities and findings of all other disciplines were summarised in the DFS document, and detail derivation of other modifying factors such as processing recoveries, costs, revenue factors, environmental and social. Overall the results of the DFS demonstrate that the HPA project is technically achievable and economically viable.
Cut-off parameters	*The basis of the cut-off grade(s) or quality parameters applied.*	Only Measured and Indicated resource category materials were considered as potential ore material. A 7.06% Al_2O_3 ore/waste cut-off grade was utilised in the pit optimisation process. No other quality parameters were applied during the Ore Reserve estimation.
Mining factors or assumptions	*The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).*	As part of the DFS, a detailed mine design was produced which consisted of the ultimate pit and staged designs, stockpiling, backfilling, waste storage facility, haul road network and associated mine infrastructure. A mining schedule consisting of monthly scheduling periods for the first 12 years followed by annual periods for the remaining Life of Mine (LoM) was generated for the total material moved (TMM) and reclaim of ore feed to the Cadoux Plant. This study indicated that: The Ore Reserve derived from the Mineral Resource can easily meet the processing feed

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Criteria	JORC Code Explanation	Commentary
		requirements for the production targets of the project. The ore presents near surface and is easily accessible by conventional open pit mining methods. The pit optimisation, design and schedule process indicate a project life of 60 years at an ore mining rate of approximately 54,500tpa, targeting HPA production of 8,000tpa. The cost of the Cadoux mining operation accounts for only approximately 0.8% of the total HPA production cost.
	The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.	A conventional open pit mine method was chosen as the basis of the DFS due to the near surface presentation of the mineralisation. Mining and backfilling of pit voids are to occur on a campaign basis. Overburden and beneficiation rejects are backfilled into the pit to minimise the foot print of the operation. Due to the relatively small quantities extracted, and to maintain adequate efficiencies, mining will be undertaken in 2 to 3-month campaigns, sufficient to excavate and stockpile a minimum of three (3) years ore supply on the Run of Mine (RoM) stockpile pad. Mine design criteria include: minimum mining width, ramp width and gradient, pit exit location and slope design parameters.
Mining factors or assumptions	*The assumptions made regarding geotechnical parameters (e.g. pit slopes, stope sizes, etc.), grade control and pre-production drilling.*	The pit slopes slope angles were based on a site-specific geotechnical assessment made by Peter O'Bryan & Associates in June 2019. The overall pit slope angles were set at 37˚. The pit optimisation process indicated that the optimal pit selection was not sensitive to slope angles. Further grade control drilling programs will be considered in the next phase of studies. The ore – overburden boundary is defined by the ore solid (wireframe) provided with the resource model. Delineation of this boundary during mining operations will utilise survey control. Visual checks will then be undertaken by the equipment operators as the visual differentiation between ore and waste is clear. This will ensure that any ore material that is not perfectly bright white will be directed to the overburden dump. RoM dumping strategies can be adopted to blend materials and manage short interval grade variations. The proposed mining method will not require drilling and blasting activities due to the weathered nature of the materials. A degree of hard-ripping may be required in some areas of indurated silcrete.

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Criteria	JORC Code Explanation	Commentary
	The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).	The April 2019 MineSight Mineral Resource Model (alum15.dat) was used as a basis for the conversion to the Ore Reserve. Only Measured and Indicated material were categorised as ore for the optimisation process. Inferred mineralisation was treated as waste.
	The mining dilution factors used.	Mining dilution will need to be avoided as this may affect the performance of the processing plant. Dilution has been set at 0% on the basis that appropriate procedures and processes will be developed to avoid contaminants entering the ore during the mining phase. This can be achieved through survey control, visual checks when excavating, and hydrocarbon spill isolation procedures.
	The mining recovery factors used.	Mining recovery has been set at 90% reflecting the need to provide clean, undiluted ore to the beneficiation plant. The ore loss is accepted at ore/waste boundaries in order to eliminate dilution. Ore loss will also occur at bench floors due to the requirement to remove road sheeting materials.
	Any minimum mining widths used.	Pit designs and interim cutbacks have been designed to suit a 75t excavator and 45t payload articulated dump trucks. The parameters used were: • A minimum mining width of 20m. • One-way ramp width of 8m. • Ramp gradient 10%.
	The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.	No inferred Mineral Resources have been included in the Ore Reserves or the associated production schedule. Within the designed final pit inventory, the Inferred tonnages are negligible. In account of the 62-year mine life (mining and beneficiation), outcome of their inclusion is immaterial.
	The infrastructure requirements of the selected mining methods.	The DFS considers the proposed open cut mine plan and schedule, and includes waste removal and backfilling, dewatering, ROM pads based on domained ore, haul roads to beneficiation plant, haulage loading facilities, water management, workshops, administration buildings, traffic management and other associated mine and facility infrastructure.
Metallurgical factors or assumptions	*The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.* *Whether the metallurgical process is well-tested technology or novel in nature.* *The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the*	The proposed process flow comprises the following key unit processes – • Wet attritioning and screening of whole ore feed to produce a low Silica screen undersize stream for downstream processing and a by-product Silica rich screen oversize stream. • Drying and calcination of attritioning screen undersize to activate Kaolin in preparation for acid leaching.

Criteria	JORC Code Explanation	Commentary
	corresponding metallurgical recovery factors applied. *Any assumptions or allowances made for deleterious elements.* *The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole. For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?* *The status of studies of potential environmental impacts*	• Staged Hydrochloric Acid leaching to extract Aluminium as Aluminium Chloride into solution. • Staged precipitation of Aluminium Chloride concentrates via Hydrogen Chloride gas phase sparging. • Aluminium Chloride concentrate recovery, filtration and washing. • Final high temperature Aluminium Chloride calcination and conversion to High Purity Alumina (HPA). • Packaging for export The proposed process flow is considered appropriate for the recovery of HPA from Kaolin as evidenced in recent results reporting an HPA product grade exceeding 99.99% Al2O3. The direct and variable testwork was based on blended and master composites that were constructed to be representative of the kaolin deposit. Test sample product were derived from RC holes that were approximate to the average resource grade and deleterious element average. Extensive variation work on grade and deleterious elements were also conducted to understand the outliers to the metallurgical response. Detailed testwork confirmed excellent amenability to leaching and precipitation stages. Recoveries achieved were 99.997% Al_2O_3. Supporting metallurgical testwork has been conducted to date based on batch testing and processing; and for bulk product generation. The testwork completed to date has been conducted based on resource representative composites, including allowance for separate variability sample testing. Alumina recoveries and grades corresponding to Alumina and potential deleterious elements are consistent with values established based directly on the testwork. IMO have undertaken large scale representative sampling of the Cadoux kaolin deposit that is considered appropriate for the commodity being studied. IMO have prior experience with this commodity and relate that to addressing the minerology requirements for the DFS testwork and review. The minerals that define the Ore Reserve are not based on a specification other than Alumina grade.

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Criteria	JORC Code Explanation	Commentary
Environmental	*The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.*	Botanica Consulting Pty Ltd has undertaken baseline studies as well as flora, fauna and other essential permitting studies at both the Cadoux and Kwinana project sites and have found no major impacts on the environment or on mining. Please see body of DFS for further details. AQ2 Pty Ltd conducted a hydrogeological survey at the Cadoux project site and found that the project was not in a water reserve or sensitive area. No major surface or subterranean water issues were identified that would impact the environment or the HPA operations. Cadoux ore and waste rock are characterised as non-acid forming (NAF) and does not pose a threat to water courses or subterranean water sources. The mining operation is small, so the footprint and disturbance area are small. The operations will be progressively back filling and rehabilitating the open pit.
Infrastructure	*The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.*	Cadoux is located 220km north east of Perth with the project area having access to major arterial roads, rail, mains water, telephone line and a 33KVA power line are all within 1km of the project. Labour, utilities, services, accommodation and transport is very accessible as there are several small towns in the area, the major regional town of Wongan Hills is 60km in distance and Perth is in easy driving distance of approximately 2 hours
Costs	*The derivation of, or assumptions made, regarding projected capital costs in the study.* *The methodology used to estimate operating costs.* *Allowances made for the content of deleterious elements.* *The source of exchange rates used in the study.* *Derivation of transportation charges.* *The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.* *The allowances made for royalties payable, both Government and private*	All project costs (capital, operating, consumables, labour, freight etc) have been identified, assessed and calculated by the various expert study managers responsible for the various sections of the DFS. The study managers include among others GR Engineering Services (GRES), Independent Metallurgical Operations (IMO), Hyland Geological and Mining Consultant (HGMC), AQ2 Hydrogeological Consultants (AQ2) and Orelogy Consulting Pty Ltd. These groups have utilised detailed studies, indexed prices, public reference prices etc to calculate the various costs used as inputs into the DFS. Please see the DFS report for further information. All costs are based on market rates as of the Q4 2019 are to a ±15% accuracy Detailed studies by respective study managers have identified and accounted for deleterious content within the deposit as well as in the process and refining of the HPA. The deleterious element has also been accounted for in the financial modelling. All mining recovery, metallurgical recovery and other technical concerns regarding the

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Criteria	JORC Code Explanation	Commentary
		commodity price for HPA have been considered by appropriately qualified individuals and groups in respect to the DFS requirements. FYI has used a number of sources and different service providers in estimating and calculating its transportation costs. FYI believes that the freight cost estimation is accurate and appropriate to the DFS. Further transportation charge details are included in the DFS. Extensive studies have been undertaken to understand and estimate operating costs and charges as well as penalties for off-specification product. IMO and GRES have particularly focused on this area of the DFS. Further detail is highlighted in the DFS. Under the operations and financial modelling, full allowances are made for state royalties, duties, taxes, compensation etc. The project financial model details the cashflows, the percentage and the amount. A 2.5% state royalty has been allowed for.
Revenue factors	*The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.* *The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.*	The Cadoux DFS financial model provides for an array of project assumptions, including costs, cost escalations, grade variations, production variation, exchange rates, etc. These assumptions have been modelled on variations and sensitivities to a range of ±15% on major input factors such as grade, operating cost, capital cost and revenue. The assumed price in the financial modelling has been derived from a number of sources and then discounted. The sources include independent market research (CRU and Allied Market Research).
Market assessment	*The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.* *A customer and competitor analysis along with the identification of likely market windows for the product.* *Price and volume forecasts and the basis for these forecasts.* *For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.*	The market assessment for price and volume/demand has been supported by: • Two independent research groups (CRU & Allied Market Research) • IMO achieving a reference price – by purchasing HPA for independent testing • FYI's own market research and direct meetings with market participants (producers, manufacturers and traders) in China, Japan and South Korea • Web-based commodity trading platform references.

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Criteria	JORC Code Explanation	Commentary
Economic	*The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.* *NPV ranges and sensitivity to variations in the significant assumptions and inputs*	The Mineral Resource estimation, completed by Hyland Geological and Mining Consultant, and mining schedule, completed by Orelogy Consulting Pty Ltd, are of sufficient technical standard and level of accuracy taking into account all mining and associated activities and contingencies. The economic assumptions used in the financial modelling are: • 0.70 USD:AUD exchange rate • 10% discount rate • Contingency of 10% on Cadoux and 15% for Kwinana capital and operating costs The financial summary and base case NPV demonstrate a positive result. Sensitivities and discounting ranges have been applied to understand the economic tolerance to various key inputs to the base case. The sensitivities are generally ±25% and despite this, the financial result still demonstrates a positive economic case and profit margin to support the development of Cadoux.
Social	*The status of agreements with key stakeholders and matters leading to social licence to operate.*	There are no existing Native Title claims on the Cadoux project tenements. Broader stakeholder and community engagement will be ongoing over the development of the project.
Other	*To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:* *Any identified material naturally occurring risks.* *The status of material legal agreements and marketing arrangements.* *The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.*	There are no obvious or likely naturally occurring risks that have been identified or which may negatively impact the Project or Project area. No major or material legal agreements exist in respect to the Company at this stage. There is one marketing arrangement signed at this point (MOU) regarding marketing of HPA in Korea. All statutory government agreements, permits and approvals commensurate to the current status of the project are all current and in good order. A Mining Lease has been granted and the Mining Proposal including Mine Closure Plan has been approved for the Cadoux site. Timeframes for Agreements appropriate to the DFS have been handled appropriately and have not put the project at risk. Agreement timeframes in respect to the DFS will be handled with similar accord so as not to put the future studies and project development at risk also.

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Criteria	JORC Code Explanation	Commentary
Classification	*The basis for the classification of the Ore Reserves into varying confidence categories.* *Whether the result appropriately reflects the Competent Person's view of the deposit.* *The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).*	Proved Ore Reserves were determined from Measured Resource material. Probable Ore Reserves were determined from mineralisation classified as Indicated Resource. No Probable Ore Reserves have been derived from Measured Mineral Resources. This classification is reasonable because of the nature of the deposit (consistency, homogeneity, low variability). The risks associated with the orebody variability appear much lower than other project risks (such as price and exchange rate variations and the requirement of meeting product specifications to realise the estimated product price).
Audits or reviews	*The results of any audits or reviews of Ore Reserve estimates.*	Orelogy Consulting Pty Ltd. have internally reviewed the Ore Reserve estimate No external reviews or audits have been undertaken on the Ore Reserve estimate.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.* *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* *Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.* *It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	The Mineral Resource and the associated Ore Reserve, relate to global estimates. To date, there has been no commercial production with FYI's HPA manufacturing process, so no comparison to production or reconciliation data can be made. The Ore Reserve estimate is an outcome of the September 2018 Pre-Feasibility Study with geological, mining, metallurgical, processing, engineering, marketing and financial considerations to allow for the cost of finance and tax. Engineering and cost estimations have been done to a ±25% level of accuracy, consistent with a PFS of this nature. An NPV was estimated with FYI's financial model which demonstrates that the project is economical sound and robust. Sensitivity analysis undertaken during the DFS shows that the project is most sensitive to a movement in the HPA selling price. The NPV is not as sensitive to changes in capital or operating costs. The robustness of the project and the low sensitivity to cost variations provide confidence in the Ore Reserve estimate. However, there is no guarantee that the HPA price assumption, while reasonable, will be achieved

FYI RESOURCES

HPA Definitive Feasibility Study

SUMMARY

Please note: This announcement is only a summary of the comprehensive DFS. The substantive DFS Report contains more than 250 pages covering 20 sections as well as appendices volumes in excess of 1500 pages and other supporting documents.

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Cautionary Statements

Substance of DFS

The DFS is a study of the potential viability of the Cadoux Kaolin HPA Project. It has been undertaken to understand the technical and economic viability of the Project. The DFS is based on the assumptions outlined in this document. These include assumptions about the availability of funding. While the Company considers all of the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by this PDFS will be achieved.

To achieve the range of outcomes indicated in the DFS, funding in the order of US$189 million will likely be required. Investors should note that there is no certainty that the Company will be able to raise the amount of funding when needed. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of the Company's existing shares.

It is also possible that the Company could pursue other "*value realisation*" strategies such as a sale, partial sale or joint venture of the Project. If it does, this could materially reduce the Company's proportionate ownership of the Project.

Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the DFS.

General and forward-looking statements

The contents of this document reflect various technical and economic conditions, assumptions and contingencies which are based on interpretations of current market conditions at the time of writing. Given the nature of the resources industry, these conditions can change significantly and without notice over relatively short periods of time. Consequently, actual results may vary from those detailed in this document.
Some statements in this document regarding estimates or future events are forward-looking statements. They include indications of, and guidance on, future earnings, cash flow, costs and financial performance. Such forward-looking statements are provided as a general guide only and should not be relied on as a guarantee of future performance. When used in this document, words such as, but are not limited to, "*could*", "*planned*", "*estimated*", "*expect*", "*intend*", "*may*", "*potential*", "*should*", "*projected*", "*scheduled*", "*anticipates*", "*believes*", "*predict*", "*foresee*", "*proposed*", "*aim*", "*target*", "*opportunity*", "*nominal*", "*conceptual*" and similar expressions are forward-looking statements. Although the Company believes that the expectations reflected in these forward-looking statements are reasonable, such statements involve risks and uncertainties, and no assurance can be given that actual results will be consistent with these forward-looking statements.

The contents of this document are also subject to significant risks and uncertainties that include but are not limited those inherent in mine development and production, geological, mining, metallurgical and processing technical problems, the inability to obtain and maintain mine licenses, permits and other regulatory approvals required in connection with mining and processing operations, competition for among other things, capital, acquisitions of reserves, undeveloped lands and skilled personnel, incorrect assessments of the value of projects and acquisitions, changes in commodity prices and exchange rates, currency and interest rate fluctuations and other adverse economic conditions, the potential inability to market and sell products, various events which could disrupt operations and/or the transportation of mineral products, including Labour stoppages and severe weather conditions, the demand for and availability of transportation services, environmental, native title, heritage, taxation and other legal problems, the potential inability to secure adequate financing and management's potential inability to anticipate and manage the foregoing factors and risks.

All persons should consider seeking appropriate professional legal, financial and taxation advice in reviewing this document and all other information with respect to the Company and evaluating the business, financial performance and operations of the Company. Neither the provision of this document nor any information contained in this document or subsequently communicated to any person in connection with this announcement is, or should be taken as, constituting the giving of investment or financial advice to any person. This document does not take into account the individual investment objective, financial or tax situation or particular needs of any person.

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1. Project Description and Development Approach

Introduction

The Company's objective is to meet the rising demand for HPA by bringing the refining of HPA into the 21st century. The major challenges in the current refining methodology of HPA are the rising costs of production, high environmental impact and increasing supply disruptions. The traditional manufacturing of HPA involves a 100-year-old two stage process (Bayer - refining and Hall–Héroult - smelting, see diagram below) that requires multiple stages of processing and expensive feedstock (i.e. already refined aluminium metal ingots), that is capital intensive, has high operating costs, includes intensive labour and energy costs and, depending on the jurisdiction in which the HPA is processed, a restrictive overlay of environmental conditions and stringent government regulations.

In the traditional process, expensive refined aluminium metal and alcohol is synthesised to produce high purity aluminium alkoxide, which is then hydrolysised to produce hydrated alumina. HPA is then obtained by calcination.

FYI intends to innovate the manufacture of HPA by using high grade aluminous clay (kaolin) in a hydrochloric acid leach and precipitation process developed specifically for the Project's Cadoux beneficiated ore (feedstock).

FYI has adapted and refined a process design flowsheet that will result in the production of more commercially reliable HPA at a fraction of the capital and operating costs of the traditional production route via bauxite.

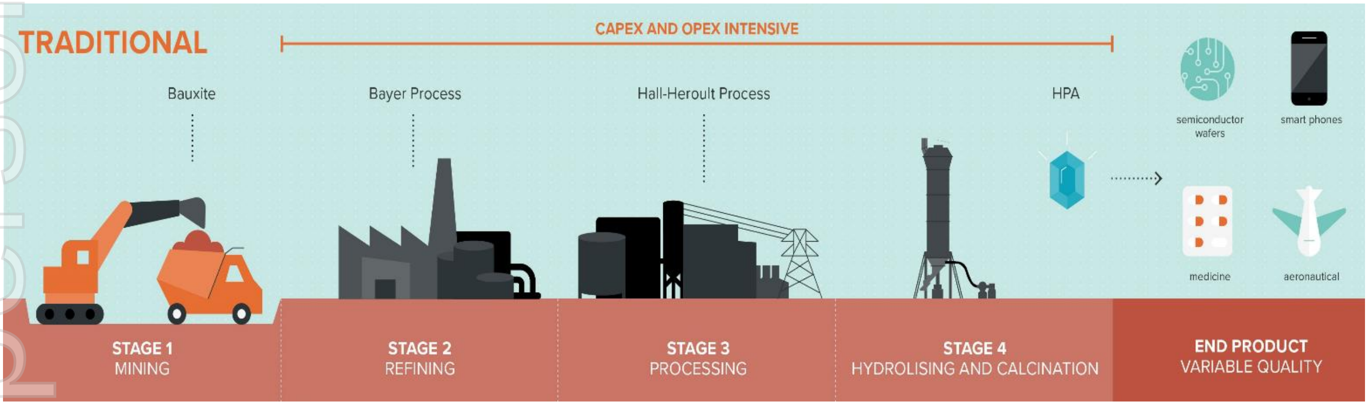

Figure 1-1 Traditional bauxite sourced process route

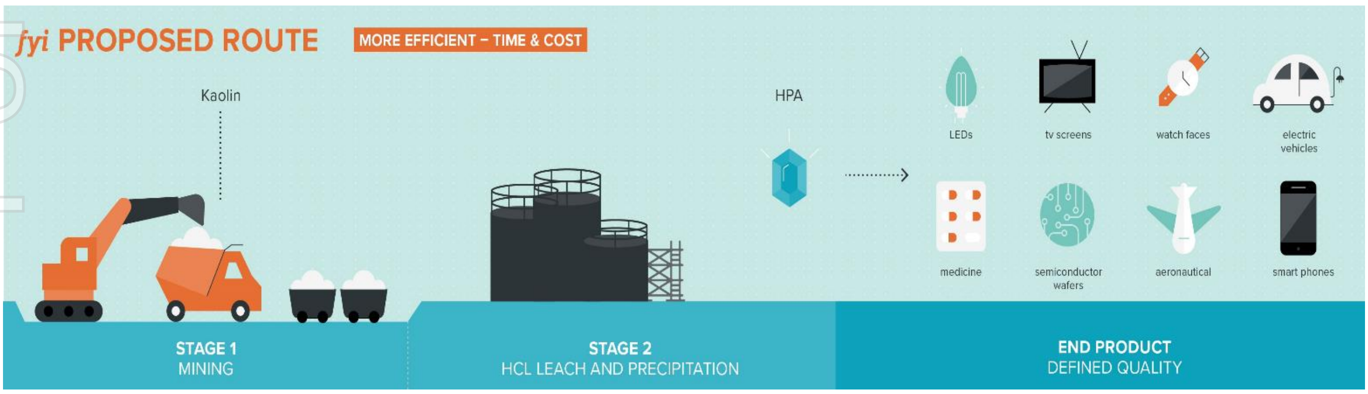

Figure 1-2 FYI kaolin sourced process route

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Objective and strategy

The Company's objective is to become one of the world's leading producers of HPA by developing a vertically integrated HPA business to address the growing global demand for the next generation of high specification industrial materials. FYI's strategy is to own and manage the entire HPA production chain from our own mine for high quality feedstock through to refining, thus allowing the Company to meet the increasing volume, quality and assurance demands of the market whilst operating in the lowest quintile of costs. The Company plans to meet the market's requirements through conventional chemistry but via a non-traditional processing route.

HPA Business Case Summary

FYI Resources is building a robust business case around the following factors:

- Long life, high quality and high margin strategy
- Fully integrated production and refining business model
- Product provenance guaranteed
- Low environmental impact
- A "unique" high grade, superior quality and characteristic kaolin orebody that is well suited to HPA refining
- Innovative development of process flowsheet
- Excellent geological understanding and definition of the kaolin resource
- A revised MRE to provide optimal feedstock for HPA production – providing many decades of feedstock production
- Exceptional metallurgical test work and development of flow sheet – supported by pilot plant trials and critical material testwork
- Outstanding process engineering design
- Strong project financials (low Opex and Capex / attractive NPV, IRR)
- Timing of entry into a rapidly growing market
- Realistic commodity pricing forecast

Future Value Catalysts

Based on the positive outcome of the DFS, FYI will progress the HPA strategy The Company could expect a number of events that may impact project valuation in a positive manner. These events include:

- Commencement of HPA project FEED, FID
- Signing of customer MOU's and strengthening marketing relationships
- Finalising financing arrangements
- Continued product developments
- Investigation on additional revenue streams

High Purity Alumina

High-purity alumina is a processed premium non-metallurgical alumina product characterised by its purity level – i.e. 99.99% (**4N**), 99.999% (**5N**). The market price, application and performance of HPA varies widely according to its degree of purity.

HPA is primarily sought after for the unique combination of its properties and characteristics, which include low-friction, high wear-resistance, hardness, thermal and electrical insulating abilities, non-corrosive and broad chemical compatibility. HPA is used in applications such as:

- light emitting diodes (**LEDs**)
- battery technologies and energy storage (cell linings / separators)
- electric vehicle (**EV**) components
- semiconductor wafers
- artificial gemstones (sapphires)
- sapphire glass for smart phones, television screens and watch faces
- high-strength ceramic tools
- space and aeronautics industry components
- high tensile light weight fabrication applications
- fine abrasives and industrial applications

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Increasing research and development and advances in technology coupled with consumer demand for high quality applications increases the adoption of HPA and continues to drive the market. These applications are all high-end markets that are expected to show continued strong year on year growth.

Feasibility Study

The Company published a Pre-Feasibility Study in September 2018. The objective of this DFS and associated research and development is to further evaluate and refine the technical and economic viability of the HPA Project. A disciplined approach by a team of selected expert study managers was deployed to define the Project DFS design criteria. The resulting DFS has operating and capital costs to an accuracy level of between [-5% to +15%] which provided the financial parameters of the Project through detailed financial analysis.

The Company aims to develop a high purity alumina refining operation with a production capacity of 8,000 tons per annum, through the beneficiation of kaolin into concentrate and then refining the concentrate into high purity alumina.

The DFS's scope addresses the:

- mining and beneficiation of Kaolin at Cadoux
- transport of kaolin concentrates from Cadoux to the refinery in Kwinana
- refining kaolin concentrate into high purity alumina (>4N) in Kwinana
- sales and shipping of high purity alumina to the market
- associated approvals and permitting
- environmental and sustainable processes
- organisational structure including corporate office

Contributors

The DFS has been prepared by the Company in conjunction with selected industry specialists:

Company	Expertise
Allied Market Research	HPA market studies - 2016 to 2022
AQ2 Pty Ltd	Water management studies
Arthur J. Gallagher & Co (Aus) Limited	Insurances development and operations
Botanica Consulting	Environmental base line review, approvals and permitting
Bureau Veritas Australia	Independent final product XRF and Laser Ablation assay verification
Cravern Group	Information, communications and technology
CRU	HPA in-depth market studies and price discovery
CSA Global Pty Ltd	PFS - Independent geological studies and Mineral Resource Estimate
Davies Collison Cave Pty Ltd (DCC)	Intellectual property management and monitoring
Dr Leon Lorenzen	Independent peer review metallurgical test work
GR Engineering Services Ltd	Process engineering design and costing
Hydr2O Pty Ltd	Cadoux Hydrology review and baseline study
Hyland Geological and Mining Consultants	DFS - Independent geological studies and Mineral Resource Estimate
Independent Metallurgical Operations Pty Ltd	Metallurgical test work and flow sheet design
Indirect Tax Consulting Pty Ltd	Indirect tax consulting services including R&D tax incentive payment
Intertek Laboratories	Assaying and Sampling
McLintock International	Shipping agency, International freight
McMahon Mining Title Services Pty Ltd	Land access, native title, tenure advice, compliance and reporting
MGM Bulk Pty Ltd	Transport provider
Orelogy Consulting Pty Ltd	Mining study, ore reserve, pit optimisation and scheduling, costings

Table 1-1 HPA DFS expert service providers

2. DFS Economic Results

The DFS result is based on a 25-year production scenario and financial modelling case of a potentially long-life (>100 year) mine and feedstock supply to the Company's HPA refinery in Kwinana.

The key outcomes of the DFS are the result of significant amount of meticulous research and development incorporating conservative design parameters and subjected to rigorous due diligence by the project managers.

Achieving this positive outcome at DFS level is the catalyst for the Company to progress the integrated HPA project to development.

Key DFS outcomes include:

NPV post tax (@10%)	US$543m
IRR	46%
Payback period (years) (post tax) (ramp up rate)	3.6
Exchange rate US$/A$	0.70
Life of Project Reserve (years)	25
Total Sales (initial 25 years) no escalation	US$4.7b
Total Project net operating cash flow (25 years)	US$2.4b
Annual EBITDA (average)	US$133m
Cash flow after finance and tax	US$88m
Shares on issue (as at publication DFS)	212,772,654
EPS after tax (per year)	$0.41
Capex (8,000 tpa)	US$198m
Capex/t (US$/t)	US$23,575
Life of Mine C1 costs, FOB Kwinana (US$/t)	US$6,217
Tonnes Processed (initial 25 years) (kt)	198
Production Target (tpa) (initial 25 years) (DDFS Study)	8,000
Proven + Probable Ore Reserves @ 24.8% Al_2O_3 (kt)	3,205
Ore Reserve life (years)	25
JORC Resources (million tonnes)	11.3

3. DFS Reconciliation to PFS

FYI considers there to be little concern or surprise with the quality of the DFS result given the minimal variation between the current DFS and the previous PFS outcome.

The DFS results are a product of very detailed and comprehensive studies by a team of expert study managers. As a result, it should be noted that the DFS is more extensive and inclusive of detail and scope.

Accordingly, FYI considers the Company's DFS result to be more robust than the PFS and in line with the International Cost Estimating and Analysis Association (ICEAA) Class 4 classification. The DFS is considered -5%/+15% accurate, whilst the PFS was in the -15%/+25% degree of accuracy.

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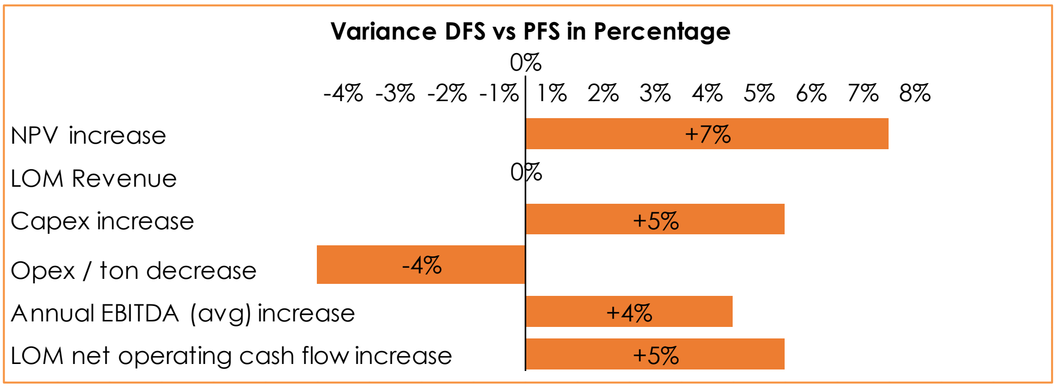
Whilst there were movements in several line categories of the DFS calculation, FYI is particularly pleased with the gross outcome, especially with increasing the NPV (by ~A$40m or 7%), limiting the capex increase (5%) and decreasing the opex per ton (2%). The key DFS metrics are shown graphically below:



4. Summary Technical Study Sections

Geology and Mineral Resource

Exploration history

The Cadoux kaolin deposit is well defined by drilling. A total of 4,177 metres of drilling has been completed from a combined 199 Aircore (**AC**), Reverse Circulation (**RC**) and diamond drill holes (**DDH**). All holes were drilled vertically. Intersected kaolin thickness ranged from 1 m to 28 m. For the most recent drilling programs a total of 18 additional RC holes were drilled in the Geostatistical "L" test pattern for a total of 416m. A further four RC water bore test holes were also drilled for a total of 198m. Finally, four Diamond (PQ) geotechnical holes were also drilled for a total of 100m.

DH-Type	2019 Drilling		Historic Drilling	
	Number	Metres	Number	Metres
AC	-	-	98	1,850
DDH	4	100	-	-
RC	22	614	75	1,613
Total	**26**	**714**	**173**	**3,463**

Table 4-1: Historic and Current Drill-Hole Statistics

Selected Diamond Core Samples (PQ) from Geotechnical Hole CXGT02

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Resource development work

The Company completed a detailed (close spaced) phase of infill test drilling at Cadoux in April 2019 which referred to as the Geostatistical "L" RC drilling program. The purpose of the program was to test the lateral short-range variability of Al_2O_3 and other selected ancillary elements in two separate directions (Grid E-W and grid N-S. The 'legs' of the Geostatistical "L" used drill hole spacings of 5m and 10m and were designed to 'test' the validity of a few of the pre-existing exploration RAB and RC drill-holes. The test pattern was also designed to test a zone where mineralization was expected to range from 'high grade' and relatively thick tending towards lower grades in a thinner part of the kaolinite horizon.

Overall the Geostatistical "L" pattern was successful in establishing that lateral continuity was slightly more variable than observed with the relatively sparse original exploration AC and RC drilling pattern, however the observed variability is considered not significant enough to alter the overall mineral resource estimate. Close examination of the new RC drill-holes with respect to a few of the previously drilled RC exploration holes ('twinned holes') revealed a very close correlation with respect to down-hole Al_2O_3 grades at equivalent depths indicating that drilling, sampling and assaying procedures have been reliable and relatively consistent.

A small part of the Al_2O_3 (kaolinite) mineralization was considered to be sufficiently densely drilled and sampled to allow the reporting of an amount of 'Measured' Resources.

Hydrological and hydrogeological appraisal

The mine site is located in the area of low groundwater potential, with those limited aquifers that do exist, being associated with weathered and fractured bedrock. The annual evaporation is approximately seven times higher than the annual rainfall, resulting in low groundwater recharge.

Groundwater levels are moderately shallow, with the depth to groundwater ranging between 10.1 m and 26.4 m bgl (i.e. 357 and 360 mAHD). Groundwater flow is to the south-east, under a low hydraulic gradient, which closely reflects the site topography.

Groundwater is brackish to saline, with salinity ranging from 3,000 to 11,000 mg/L TDS and is slightly acidic to near neutral, with field pH values range from 5.8 to 6.8. Groundwater is sodium and chloride dominant, indicative of an end point ("older") water from an aquifer where limited recent recharge is occurring.

As part of the hydrogeological data collection for the site, four monitoring bores (CXWB01 to CXWB04) were constructed across the site, while one RC drill hole, GLRC016, was also equipped with casing to allow for hydraulic testing. Following the bore completion, hydraulic testing was undertaken on these five bores. The results of these tests indicated that the permeability of the weathered aquifer (saprock/saprolite) and solid fresh bedrock aquifer range from 0.004 to 0.09 m/d (average about 0.03-0.004 m/d). At one location, CXWB01, increased permeability is evident, associated with fractured bedrock (range of 0.5 to 2.8 m/d, average permeability of 1.7 L/d).

Geotechnical appraisal

The geotechnical assessment by Peter O'Bryan and associates has been based on information derived from data obtained from geotechnical cores. Available information indicates only minor variation in ground conditions across the proposed mining area. From a wall design perspective, it is concluded that no further geotechnical investigation is required prior to commencement of mining.

Ongoing geotechnical assessment of actual conditions during operation, based on observed wall stability performance and mining experience will, however, be required to refine geological and geotechnical models and hence optimise pit design parameters.

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Ongoing geotechnical assessment

It is considered essential that design re-assessments and where necessary design adjustments be made based on the findings derived from observational techniques employed during pit development.

Information obtained from mapping and slope stability monitoring should be assessed to confirm, or as the case may be, adjust, pit wall design parameters. As more data become available, it will become more likely that an 'optimal' approach to wall design and development will be derived.

Mining and Ore Reserves

Mining activities at Cadoux are planned on a campaign basis by contract miners. Each campaign generates 3 years of ore supply in a 3-month period. The ore is placed on a stockpile and the contractor demobilises after completion of the campaign. Backfilling with commence during the second campaign.

Mining Method

Conventional open pit mining is adopted due to the shallow depth of the orebody and is suitable for free digging and hard ripping (i.e. no drilling and blasting). Backfilling will minimise the disturbance footprint of the small operation and the environmental impact. The adopted mining method has the following steps;

- overburden is excavated with trucks and an excavator until the top of the orebody is exposed, with some areas potentially requiring hard ripping;
- the exposed ore is mined with trucks and an excavator then hauled either directly to mill or a Run of Mine (ROM) stockpile for future processing;
- overburden and rejects are placed back into the previously excavated sections of the pit as soon as they become available for backfilling. (i.e. have enough stand off from the mining face and are completely exposed at the bottom).

The operation is planned to be excavated with contract mining. A campaign mining methodology will be used as it is suitable due to the relatively low tonnage quantities required from the proposed mining/loading operation. The mine will be in operation for typically 3 months (a single campaign) with each subsequent campaign separated by a period of 3 years from the preceding one. A single campaign is designed to excavate and stockpile 3 years kaolin supply on the ROM stockpiles. This approach presents significant savings in overhead costs and ensures that adequate efficiencies are maintained.

The various activities of the mining operation consist of:

- clearing of vegetation and topsoil stripping and storage;
- Haul road and ramp construction;
- grade control;
- establishment of any required pit bunds;
- excavating and hauling overburden material to surface storage facilities or backfilling of mined out voids wherever ore mining has been completed;
- ore mining and hauling to ROM stockpiles;
- rehandling of Cadoux plant rejects, tailings;
- rehabilitation works and Pit dewatering when required.

Optimisation inputs and assumptions

The open pit optimisation process is the first stage of the conversion of a mineral resource into a mineable open pit reserve. At this point, all latest physical, technical and economic parameters available are applied to the orebody to determine a mineable pit boundary. Open pit optimisation work has been undertaken to:

- identify, quantify and validate the potential mining inventory as guidance for pit designs;
- evaluate the effects of variations in the project economics and their assumptions; and
- determine the overall robustness of the Project and the potential for advancement.

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The inputs and assumptions used in the pit optimisation process are in the table below.

Item	Value	
Block Model	April 2019 Hyland Consultants Mineral Resource Estimate	
Ore Reserve Reporting	Only Measured & Indicated Resource materials can be converted	
Item	**Units**	**Value**
Mining		
Ore Loss	%	10
Mining Dilution	%	0
Pit Slope	degrees	37° in all bearings
Mining Rate	dtpa	Variable
Mining Cost	AUD$/t	3.85 – 4.85
Processing		
Cadoux Beneficiation Costs	AUD$/ ore t	42.86
Cadoux Beneficiation Rate	dtpa	53,500
Cadoux to Kwinana transport costs	$/t intermediate concentrate	55.49
Kaolin concentrate transport/HPA Feed rate	dtpa	35,000
Kwinana HPA production costs	$AUD/t ore	1357.10
Minimum HPA (99.99% Al_2O_3) Production	tpa	8,000
Total Al_2O_3 recovery from processing	%	61.28
Financials		
Product Price HPA	$AUD/t	34,286.00
Royalties	% of product revenue	2.5
Exchange Rate	USD / AUD	0.70
Discount Rate	%	10

Table 4-2 Optimisation parameters and constraints

Optimisation results and shell selection

The pit optimisation results are presented in the figure below, showing:

- the Shells 12-45 have effectively the same geometry and value with the maximum best-case being Shell 31.
- the best case discounted cashflows are insensitive to larger inventories and shell sizes beyond Shell 6.
- the revenue stream associated with the high-grade concentrate far outweighs the costs associated with mining, beneficiating and refining, hence even at low revenue factors; all the measured and indicated ore is mined and continues to produce positive cash flows.
- due to the long mine life, the discounted cash flow is substantially lower than the undiscounted cash flow.
- mining costs are a fraction of the total costs.

Whilst the best-case shell was Shell 31, there is minimal additional discounted cashflow beyond Shell 6. This negates the benefit of mining a pit larger than Shell 6. Furthermore, mining to higher shells and increasing the mine life unnecessarily exposes the project to further risk in increased costs. The worst and average Case was Shell 5. When comparing Shell 5 and Shell 6, the larger shell presented a more suitable geometry amenable to the campaign-style mining and backfilling methodology proposed. Thus, Shell 6 with a revenue factor of 0.34 that yielded a 60-year mine life was selected as the basis for mine design.

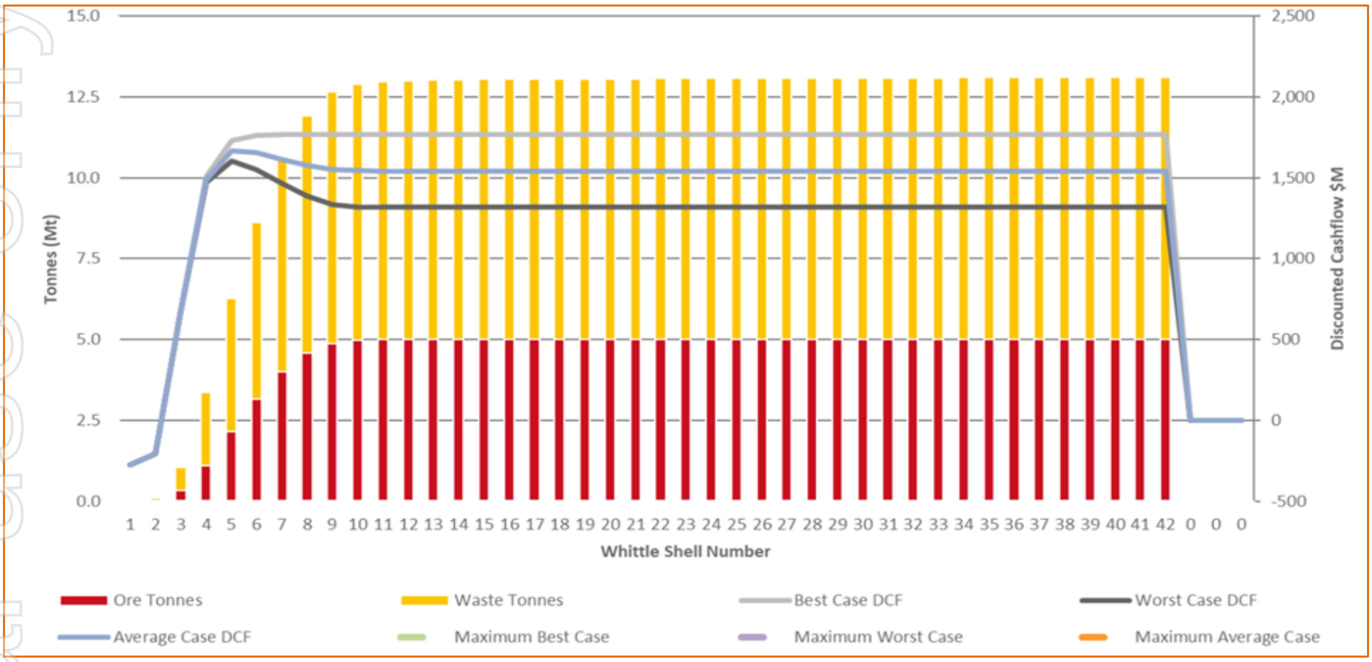

Figure 4-1 Pit optimisation results by pit

Mine design

The basic Cadoux site layout is shown in Figure 4-2. Mine design was based on the optimal pit-shell and the size of the anticipated mining fleet with considerations for:

- minimum mining width;
- bench height;
- berm and batter configuration;
- haul road width; and
- backfilling.

A fleet of 45t articulated trucks and a 75t excavator was selected for the project. Minimum mining width considerations aim to avoid situations where future stages are too narrow to be mined (hence the ore will be sterilised) and to ensure that mining equipment can be operated efficiently and safely at the bottom of each stage.

The break-even cut-off grade for material to be treated as ore is substantially lower (7.06% $Al2O3$) than the grade of the orebody (averaging 23.38% $Al2O3$, measured and indicated only). Hence, all mineralised material meets the grade to be classified as ore. However, due to the presence of deleterious elements and poor metallurgical performance, the basement and saprolite rock is not classified as ore despite bearing some alumina grades.

Where sensible, the bench height is 5m. Near the bottom of the pit, the bench height was reduced to 1 m to be able to selectively mine the ore along the ore/waste boundary. The 5 m wide berms were designed every 2 benches (10m) with 50° batter angles. This results in an overall slope angle of 37° matching the geotechnical slope design criteria.

The Project is highly sensitive to deleterious material mixing with the ore, the source of which is diluent material from outside the ore zone. To mitigate the risk of dilution and the introduction of other materials during the mining process, potentially contaminated ore will be treated as waste. Hence, an ore mining recovery of 90% has been assumed.

The results from the mine design are summarised in the Table below:

Category	Ore	Al_2O_3	Fe_2O_3	K_2O	TiO_2
	kt	%	%	%	%
Proved	290	24.9%	1.1%	0.5%	0.8%
Probable	2,914	24.8%	1.1%	0.6%	0.9%
Total	**3,205**	**24.8%**	**1.1%**	**0.5%**	**0.9%**

Table 4-3 Ore Reserve Estimate above 7.06% Al2O3 cut-off grade

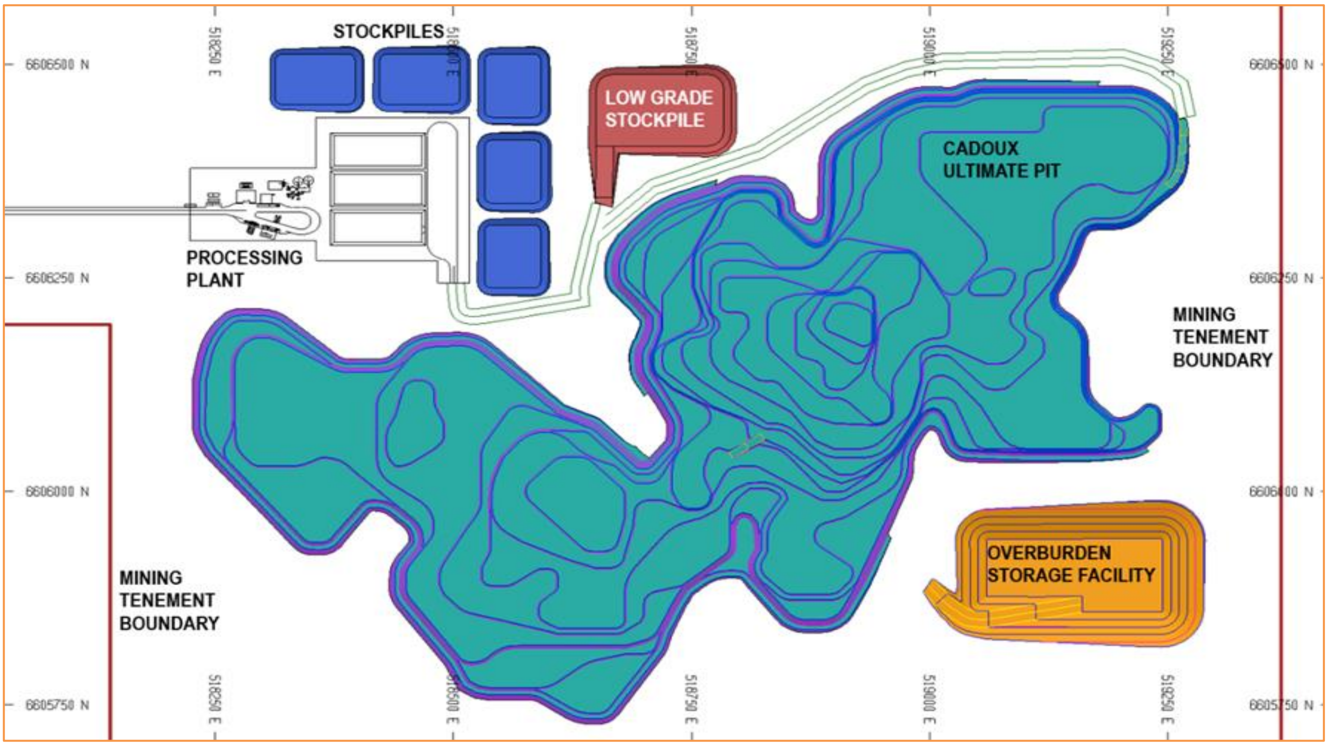

Figure 4-2 Cadoux site layout, with final pit design

Haul roads were designed in accordance with industry standards using a multiple of 3.5 times the truck width. Backfill slope angles were designed at 35° and with a swell factor of 20%. Stages were designed in accordance with the mining campaigns A representative site layout can be seen in Figure 4-2 (the overburden storage facility is to be removed and the pit completely backfilled at EOM).

Mining and Processing Schedules

The scheduling activity objective was to generate maximum value while maintaining the practical integrity of the mining method) and certain constraints being realistically achievable. The scheduling aimed to:

- provide a consistent total material movement (TMM) between campaigns to align with any equipment assumptions utilised during optimisation and design;
- provide allowance for backfilling opportunity of overburden and Cadoux plant reject material;
- defer mining and backfilling of areas in close proximity to inferred material to prevent sterilisation of possible ore by backfill. By deferring excavation of this material, this allows further drilling in these areas that may upgrade the mineral resource; and
- match campaign production with processing requirements to minimise stockpile balances and defer the associated costs.

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Maximisation of the project value has been achieved by:

- deferring mining of areas with a high stripping ratio;
- maximise cashflow by maximising HPA production; and
- deferring processing costs by targeting a higher head grade early in the schedule. A higher grade translates into less tonnes processed and therefore defers costs between individual time periods.

The mining and processing schedule summaries Figure 4-3 to Figure 4-4, highlighting:

- the mining campaigns commencing every 3 years with total mining averaging 500kt per campaign;
- a high stockpile balance at the end of each mining campaign, reducing over the next 3 years as ore is reclaimed and fed to the beneficiation plant;
- the beneficiation feed tonnages and grades for each year; and
- the Kwinana HPA production profile.

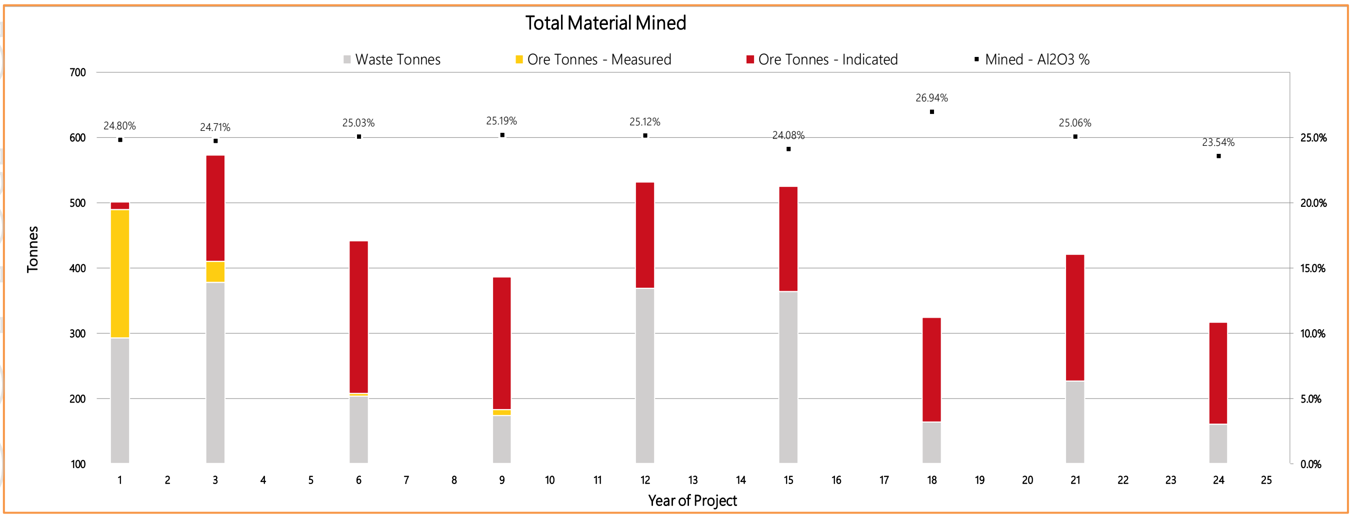

Figure 4-3 Total Material Mined, by campaign

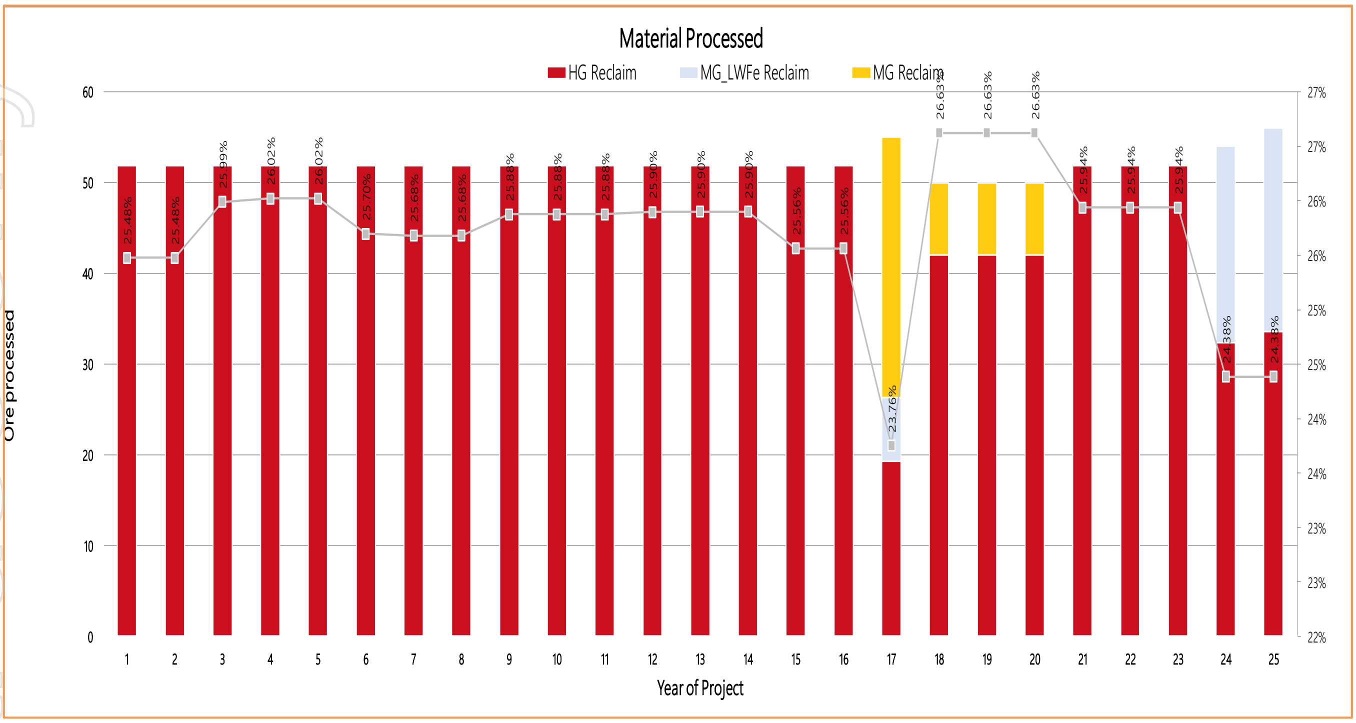

Figure 4-4 Material processed grad

Ore Reserve Estimate

An Ore Reserve in accordance with the JORC 2012 Code was estimated for the Cadoux HPA Project. The Ore Reserve estimate is based on the measured and Indicated Mineral Resource Estimate for the Cadoux kaolin deposit, metallurgical test work, processing and engineering designs for the Cadoux and Kwinana plants and their associated infrastructure, cost estimation, marketing and pricing research.

The mine planning inputs, variables and assumptions for the Ore Reserve estimate are summarised, in accordance with reporting criteria (JORC 2012 Table 1 Section 1) has been completed, in Table 4-24-5. The financial modelling of the project was performed and sensitivities analysed to confirm that the project generates positive economical returns and has a reasonable likelihood of success.

The composition of the total Ore reserve is shown in Table 4-3. The Ore Reserves are summarised by stage in Table 4-4. The average life of each stage is 3 years with a total mine life of 51 years. Note, processing of this ore continues for another 10 years, through to Year 62.

Category	Ore	Al_2O_3	Fe_2O_3	K_2O	TiO_2
	kt	%	%	%	%
Proved	290	24.9%	1.1%	0.5%	0.8%
Probable	2,914	24.8%	1.1%	0.6%	0.9%
Total	**3,205**	**24.8%**	**1.1%**	**0.5%**	**0.9%**

Table 4-4 Ore Reserve Estimate above 7.06% Al2O3 cut-off grade

Stage	Proved Ore		Probable Ore		Waste	Total Mining	Waste Ratio
	kt	Al_2O_3 %	kt	Al_2O_3 %	kt	kt	
1A	63	25.9%	1	25.9%	150	214	2.3
1B	134	24.4%	10	22.4%	142	287	1.0
2	33	24.8%	163	24.7%	378	573	1.9
3	4	26.6%	234	25.0%	204	442	0.9
4	9	24.6%	204	25.2%	174	386	0.8
5	-	-	162	25.1%	369	531	2.3
6	-	-	161	24.1%	364	525	2.3
7	-	-	161	26.9%	163	324	1.0
8	-	-	194	25.1%	226	421	1.2
9	-	-	156	23.5%	161	317	1.0
10	-	-	151	24.4%	334	484	2.2
11	-	-	149	24.8%	324	473	2.2
12	-	-	148	26.0%	341	489	2.3
13	-	-	162	25.2%	374	536	2.3
14	-	-	153	25.2%	385	539	2.5
15	-	-	165	24.1%	468	633	2.8
16	47	24.7%	180	23.9%	474	701	2.1
17	-	-	181	24.2%	447	628	2.5
18	-	-	179	24.2%	351	530	2.0
Total	**290**	**24.9%**	**2,914**	**24.8%**	**5,827**	**9,032**	**1.8**

Table 4-5 Ore Reserves by Campaign above 7.06% Al2O3 cut-off grade

Metallurgy

Following the successful completion of the PFS, FYI progressed with a more detailed review of the HPA project metallurgy under a DFS scope. The studies continued to confirm and optimize the innovative HPA process flowsheet based on the metallurgical test work outcomes. The following major test work was completed during the DFS:

- bench scale;
- bench scale variability;
- locked cycle(s);
- pilot plant.

In addition to this test work, ad hoc metallurgical test work was conducted based on test work outcomes suggesting follow-up. All the test work conducted has been subject to an independent peer review. The peer review was conducted by Dr Leon Lorenzen of Lorenzen Consultants.

Bench scale test work

FYI's bench scale test work was concluded in the middle of 2019 and produced an additional testwork study report (IMO # 6014), which outlined the subsequent test work steps required to refine the process flow sheet and mass balances.

A number of attritioning tests was undertaken on the composites to determine the optimum conditions to maximise alumina recovery and grade for feed stock to the Kwinana refinery. Variables tested for attritioning included duration, intensity, density and size separation. Results concluded that the optimum screen size for recovery and grade was 106 µm with conditions of:

- 5-minute duration;
- solids density of 50% solids w/w.

Subsequent to attritioning, the samples were calcined to generate feedstock ready for further processing and purification.

In summary the bench scale testing involved detailed analysis on:

- acid leaching optimum. As part of the acid leaching test work, the following variables were tested: temperature, duration of leach, analytical grade vs industrial HCl;
- precipitation:
    - evaluation of the number of precipitation stages;
    - evaluation of the impact of stage recovery; and
    - evaluation of the impact of gas sparge flux rates.
- calcination, north and south sample indicating Al_2O_3 grades of 99.75% and 99.8% respectively;
- calcination – impact of crucible types; and
- calcination – Impact of crucible loading masses.

All experiments looked at determining the optimum in all sub-process by varying inputs including but not limited to:

- duration/rate;
- feed stock;
- temperature;
- reagent purity;
- mass balance; and
- measure the effect on product grade, purity.

The recommendations for further steps were:

- test additional variability samples, encompassing composites selected based on spatial, depth and grade variations;
- further attrition test work on feed samples excluding the siliceous cap existing within the deposit as well as highlighting variations based on depth;
- further test work surrounding the impact of the number of precipitation stages on the final product; and
- locked-cycle test work allowing determination of the impact of recycle streams within the leaching and precipitation stages on the rejection of impurities to the final product.

All the recommendations were followed up during the subsequent metallurgy test work which was completed during the DFS.

Locked cycle test work

Two locked cycle tests were conducted during FY2019. This test work was conducted to determine the impact of the recycle and bleed streams within the leaching and precipitation stages on the rejection of impurities to the final product.

The first locked cycle was completed on the master composite sample and 1 ppm detection limits for the solution assays were sufficient for this locked cycle testing. The second locked cycle was conducted on the pilot composite, generated for use in the upcoming pilot plant.

The locked cycle test work provided the following outcomes:

- reduction in HCl leach recovery from ~94% to ~93%, likely due to the recirculating load of Al back into the leach in solution resulting in insufficient HCl for complete leach recovery;
- all cycles returned HPA assays of 99.992% - 99.998% Al_2O_3; and
- impurities did not appear to be building in recycle streams as evidenced by Na and Fe reported as below 1 ppm for continuous cycles from Precipitation stage 3.

The second locked cycle was conducted to assess the impact of the removal of the evaporation stage from the flowsheet, as well as the impact of the inclusion of centrifuging of the ACH precipitate products rather than vacuum filtration methods.

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To provide comparable data, the locked cycle was broken into two stages: the first being four cycles utilising vacuum filtration, the second stage consisting of four cycles with the centrifuge for solid liquid separation. Allowing a direct comparison for the impurity and water balance between the two solid/liquid separation technologies.

Photos of the centrifuge to be used in the second half of the second Locked cycle are presented below.

Centrifuge & control system

Centrifuge – closeup

Master composite locked cycle testwork

The master composite locked cycle test work involved a total of six cycles with assay analysis of all major streams providing an indication of the impact of recycle streams on the rejection of impurities throughout the circuit.

Overall flowsheet balances per cycle were completed for aluminium, sodium, iron and potassium. The overall major findings from the master composite locked cycle testwork are as follows:

- Aluminium mass in the bleed and recirculating streams is not building through the cycles indicating that aluminium had balanced throughout the flowsheet for the six cycles;
- low recycle mass of impurities reporting to the recirculating streams highlighting the effectiveness of the location for the bleed streams;
- overall total impurities balance presenting no trend of increasing or decreasing mass indicating they are not building throughout the flowsheet;
- HCl leach aluminium recoveries ranging from 92.3% to 94.4%, plateauing through the locked cycle. Leach results indicate that the introduction of the recirculating streams have a minor effect (reduction) on the overall aluminium recovery, but rapidly equilibrate providing there is sufficient free acid to leach the meta-kaolin present in the leach feed;
- challenges presented during the evaporation stage with the feed solution nearing solubility limits of aluminium resulting in the crystallisation of aluminium throughout all six cycles in the evaporator product. This therefore led to significant variability in evaporation stage mass reductions ranging from 25.4% for cycle 1 to as low as 2.6% (averaging 10.9%) for subsequent cycles;
- significant impurity reductions with increasing precipitation stage indicated by Na, Fe and K feed grades all reported below 2,500, 20 and 10 mg/L for precipitation stages 1 to 3 respectively.

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High Purity Alumina analysis master composite locked cycle

The final six calcined products from the master composite locked cycle were submitted to Ultratrace for assay analysis via X-Ray Fluorescence (**XRF**) and Laser Ablation (**LA**). Summarised final product assays are indicating grades ranging from 99.994% to 99.999% Al_2O_3.

Cycle	Sum of LA	Sum of Metal XRF	Sum of LA and Metal XRF	HPA Grade
#	ppm	ppm	ppm	% Al_2O_3
1	2.17	16.34	18.51	**99.998**
2	23.06	38.86	61.92	**99.994**
3	15.57	4.67	20.24	**99.998**
4	5.58	29.06	34.64	**99.997**
5	5.29	0.00	5.29	**99.999**
6	2.80	14.01	16.81	**99.998**

Table 4-6 master composite locked cycle final product analysis summary

Pilot composite locked cycle test work

The pilot composite feed grades were selected based on the first three years of Run of Mine material, designed to cover the initial three years of mine life and payback period for the Project. The target alumina and deleterious element grades for the pilot composites are presented in the table below.

Analyte	Target	Back Calculated Head Grade
	%	%
Al_2O_3	24.80	25.55
Fe_2O_3	1.16	0.93
SiO_2	63.88	62.87
TiO_2	8.82	0.89
CaO	0.02	0.03
Na_2O	0.14	0.14
K_2O	0.37	0.58
MgO	0.08	0.07

Table 4-7 Pilot composite target and actual summarised head grades

The pilot composite locked cycle involved a total of eight cycles with assay analysis of all major streams providing an indication of the impact of recycle streams on the rejection of impurities throughout the circuit.

Overall flowsheet balances per cycle have been completed for aluminium, sodium, iron, potassium and chrome. The overall major findings from the pilot composite locked cycle test work are as follows:

- Aluminium mass in the bleed and recirculating streams is not building through the cycles indicating that aluminium had balanced throughout the flowsheet for the eight cycles;
- total aluminium balance is consistent, ranging from 88 – 95% with lower aluminium reported exiting the system due to inefficient sample splitting for the final ACH and biases in final HPA mass due to only a portion being calcined;
- implementation of centrifuging after Cycle 4 resulted in an overall increase in the mass of impurities reporting to the filtrate of each precipitation stage and subsequent reduction in impurities reporting to the wash;
- Chrome metal units out are consistently higher than metal units in due to the leach residue samples being pulverised in a hardened steel, chrome based pulverising bowl therefore contaminating the sample with chrome;
- Fe and Cr grades reporting to the filtrate and wash streams appear to increase from Cycle 4 onwards indicating potential contamination of the streams due to corrosion and leaching of the centrifuge;
- HCl leach aluminium recoveries ranging from 83.3% to 94.2%;
- significant impurity reductions with increasing precipitation stage indicated by Na, Fe, K and Cr feed grades all reported below 2,250, 70 and 7 mg/L for Stages 1, 2 and 3 respectively.

Pilot composite locked cycle final product analysis

The final eight calcined products from the pilot composite locked cycle were submitted to Ultratrace for assay analysis via X-Ray Fluorescence (**XRF**) and Laser Ablation (**LA**). The final product assays indicated grades ranging from 99.920% to 99.998% Al2O3.

Cycle	Sum of LA	Sum of Metal XRF	Sum of LA and Metal XRF	HPA Grade
	ppm	ppm	ppm	% Al2O3
1	11.9	69.73	81.63	**99.992**
2	5.74	76.76	82.5	**99.992**
3	4.71	44.97	49.68	**99.995**
4	6.54	11.67	18.21	**99.998**
5	13.32	13.99	27.31	**99.997**
6	11.93	9.35	21.28	**99.998**
7	117.7	681.77	799.47	**99.920**
8	37.82	267.72	305.54	**99.969**

Table 4-8 Pilot composite locked cycle final product analysis

The final two cycles were assessed for external contamination of the final product and found to be contaminated through the storage practices utilised for the testing.

Recommendation locked cycle test work

Based on the current Metallurgical testwork to date IMO offer the following recommendations for further development:

- Conduct GDMS analysis on the final alumina products allowing confirmation of the results and provide a clearer indication of the impurities present; and
- Complete hydrometallurgical piloting on the Pilot Composite to confirm the outcomes and assumptions from the locked cycle testing.

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Due to the requirement of HPA sample for marketing purposes all locked cycle final products were consumed with no reserve mass available for the recommended GDMS analysis.

Variability testwork

The purpose of the variability test work was to assess the range of metallurgical performance that might be expected throughout the orebody so that the company understands the impact of the deposit characteristics resulting in a more consistent and reliable HPA grade.

The variability test work program was undertaken using sample intervals that were collected following completion of a drilling campaign conducted at the Project in 2018.

The variability test work program involved a total of ten (10) composites representing the variable grade, depth and spatial distribution from the initial 3-year ore zone. Each composite underwent the complete process flowsheet beginning with beneficiation through to final precipitation and calcination, generating HPA product for analysis.

Composites were selected for the variability composites to assess:
- spatial variation;
- Alumina feed grade variation;
- deleterious element grade variations; and
- lithological variations.

Head assay analysis

The head assay analysis of the ten variability composites were indicating:

- Al_2O_3 grades ranging from 20.3% to 28.9%;
- Fe_2O_3 grades ranging from 0.4% to 2.4%;
- K_2O grades ranging from 0.04% to 2.89%;
- Na_2O grades ranging from 0.08% to 0.24%;
- TiO_2 grades ranging from 0.5% to 1.5%;
- MgO grades ranging from 0.02% to 0.12%; and
- SiO_2 grades ranging from 59.1% to 70.0%.

Attritioning testing

The ten variability composites underwent attritioning at optimum conditions. The attrition test was conducted utilising a standard Denver attritioning cell under the following conditions:

- 50% solids w/w;
- 5-minute duration;
- attritioning speed of 1,300 RPM; and
- wet screening cut size of 106 µm.

The fine leach feed generated from attritioning the variability composites concluded:

- no significant impact of attritioning on alumina recovery to the -106 µm fraction with recoveries ranging from 60.9% to 99.5% compared to initial feed recoveries of 58.7% to 99.5%;
- relatively consistent -106 µm fraction alumina grades ranging from 30.5% to 37.0% compared to initial calculated feed grades ranging from 19.8% to 28.1%; and
- iron recoveries to the -106 µm fraction ranging from 57.0% to 94.1% with Fe_2O_3 grades ranging from 0.3% to 2.5%.

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HCl leach testing

Following attrition testing the -106 µm size fractions for each of the variability composites were calcined at 750°C and leached in industrial grade 28% HCl. The hydrochloric acid leach tests were conducted at the following conditions:

- 20% solids w/w;
- 180-minute duration;
- geating to 80°C, allowing to reach reaction temperature and maintaining 80°C for the remainder of the test;
- atmospheric pressure;
- industrial grade HCl; and
- 28% HCl w/w.

The leach results were:

- final alumina recoveries ranging from 83.6% to 94.9%;
- varied alumina leach kinetics were observed across the ten tests, with alumina recoveries ranging from 22.6% to 41.2% after a 30-minute duration;
- overall Fe_2O_3 recoveries ranging from 81.4% to 93.9%;
- overall Na_2O recoveries ranging from 43.4% to 90.8%; and
- significant variation in overall K_2O recoveries ranging from 6.9% to 81.8%.

Precipitation & Water Leach Testing

The leach liquors generated from the HCl leach tests on each variability composite underwent three stages of Aluminium Chloride precipitation. The three stages of precipitation targeted aluminium stage recoveries of 95.0%, 87.5% and 87.5% respectively.
Precipitation gas addition flux rates were maintained at consistent flux rates of 1.7 L/min/L, slightly increased to those proposed for the final plant design to ensure results align with final design.

The solids generated from the first and second precipitation stages were water leached in distilled water, targeting an aluminium concentration of 60,000 mg/L with the leach liquor acting as the feed for the following precipitation stage.

The results for the precipitation testing undertaken on the variability composites were:

- stage 1 aluminium recoveries ranging from 90.3% to 94.1% and averaging 92.5%, marginally lower than the 95.0% target;
- stage 2 aluminium recoveries ranging from 81.5% to 88.4%, averaging 86.0% marginally lower than the target 87.5%; and
- stage 3 aluminium recoveries ranging from 85.9% to 89.6%, averaging 87.6% compared to the target 87.5%.

Final product analysis

A sub-split of the final stage 3 precipitation products for the variability composites underwent a 2 – stage calcine at temperatures of 750°C and 1250°C respectively. The final calcined products from each variability composite were submitted to Ultratrace for assay analysis via X-Ray Fluorescence and Laser Ablation. All composites were also submitted to Eurofins Materials Science (**EAG**) Laboratories for GDMS analysis allowing for confirmation and confidence in the product grades reported from XRF/LA.

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All variability composites achieved final high purity alumina products ranging from 99.997% to 99.998% Al_2O_3 via GDMS methods.

Composite	XRF / Laser Ablation		GDMS
	Al_2O_3 %	Al_2O_3 % Dup	Al_2O_3 %
VC1	99.9878		**99.9976**
VC2	99.9914		**99.9971**
VC3	99.9995		**99.9976**
VC4	99.9969	99.9991	**99.9981**
VC5	99.9936		**99.9972**
VC6	99.9983		**99.9977**
VC7	99.9977		**99.9977**
VC8	99.9996		**99.9977**
VC9	99.9978		**99.9977**
VC10	99.9989	99.9983	**99.9975**

Table 4-9 Variability test work - final product Alumina results summary

Variability HPA assay grade discrepancies between the GDMS assays and XRF/LA assays highlighted the limitations of XRF/LA assay techniques compared to the GDMS assay method.

The variability test work report recommended:

- conduct XRD analysis on all variability composites to assess the mineralogical variation in the ore throughout the first three years of mining. This analysis will further allow for correlations to be made between potassium feldspar grade, alumina recovery and provide a greater insight into the impact of mineralogy on the leach process;
- confirm current results or reduced impurity grade by employing a centrifuge as a solid liquid separator for a variability sample as opposed to the vacuum filtration used for previous testing stages;
- conduct a fourth precipitation stage on select variabilities to determine whether a 99.999% HPA product can be generated or whether purity limits have been reached by the current methods; and
- conduct calcinations after each stage of precipitation whilst using a centrifuge to determine a product purity curve for each stage, providing further insight and confidence into the purification stages.

Pilot plant operation and test work

The Company conducted a successful HPA production pilot plant trial using feedstock from the Cadoux licence area. The pilot plant trial production was designed to test functional operations of the flowsheet design and to observe and analyse the continuous "end to end" process operation for scale up factors for inclusion into the proposed full-scale commercial plant.

The pilot plant operated continuously "end to end" from the 2nd to 9th October 2019 on a 24/7 basis. During that time, the pilot plant met or exceeded FYI's modeled operational performances, demonstrating the potential for commercial production of HPA as per the pre-feasibility study's assumptions.

The pilot plant demonstrated that FYI's unique HPA flowsheet could operate on a continuous basis.

FYI undertook the pilot study using the best scale up practices to replicate commercial production. The manually observed results from the pilot plant were consistent with the previously reported test work.

The successful trial production provides FYI with a complete metallurgical assessment of the product behavior and characteristics through the refining process. An energy balance has also been developed to determine the requirements for heating and cooling inputs, along with a model for all other inputs (costs) used in the process including providing projections for reagent consumptions.

FYI completed two pilot plant trial product phases: one phase comprised a standard process, the second phase included an optimised trial which included flowsheet and materials handling modifications to the plant which may have the potential to improve upon the targeted 4N HPA.

The first phase pilot plant results were very encouraging, providing a sound interpretation of batch, locked cycle and variability testing for incorporation into the design and construction of the continuous pilot plant. In addition to demonstrating that the target grade of 99.99% Al_2O_3 could be produced on a continuous basis from kaolin feed material, the pilot plant provided information that will be used to enhance engineering design criteria for a full-scale plant.

The first pilot plant run improved the level of understanding of the various unit processes, recycle streams, mass balances and materials of construction. Minor modifications to the pilot plant could potentially yield HPA in excess of 99.99% Al_2O_3.

A further part of the pilot plant trial included a separate "optimised" phase of the pilot plant trial, with the potential to produce higher grade HPA.

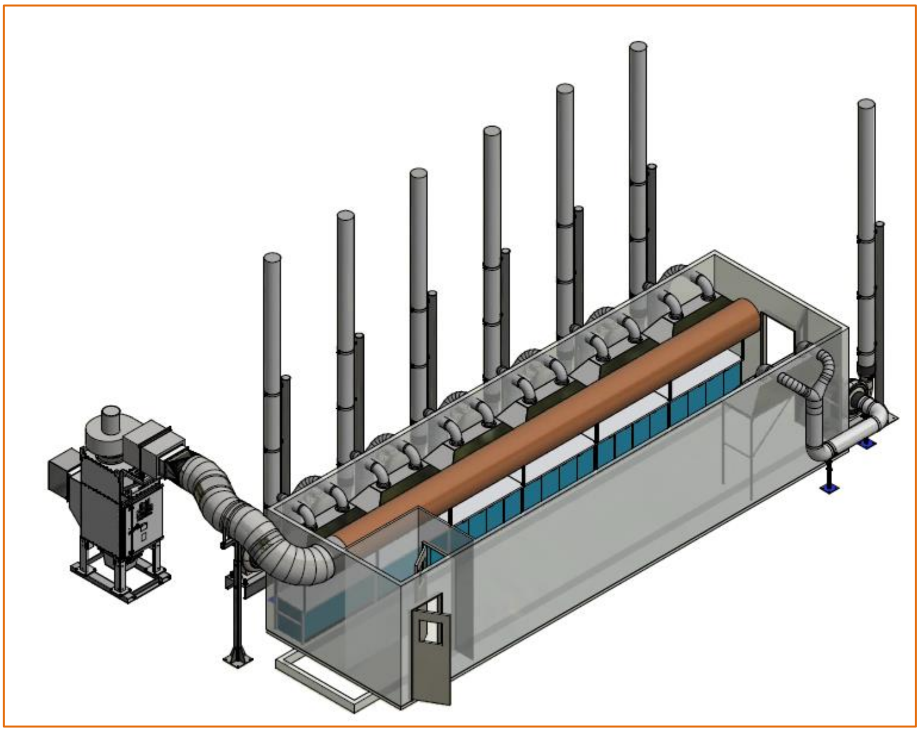

Figure 4-5 Isometric view of pilot plant facility in Kwinana

FYI's innovative process flowsheet was demonstrated through extensive pilot plant operation to provide confidence in the deliverability and operability of the three main processing stages – beneficiation, leach and precipitation / purification. The pilot plant comprehensively validates the operating and design parameters used in this study.

Figure 4-6 Pilot plant operations

Additional materials handling test work

Across all test work activities (locked cycle, variability testing, pilot plant), during the DFS period a number of experiments and investigations needed to be conducted to resolve unforeseen challenges and issues presented during the test work.

A number of experiments and investigations were conducted during the DFS inclusive of:

- additional characterisation work surrounding the precipitation stages;
- experiments included HCl leach settling test;
- testing of Filtration rates for HCl Leach products;
- evaporation testing on leach liquors at varied target HCl w/w%;
- precipitation testing at varied HCl flowrates;
- laser sizing analysis;
- optimised precipitation settling and air-blown filtration tests; and
- precipitation optimisation with varied precipitation stage recoveries of 70, 80 and 90% to determine the overall impact of final product purity.

Future Batteries Cooperative Research Program (FB-CRC)

The Future Batteries Cooperative Research Program (FB-CRC) was established during FY2019 and FYI is an associate partner. FYI has provided the below study hypothesis:

> Improved assay techniques for lower detection limits
>
> Changing and advances in technology have driven demand for higher purity materials as feed sources for manufacturing. As product impurities have been increasing, the technologies available to provide a rapid, accurate and precise assay to the required detection limits have failed to keep up with demand.
>
> FYI Resources proposed a study into the current technologies available for the assay of high purity solids currently available for both onstream analysers as well as for routine samples. Following the review into the technologies available, a study will be conducted aimed at reducing current detection limits whilst still maintaining the required accuracy and precision.

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Materials of constructions for abrasive and corrosive high purity products

As requirements for increased purity materials for manufacturing is increasing, so too is the demand for materials of construction that can withstand the corrosive and abrasive nature of the materials being produced. For example, the abrasion of handling systems for high purity alumina introducing contamination into the final product.

Constant wear on materials of construction such as; hopper liners, conveyor systems and pipe lining can introduce impurities into the process or final product through either mechanical or chemical corrosion. Processes required to generate the high purity product are typically conducted at elevated temperatures and pressures, further increasing the likelihood of contamination of the final high purity product.

The proposed area of research will be around materials chemistry and assessing potential new materials of construction to withstand the mechanical and chemical corrosion from the processes generating the high purity products.

At the end of FY2019, research organisations are preparing project proposals to support and address the above key themes. FYI is hopeful that during FY2020, projects will be commenced to help address these underlying dynamics in FYI's unique HPA process.

Via its relationship with Curtin University, FYI has engaged a number of high purity alumina consultants assisting the Company with its process, peer review and the recycle of the waste streams.

Peer review

During the DFS, Dr Leon Lorenzen provided the peer review of the metallurgical test work to date to check the quality and relevance of the work and provide recommendations to improve the quality. Dr Lorenzen was recommended via Future Batteries Cooperative Research Program (**FB-CRC**) as a specialist in high purity minerals/materials and impurity / contamination control.

Dr Lorenzen's key competencies relevant to the Project are:

- Extensive management and working experience in mineral processing, chemical engineering, waste management, water management and renewable energy sectors;
- Trusted advisor to all levels within the mining and chemical industries as well as finance and academic institutions.
- Professionally registered to operate in many countries and recognised as Competent Person and Qualified Person in the fields of Chemical Engineering and Mineral Processing Internationally.
- Extensive experience in managing and coordinating multi-disciplinary and integrated research programmes and industry projects covering all aspects for example the mineral value chain, i.e. exploration and geology, mining and planning, geo-metallurgy and geophysics, processing,
- infrastructure and optimisation across the value chain.

Dr Lorenzen provided valuable recommendation and his general feedback was that the test work to date was well designed, thoroughly executed and well reported.

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5. HPA Markets

the HPA pricing and marketing is Fundamental to the success of Project. In order to determine a reliable pricing matrix, FYI has mandated independent sector and industry research from Commodity Research Unit (**CRU**) and Allied Market Research (**Allied**) as well as incorporating separate in-house marketing studies.

The following marketing highlights are based on the independent research groups findings and supported by FYI's internal research and one on one meetings with customer groups:

- HPA has a strong demand outlook with the HPA global market expected to increase from around 35,000t in 2019 to 145,000t in 2026, driven primarily by strong growth in demand for HPA as a lithium-ion battery (**LIB**) separator coating.
- HPA pricing is determined by product purity, the physical characteristics of the products, ability to deliver consistent product quality and the end-use application of the HPA.
- The strong demand outlook and rising cost inputs are expected to place upwards pressure on prices. The main downside risks are increased competition from Chinese producers and changes to technology which reduce HPA intensity in manufacturing processes. Chinese material tends to be of lower quality than that produced by the established companies outside of China
- The Company is developing a consistent, high quality product delivered by a reliable quality and assurance process
- FYI also promotes itself as being a fully integrated producer from "mine to market". This ensures total control of product provenance to delivery of the customer. This guarantees ethical sourcing, low carbon footprint and strict quality and purity control.

Considering the above, for the purposes of this DFS, the Company uses the conservative forecast price of US$24,000 (free on board (**FOB**), ex-Fremantle) per tonne HPA for pricing and modelling.

FYI is continuing with its market engagement with potential customers. The Company has produced sufficient market samples during the pilot plant program to share with potential customers in order for them to trial and qualify with a view to secure off-take agreements to support the Project. This product engagement is highly customer driven and is therefore effective in terms of determining product specification.

Demand

Drivers of demand

Market demand	Production process	End-use application	End-use sectors
HPA demand	Synthetic sapphire production	LED & semiconductor substrates Scratch-proof glass	Lighting, automotive, signs, electronics, tablets, smart phones, watch faces
	Direct use in manufacturing process	Lithium-ion battery (**LIB**) separator coating	Electric vehicles Consumer goods
		Phosphor coating	Fluorescent lighting

Figure 5-1 Market Demand

4N HPA accounts for the largest share of the HPA market demand, although more specialist applications, such as high-quality microscope glass, are likely to utilise higher-specification HPA products, such as 5N.

The demand for high-purity alumina has gained traction and is expected to grow at a CAGR of 22.0% in terms of volume during the period 2019 - 2026, owing to increase in demand from applications such as LED bulbs, LIB separator coating, electronic displays, automotive, and medical. This trend is anticipated to continue with surge in adoption of HPA by end users and emerging technological developments. The HPA global market is expected to increase from around 35,000t in 2019 to 145,000t in 2026, (Source: Allied Market Research, October 2019, Global High Purity Alumina Market, Opportunity Analysis and Industry Forecast 2018 – 20126).

Category	High Purity Alumina Market, by Application, 2018–2026 (Ton)									
	2018	2019	2020	2021	2022	2023	2024	2025	2026	CAGR (2018-2026)
LED Bulbs	15,079	17,894	21,404	25,806	31,360	38,407	47,404	58,959	73,892	22.5%
Semiconductor Substrates	4,776	5,635	6,703	8,037	9,712	11,829	14,518	17,957	22,380	21.8%
Li-ion Batteries	2,630	3,253	4,047	5,068	6,386	8,098	10,335	13,275	17,163	26.8%
Optical Lenses	1,788	2,078	2,434	2,872	3,415	4,091	4,938	6,003	7,350	19.8%
Bio-Medical Devices	1,106	1,292	1,522	1,807	2,162	2,608	3,169	3,881	4,788	20.6%
Others	5,042	5,814	6,754	7,901	9,309	11,044	13,191	15,861	19,197	18.6%
Total	**30,42**	**35,976**	**42,86**	**51,49**	**62,34**	**76,08**	**93,55**	**115,94**	**144,77**	**22.0%**

Figure 5-2 HPA market by application, 2018 - 2026

Forecast HPA demand by end-use

The growth is driven primarily by strong growth in demand for LIB separator coating driven by electrical vehicle growth [source: 2018-07-03 CRU High Purity Alumina Market Study - FYI Resources].

HPA, with its superior properties such as high brightness, superior hardness, and superior corrosion resistance, finds applications in LED bulbs, semiconductor substrates, li-ion batteries, optical lenses, bio-medical devices, and others. LEDs are expected to replace traditional lighting systems completely as they are sustainable, durable, and safe. HPA in powdered form is a major component in protective coatings and used as a phosphor material in plasma displays. In Asia-Pacific, government funding has fueled the manufacturing capacity investments for electronic companies, which in turn is expected to fuel the demand for HPA during the analysis period.

In 2018, LEDs accounted for the largest share of HPA demand, totaling 20,000t, equivalent to 52% of global demand. The fastest growing end-use demand sector in recent years has been LIB battery separators, which grew at a CAGR of 25.7%, reaching 5,000t in 2018. Demand from phosphors has been gradually declining, as fluorescent lighting has increasingly been replaced by LED alternatives. Sapphire glass accounts for a relatively small share of the overall market, totaling around 2,000t in 2018.

Lithium-ion battery separator demand growth

- Outstanding growth is forecast in the LIB separator market – a 49% CAGR, from 5,000t in 2018 to 80,000t in 2025 – drives the majority of HPA demand growth: Underpinning this forecast is the market share of cylinder, prismatic and polymer/pouch separators for batteries being produced. It is expected that cylindrical separators will grow strongly (29% CAGR) and climb from a 64% market share of separators to 87% by 2025.
- The average cell volume of batteries is also growing, as LIBs tend more towards electric vehicle rather than consumer handheld electronics.
- Ceramic separators offer the highest combination of temperature performance, safety and life cycle – as a result, in the forecast period, they are expected to achieve mass commercialisation in EVs.

The share of coated separators is forecast to rise from 36% in 2018 to ~80% by 2025, of this, HPA coating is expected to marginally increase market share. Overall, it is forecast that HPA-coated separators will rise from 21% of the current market to 60% by 2025.

One of the drivers of the LIB separator growth is the growth of electric vehicles. Acceleration of the EV growth is expected as a result of China's 2-Credit Policy (announced in September 2017 and introduced in April 2018) and China's Battery Manufacturing Legislation, which was announced late 2017. The policy stipulates that manufacturers must sell a certain proportion of EV vehicles, rated according to a credit system and the legislation stipulates that battery manufacturers must create batteries with a minimum charge density, scale, maximum price, etc. The impact of China's policy and legislation change is highlighted in the below graph.

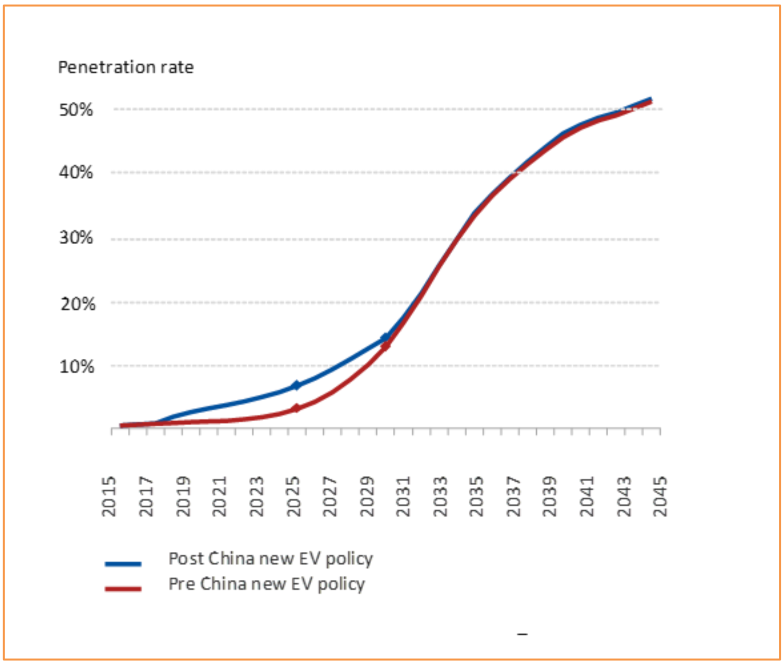

Figure 5-3 EV penetration rate in China Light Duty Vehicle (LDV) market

Source: CRU Perth Tech Metals Briefing – June 2018

Outlook for key drivers of HPA demand

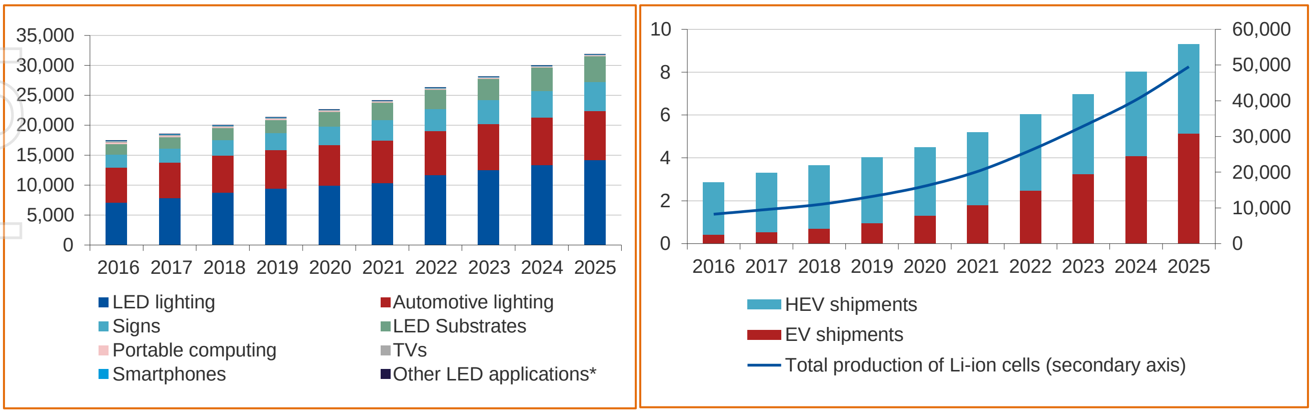

Figure 5-4 Breakdown of LED usage and HEV / EV shipments & total production of Li-ion battery cells

Static lighting makes up the largest end-user sector for LEDs with 44% of consumption (2018), followed by automotive with 31%. LED usage in signs is expected to grow fastest, with a 2018-25 CAGR of 9.2%.

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Electric vehicles (**EV**) and hybrid vehicle (**HEV**) shipments are set to grow strongly over the forecast period, more than doubling between 2017 and 2025.

Especially in Europe, investment continues to transition towards renewable energy for electric vehicles, supporting the shift to new responsibly produced raw material supplies. The EU's ambition is to be carbon neutral by 2050.

FYI's goal is to produce its HPA responsibly and meet the customers' requirements in this regard.

Electric vehicle manufacturers have recently indicated further actions to promote responsibly produced battery raw materials, in particular.

- BMW Group is targeting new supplies by country of origin and is developing a revised sustainability strategy for its entire value chain;
- Volvo has announced it will become the first car maker to implement global traceability by applying blockchain technology. Traceability of raw materials, like HPA, used in the production of lithium-ion batteries is one of the main sustainability challenges faced by car makers. Volvo stated that "customers can drive electrified Volvos knowing the material for the batteries has been sourced responsibly";

The below table will show the major investments underway to establish new battery manufacturing capacity of more than 200 GWh for EV's in Europe. Please note that also other investments are planned in the US and across Asia.

Company	Country	City	Year	Start GWh	Later GWh	Details
Volkswagen	Germany	Salzgitter	2024	16	24	JV with Northvolt: 70 electrified models by 2030. Construction start 2024
CATL	Germany	Erfurt	2022	14	24	Ground-breaking ceremony took place in Oct 2019. Investment 1.8m euro
Hyperdrive	England	Sunderland	2014	2.5	2.5	Opened July 2019, capacity to produce up to 30,000 vehicle and batteries annually
Leclanche	Germany	Willstätt	2020	1	1	2018 joint venture with Exide Industries, India's largest manufacturer of batteries
PSA Group	France	Unknown	2030	48	48	PSA group and SAFT (part of Total) form joint venture, investment 5m euro
SVOLT	Germany	Unknown	2023	20	24	SVOLT Energy Technology (ex-China's Great Wall Motor Supply to BMW AG
Terra E Holding	Germany		2028	32	32	Consortium of 17 German companies won government support for the project
Freyr	Norway	Mo I Rana	2023	32	32	Plans for a "Nordic Battery Belt" with at least ten plants are in the pipeline
Northvolt	Sweden	Skelleftea	2021	16	32	Funding completed in 2019, Construction start in 2019, US$1b equity raised
Farasis Energy	Germany	Bitterfeld	2022	10	10	Supply batteries to Daimler
LG Chem	Poland	Wroclaw	2022	6	70	In 2022 the factory is expected to reach a production capacity of 65-70 GWh a year
SK Innovation	Hungary	Komarom	2021	7.5	7.5	Production of third generation cells
Samsung SDI	Hungary	Goed	2020	3	15	That facility has the capacity to turn out batteries for 50,000 EVs a year
BYD	Europe		202X	?	?	The company is backed by Warren Buffett's Berkshire Hathaway Inc
Tesla Giga Berlin	Germany	Berlin	202X	?	?	It will also serve for assembly of the Tesla Model Y, annual capacity of 500,000 EVs
Total 2020 - 2028				**208**	**322**	

The demand for high-purity alumina has gained traction and is expected to grow at a CAGR of 22.0% in terms of volume during the analysis period, owing to increase in demand from applications such as LED bulbs, electronic displays, automotive, and medical. This trend is anticipated to continue with surge in adoption of HPA by end users and emerging technological developments in the electronics industry.

Increase in penetration of LEDs in the lighting market and rise in applications of high-purity alumina in smartphones, smartwatches, and tablets are the major factors propelling the growth of the global market. However, higher cost of production is expected to impede the market growth.

The LED bulbs segment dominated the high purity alumina market in 2018, owing to the shift toward LED lighting as compared to traditional lighting. Moreover, rise need for energy-efficient light sources has increased the demand for LED bulbs, which has fueled the growth of this segment. Increase in per capita consumption of power has boosted the demand for electricity across the globe. This in turn has led to rise in demand for high- purity alumina in the lighting industry. Electronics display serves as the most lucrative application segment, as several companies are investing in enhanced quality products such as high-purity alumina in electronics displays, encompassing tablets, smartphones, and smartwatches.

Pricing

The different manufacturing processes in which HPA is used mean that product characteristics and producer profiles are important in establishing value. The following factors are important in determining the value of HPA:

Opaque market
There are a limited number of producers in the market and nearly all are private companies, meaning there is limited publicly available information regarding pricing and completed transactions. Quality of the product is critical. Accordingly, there is also no recognised benchmark price for HPA.

Heterogeneity of products
Although impurity levels are largely comparable between products, the distribution of impurities, physical characteristics and consistency of supply are equally important factors in determining product value.

Chinese products and industry dynamics
Fierce competition in the Chinese LED industry has seen producers seek to cut production costs by using lower quality products. This has resulted in some Chinese producers using sub-4N HPA products to produce sapphire substrates, although such material is often still advertised, and sold, as 4N. Thus, effectively a two-tier market has evolved, with quality and prices inside China much lower than those outside of China.

Product specifications
Bulk density of pellets must be at least 2.2g/cm3 for use in making synthetic sapphire, while silicon must not exceed 20ppm and iron must be less than 10ppm. Furthermore, for powdered products used in high quality applications, such as for LIB separators, mean particle size should be around 0.5µm, with tight grain size distribution. However, product specifications are highly dependent upon end-use application, with prices changing accordingly.

Relationship building
A key component of the HPA industry is establishing long-term relationships between suppliers and consumers. The tight tolerances in manufacturing processes mean that consumers need to ensure a quality product can be delivered consistently to specification, particularly where there are safety implications, such as in LIB separator coating applications. Consumers are generally prepared to pay higher prices if consistency of supply can be guaranteed. FYI has commenced this relationship building with a number of groups in Japan, Korea and China.

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Outlook for prices

Price drivers

The primary drivers of upward price pressure are:
(a) increasing production costs, particularly in China where electricity and environmental costs are rising,
(b) intermittent supply, and
(c) a strong demand outlook

Further volumes coming out of the market will help to support prices. The price pressure parameters in Australia are relatively stable and alternate supplies are limited at present.

Outlook

Over the medium to long term, we believe that the strong outlook for demand is likely to drive prices well above current levels.

The limited ability of Chinese producers to compete in the higher quality 4N market should allow for stronger prices in this market segment, with the added benefit of its positive outlook for demand growth makes this market an attractive proposition for the Company.

Electric vehicle market growth in particular is likely to drive strong premiums for high-quality 4N with consistent physical properties in the near to medium term, and this should provide strong price support to high quality 4N products.

Risks and caveats

Experience in other industries has shown that Chinese producers have the desire and resources to push into the production of technologically-advanced materials and can often close knowledge gaps quickly. Should Chinese producers increasingly seek to participate in the high-power LED market, prices could decline sharply if there is a repeat of the situation observed in low- and medium-power LEDs.

Manufacturers often over-engineer new technology, but over time find ways to cut back on input quality or reduce material use without compromising product quality over the longer term.

Market engagement

Throughout 2019, Company representatives met with potential customers and reputable current producers, key traders in mainland China, Japan, Taiwon and South Korea to continue to develop relationships, discuss the Project's progress and potential cooperation. The feedback continued to be very encouraging, and the Company is following up on the feedback and will provide samples from the 2019 pilot plant run to the interested parties.

It is expected that the provision of the pilot run samples will lead to off-take agreements and/or investment in the asset (via a Joint Venture) or indeed, in the Company.

Adopted pricing for the DFS.

FYI has developed a methodology to establish a conservative and realistic sales price for HPA, which is used in the DFS financial model.

This methodology includes sourcing of price indications from:

1. independent price forecasts and price revealing by industry research experts CRU and Allied;
2. web-based commodity trading platforms;
3. purchasing of product from an established commodity retailer / trader; and
4. FYI's own market intelligence studies - having direct face to face meetings with small and large manufacturers and traders in China, Japan and South Korea.

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Pricing information used for the DFS was derived from:

1. CRU and Allied research reports and presentations including price forecasts for the period 2019 to 2026;
2. February 2020 pricing on web-based commodity trading platforms for HPA was evidenced in retail spot prices for 4N ranging from US$53,000/t to US$ 60,000/t;
3. Invoiced price for HPA (used in independent metallurgical test work and verification of purity) – US$100,000/t; and
4. Canvassing of approximately 30 separate groups indicated the price range for 99.99% HPA was between US$22,000/t (China) and US$37,000/t (South Korea).

In order to calculate the HPA price for the DFS, the Company allowed for an adjustment of spot pricing versus contract, end-user versus trader and applied an error margin to be on the safe side. This and a projected decline of 10% for the period until the Company sells its first HPA results is a price of US$24,000/t HPA.

This adopted price is in line with the pricing from the Company's market forecasters, which is on average US$24,400/t. The pricing methodology takes in account the price difference of HPA between diverse countries such as China, South Korea/Japan and markets such as end-users versus traders.

6. Risks and Opportunities

Risks

FYI is committed to a risk management framework and a set of processes which effectively identifies and manages risk in a business. These processes include:

- Identification of risks
- Assessment of risks to determine their severity and potential impact
- Evaluation of risk to determine risk retention or mitigation
- Treatment of risks deemed unacceptable to the business
- Communication and consultation of risk management activities
- Review of risks, mitigation strategies, actions and the risk management process.

The project Risk Management Plan is aligned with the *AS/NZS ISO 31000:2009 – 'Risk Management – Principles and Guidelines'*.

The identification and management of risks and opportunities in the project has had a positive effect on the DFS outcomes.

Benefits include a more comprehensive and detailed study over the PFS, the reduction of project forecast costs through design improvements and effective management of human and material resources for optimal schedule, cost and safety outcomes.

Risk Management Policy

The Risk Management Policy (**Policy**) sets the environment for determining how risk will be managed within the business. The Policy integrates into the business planning framework, corporate governance framework and broad vision of the business.

FYI recognises that the business is exposed to certain levels of risk in its undertakings. Some risks are generated through external forces beyond the control of the Company, and some are generated through the activities of the business. The success of the business is based on how risk is managed. FYI aims to incorporate both entrepreneurial activities required for commercial success together with the discipline of well-developed strategies and processes for minimising adverse outcomes.

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7. Additional Opportunities

By-products revenue stream

Testing of the kaolin in Cadoux has shown that the Project will produce material volumes of high purity quartz (**HPQ**) from the beneficiation at the mine site as well as inert silica from the refining of concentrate in Kwinana as by-products. The evaluation of these potential revenue streams is ongoing but have not been taken into the Project's financials. The company is in discussion with a number of interested parties.

5N purity product

Based on metallurgical process testing to date, which resulted in an average purity of 99.997%, the Company is exploring the production of a 5N product. The Company will use next phase metallurgical test work as an opportunity to de-risk and optimize its developed process and potentially produce 5N HPA as an additional product. The Company will ensure that sufficient resources are provided for the continued improvement of the pilot test plant. A 5N product produces greater margins, and there is a growing market to warrant the additional capex. The evaluation of the 5N opportunity is ongoing, however are not included in the Project's financials.

Kwinana Industrial Zone (KIZ)

The KIZ represents a tremendous opportunity for FYI in terms of leveraging off the precincts "Industrial Symbiosis" and by-product exchanges. The RIZ has significant industrial development associated with the battery industry development and value chain that is set to emerge over the next few years. The $16bn of direct contribution to Western Australia's economy is an ideal platform for the collegiate interests of proponents within the KIZ to leverage off the by-product commercial exchanges. FYI is a direct beneficiary of a number of direct business exchanges that have a material impact to the Company's opex and capex figures.

Increased operational efficiencies

A higher throughput may be achieved following the commissioning phase through operational efficiencies that might be achieved, both at Cadoux and Kwinana, due to the engineering capacity allowances and operational fine tuning.

Industry engagement

In view of the projected growth of the Lithium-Ion Battery (**LIB**) separators market, the Company has joined the Future Battery Industries Cooperative Research Centre's industry research program (**FBI CRC**) as an associated member. The FBICRC program will enable Australian industry, governments and academics to optimise the cost competitiveness and productivity of the Australian energy storage metals, materials and systems industry to meet growth in markets, companies and exports. The program will enable value creation, sustainability and global competitiveness through the battery value chain. The Company has been involved in the program setting and from FYI's point of view the use of correct materials in the current process and the on-line product grade testing is critical. Discussions are ongoing.

Environmental benefits

An important objective for the Company is to develop the Project sustainably and through environmentally friendly methods. The Company will, where possible, invest in renewable energy to even further reduce its carbon footprint. The company is in discussion with a number of renewable energy partners to find an efficient solution. The discussions are ongoing.

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8. Sensitivities

The sensitivity effects of varying a number of key drivers of cost and revenue have been modeled to assess their effects on the project value.

The Project's sensitivity analysis, at 10% discount rate, and changes to input by +/- 20%, is shown below represented in a Tornado Graph. The Project is highly sensitive to the sales price, throughput and less to Operating and Capital Costs.

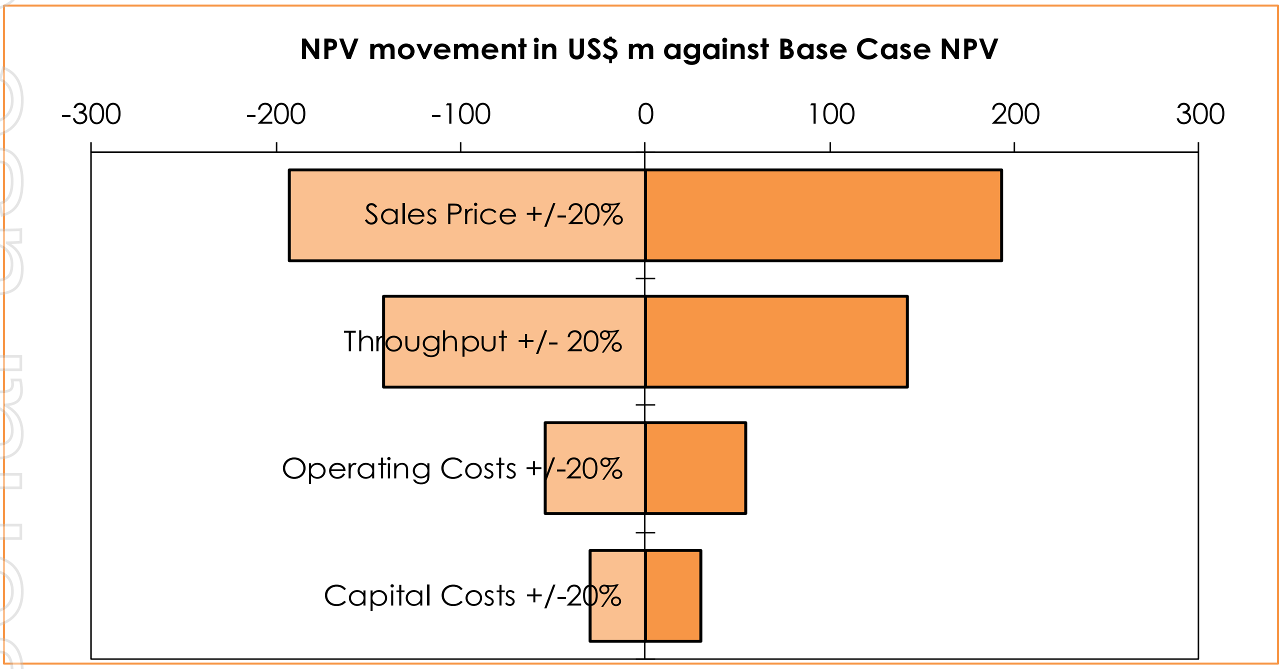

Figure 8-1 Sensitivity – Tornado graph

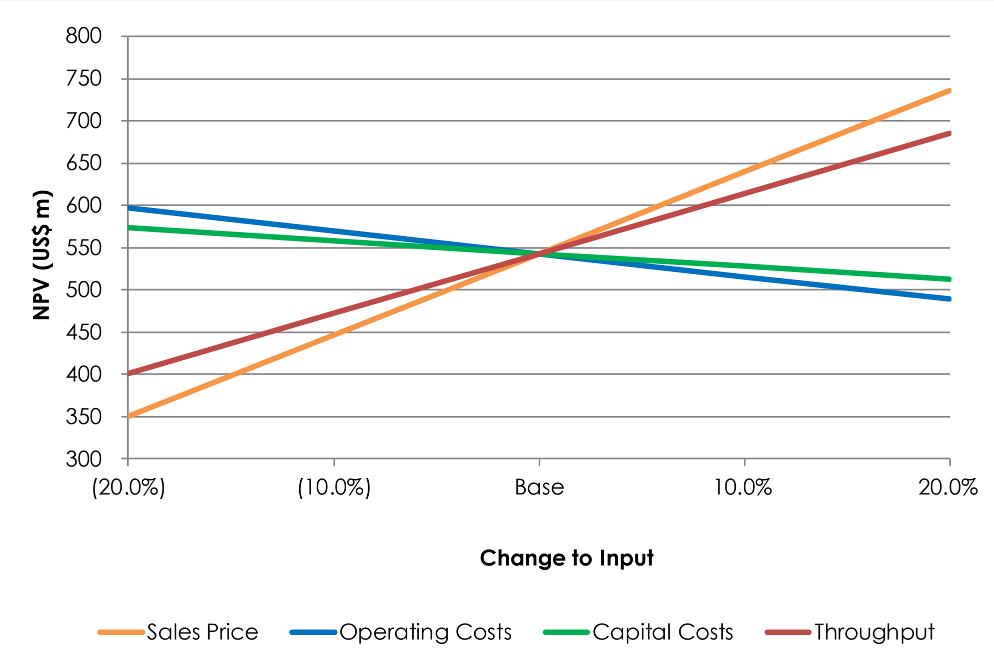

Figure 8-2 Sensitivity – Spider graph

% Delta	Sales Price	Through put	Capex	Opex
-20%	350	401	573	597
-10%	446	472	558	570
Base	543	543	543	543
10%	639	614	528	516
20%	736	685	513	489

Table 8-1 Sensitivity Table - Post Tax NPV 10%

9. DFS Conclusion

FYI has completed this comprehensive DFS in partnership with top tier consultants. The study is supported by extensive research and development and test work including a substantive pilot plant test program, detailed engineering design and cost studies. The study is underpinned by a high confidence Ore Reserve and Mineral Resource estimate.

The focus of the Study has been to evaluate the feasibility of the development of the Company's high quality, long life and fully integrated HPA project.

The Company presents a nominal production case of approximately 8,000 tonnes per annum of >99.99% Al_2O_3 purity using conservative economic parameters and summarises the Material Assumptions, project risks, HPA marketing and other key project inputs.

FYI's Cadoux kaolin deposit is a unique combination of favourable geology, chemistry and physical characteristics that presents as an ideal source of HPA feedstock. The corresponding innovative and efficient processing route developed by the Company, combined with the location of the refinery in Kwinana and its proximity to the source of inexpensive reagents and utilities, helps drive FYI's enviably low capital and operating costs.

The alignment of low-cost production and value drivers to the high forecast demand in the various HPA markets places FYI in a favourable position amongst its peers.