29 June 2015

BANKABLE FEASIBILITY STUDY CONFIRMS ALTECH'S HIGH PURITY ALUMINA (HPA) PROJECT

Highlights

- Bankable Feasibility Study (BFS) successfully completed three months ahead of schedule
- Compelling financial and technical results:
  - Capital cost estimate US$76.9 million (A$98.6million)
  - Payback period 3.8 years
  - Estimated pre-tax NPV of US$326.1 million (A$362.4 million) (@ 10% discount)
  - Highly attractive IRR of 30.3%
  - Long-term sale price forecast of US$23,000/tonne (A$25,560/tonne) for 99.99% (4N) product
  - Cost of goods sold US$8,140/tonne (A$9,050/tonne)
  - EBITDA of US$59.4 million (A$66.0 million) per annum.
- Altech will now proceed to the funding phase of the project

Altech Chemicals Limited (Altech/the Company) (ASX: ATC) is delighted to announce the positive results of its Bankable Feasibility Study (BFS) for the development of a 4,000tpa high purity alumina (HPA) processing plant at Tanjung Langsat, Johor, Malaysia and an associated kaolin beneficiation plant at Meckering, Western Australia to provide feedstock for the HPA plant (the Project).

The financial and technical outcomes from the BFS are particularly compelling and it is now the Company's intention to move to secure the required equity and debt funding that will enable it to rapidly transition the Project to final design and development.

Total capital costs for the Project are estimated at US$76.9 million (A$98.6 million), assuming a USD:AUD exchange rate of 0.78.

Annual revenues at full production (4,000tpa of HPA) are forecast at US$92.0 million (A$102.2 million), with an assumed long-term selling price of US$23,000 (A$25,560) per tonne of HPA, FOB Malaysia. Total annual operating costs, including mining, beneficiation, shipping and processing are estimated at US$32.6 million (A$36.2 million) or US$8,140 (A$9,050) per tonne of final HPA product at full production, resulting in an impressive gross margin of ~65%.

Earnings before interest, tax and depreciation (EBITDA) are expected to be US$59.4 million (A$66.0 million) per annum at full production, the pre-tax Net Present Value (NPV) of the Project is US$326.1million (A$362.4 million) at a discount rate of 10%, and the Internal Rate of Return (IRR) is ~30.3%. Payback of capital is 3.8 years.

The Project presents a robust and attractive business case that delivers high margins, strong cash flows, and the rapid payback of a relatively modest capital investment. Having considered the results of the BFS, the Company will now proceed to secure the required funding and continue with detailed design, permitting and approvals, and subject to funding, commence the ordering of long-lead items, initiate site clearances and then commence construction.

Altech's managing director Mr Iggy Tan said, "*The BFS was completed three months ahead of schedule, which is testament to the hard work and commitment from our BFS team".*

"The results from the BFS have confirmed the Company's belief that the unique qualities of its Meckering kaolin deposit, combined with HCl processing to produce high purity alumina, is a technically viable and commercially attractive business case – a potential "company maker". Subject to successful funding, the development schedule will see campaign mining commence at Meckering around Q4-2016", he concluded.

BFS Results – Key Financials

	US$ (mill)	A$ (mil)
Project Capital Costs	76.9	98.6
Revenue p.a.	92.0	102.2
Operating Costs p.a.	32.6	36.2
EBITDA p.a.	59.4	66.0
Payback	3.8 years	3.8 years
IRR	30.3%	30.3%
Net Present Value (@10.0%)	326.1	362.4
NPV/Capex Ratio	4.24	3.68

A full summation of Altech's BFS including the key financial results is set out below.

Summary of Bankable Feasibility Study

The following is from the Executive Summary of the Bankable Feasibility Study (BFS).

Altech Chemicals Limited (Altech/the Company) is aiming to become one of the world's leading suppliers of 99.99% (4N) high purity alumina (HPA) (Al_2O_3) through the construction and operation of a 4,000tpa high purity alumina (HPA) processing plant at Tanjung Langsat, Johor, Malaysia. Feedstock for the plant will be sourced from the Company's 100% owned kaolin deposit at Meckering, Western Australia where a beneficiation plant will be constructed and mine developed to supply ~18,656tpa (dry) of beneficiated kaolin to the HPA plant.

HPA is a high-value product and is the major source material for the manufacture of sapphire substrates (used in a range of applications, most notably in LEDs), semiconductor wafers (high performance electronics) and scratch-resistant artificial sapphire glass. The global HPA market is approximately 19,040tpa (2014) and is expected to at least double over the coming decade.

1. Bankable Feasibility Study (BFS)

The BFS is a comprehensive and detailed study of the technical and commercial viability for the construction and operation of a 4,000tpa HPA processing plant at Tanjung Langsat, Johor, Malaysia, and the associated development of an aluminous clay (kaolin) beneficiation plant and mining operation at the Company's 100%-owned kaolin deposit at Meckering, Western Australia to provide feedstock to the HPA plant (the Project).

The BFS has identified the preferred chemical processing method and associated design for the HPA plant, the preferred beneficiation and mining method for the Meckering kaolin deposit and other infrastructure requirements and capacities for the Project. Detailed capital cost and operating cost estimates have been obtained from prospective suppliers, contractors, or expert consultants, enabling detailed financial modelling of the proposed development.

The key elements of this BFS for the development of the Project include:

- Engineering concept development;
- Estimation of the capital costs and operating costs;
- Market analysis of potential product sales and revenue; and
- Financial analysis and scenario modelling.

1.1 The HPA Market and HPA Demand

HPA is an essential and high-value material for the lighting, electronics, aerospace, defence and medical industries. For 2014, the global HPA market was independently estimated at 19,040tpa and demand is expected to increase to 48,230tpa by 2018. The increase in global HPA demand, which is currently rising at a constant annual growth rate (CAGR) of 28%, is underpinned by HPA's significance in the production of critical components used in light emitting diodes (LED's) and high-performance electronics. Specifically, HPA is the key ingredient required for the manufacture of sapphire substrates, used in a range of applications, most notably in LED lighting and displays. Products that use LEDs are energy efficient and the ongoing replacement of incandescent filament light bulbs with more energy efficient, longer lasting and lower operating cost LED lighting is forecast to drive significant growth in HPA demand, as more than 90% of the world's LED lights use sapphire substrates and over time LED lighting is expected to completely replace incandescent bulbs.

In addition, increased demand for HPA is attributable to continued growth in the manufacture of semiconductor wafers, used predominantly for high-performance electronics. HPA is a preferred material for wafer production because of its high level of plasma corrosion resistance and high bending strength. Semiconductor demand is expected to experience steady growth because of increased global use of electrical and electronic appliances, and rapid economic growth in emerging countries.

Sapphire is second only to diamond when it comes to hardness, and this attribute combined with its scratch resistance has seen sapphire glass traditionally used for high-end watch faces and camera lenses. Demand for artificial sapphire glass by smartphone manufactures is expected to grow as they adopt sapphire glass facings for products and follow the lead of smartphone manufacturers Vertu and Huawei. Apple (and others) already use sapphire glass for the smartphone camera lenses and Apple selected sapphire glass for the face of its newly released Apple Watch. The manufacture of sapphire glass facings requires the production of a large 99.99% (4N) pure HPA/aluminium oxide (Al_2O_3) single crystal boule, from which the glass facings are cut and shaped; there is no substitute for HPA in the manufacture of these sapphire crystal boules.

Other drivers for increasing HPA demand include lithium-ion batteries (hybrid cars), phosphor display screens (PDPs), and soft focus cosmetics.

Figure 1 - Global HPA market by application (2013)

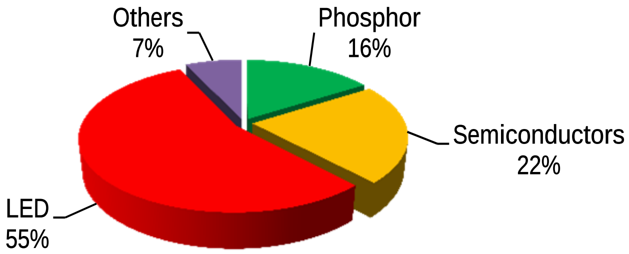
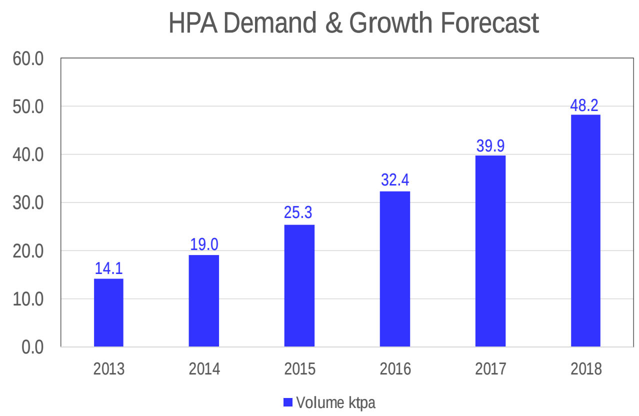


Figure 2 - Annual global HPA demand (thousands of tonnes) estimates (2013-14) and forecast (2015-18)



1.2 HPA Pricing, Supply and Market Dynamics

1.2.1 Current HPA supply

There are a limited number of HPA producers; the largest 8 producers supply 50% of global HPA market and 14 of the top 20 HPA producers are Chinese companies, although the largest producer of HPA is Sumitomo Chemical of Japan.

All established HPA producers purchase either aluminium metal or aluminium sulphate as feedstock and use one of four processing techniques for HPA production, either hydrolysis of aluminium, choline hydrolysis of aluminium, thermal decompression of ammonium aluminium sulphate, or thermal decomposition of ammonium aluminium carbonate hydroxide.

As the established producers use a refined aluminium product as feedstock, current HPA production costs are estimated to be significantly higher than those for Altech's HPA Project, which has the advantage of using its own aluminous clay (kaolin) feedstock that is low in both sodium and iron, impurities that add to processing costs.

1.2.2 Market dynamics

Independent assessment by Technavio, a leading technology research and advisory company with global coverage, has determined that the outlook for HPA demand is strong and the threat to demand from substitute and/or rival products is low. Consequently, it is expected that the bargaining power of HPA suppliers will remain strong despite the forecast of a moderate threat from new entrants to the supply side of the HPA market, of which Altech will be one. Refer table 1 below for a summary of Technavio's analysis of HPA market dynamics.

Table 1 - Market forces analysis

Factor	Magnitude of Impact	Comment
Threat of substitutes	Low	There Is no direct substitute of high purity alumina as it is used in high-tech applications
Threat of rivalry	Low	Competition among the existing players is low in the market, as there are few vendors at present
Threat of new entrants (supply side)	Moderate	Probability for new players to enter the market is moderate as this is a high margin product, and new innovations on reducing the cost of production could bring more active players into the market
Bargaining power of buyers	Low	Buyers have few choices of global suppliers and it is not easy to switch
Bargaining power of suppliers	High	Currently, there is high purity alumina deficit, making the buyers over dependent on suppliers

1.3 HPA from Kaolin

The production of alumina or aluminium oxide from kaolin (or 'aluminous clay') is not a new concept. Compared to the Bayer refining and Hall-Herout smelting techniques, which are widely used for the industrial scale production of aluminium from bauxite ores, the chlorination (or acid processing) of alumina containing clays promised many advantages, and as a result industry spent many years perfecting technologies for the extraction of alumina from clays. Significant information and research, including documented US Government success relating to various process technologies exists. These successes were the catalyst for Altech's HPA Project and the concept of kaolin-to-alumina acid-based processing, around which this BFS is constructed.

During the 1980's, aluminous clay (or 'kaolin') hydrogen chloride (HCl) processing was demonstrated to be ideal for producing HPA, primarily due to the absence of sodium ions in an aluminous clay feedstock (the presence of sodium irons in refined alumina feedstock such as aluminium metal or aluminium sulphate, when used for the production of HPA, adds to processing costs). However, due to the limited demand for HPA in the 1980's, HCl processing technology was not commercialised and the Bayer/Hall-Herout processes, which although unable to produce HPA, were widely adopted for the large-scale commercial production of smelter grade alumina (SGA) (99.5% Al_2O_3), using bauxite ores as feedstock.

With a global market for HPA now well established and forecast for healthy annual growth, the commercial viability of HCl processing of kaolin to produce HPA is now established, and set out in this BFS.

1.4 HCl processing Test Work

Since 2012, the Company has undertaken test work to confirm and refine the application of HCl processing of kaolin sourced from its Meckering deposit for the production of HPA.

Laboratory scale test work was initially conducted in Perth, Western Australia by TSW Analytical Pty Ltd (TSW), a leading forensic and analytical chemist group. Since early 2014 larger scale batch processing of kaolin sourced from a bulk-trial test pit at Meckering has been undertaken by the Simulus Group, a Perth-based hydrometallurgical and mineral process services group, TSW also provided analytical services for this work.

Batch processing included the bulk wet processing of representative samples of future run-of-mine (ROM) kaolin from Meckering to optimise and confirm the beneficiation flow sheet. Beneficiated kaolin was then subjected to HCl processing, which involved calcination; acid leaching to produce aluminium chloride; crystalisation of aluminium chloride; two stages of purification; roasting for acid recovery; and final calcination for the production of finished product HPA.

Results enabled the optimisation of the Company's HCl process design as well as the simplification of the final HPA plant design, which had the added benefit of reducing estimated capital and operating costs. Significantly, the batch processing results confirmed that the HCl "aluminous clay to HPA direct route" was valid for the kaolin sourced from the Company's Meckering deposit.

1.5 Meckering Kaolin Deposit

Altech's 100%-owned aluminous clay ('kaolin') deposit is located close to the town of Meckering, Western Australia, and is approximately 130km by road from Perth and ~153km from the port of Fremantle, Western Australia.

At Meckering, the Company holds a land position of approximately 587km^2 covering three (3) tenement applications and one (1) granted tenement. The Company's kaolin deposit sits within granted tenement E70/3923 and the deposit, with a JORC indicated and inferred mineral resource of 65Mt[1] provides an abundant, low-cost feedstock for a 4,000tpa HPA plant, which will require ~18,650tpa of beneficiated kaolin at full capacity. At this rate of production, the Meckering deposit is capable of satisfying the plants' kaolin requirements well beyond the 30-year timeframe of this BFS.

The Meckering kaolin deposit is low in impurities, especially iron and sodium, and consequently is an ideal feedstock for HCl processing to HPA.

[1] Refer Appendix 1 for a table summarizing the Company's Meckering kaolin Mineral Resource

1.5.1 Meckering mining

A mining area has been identified, an open pit designed and a mine plan for an initial 30-year mine life developed.

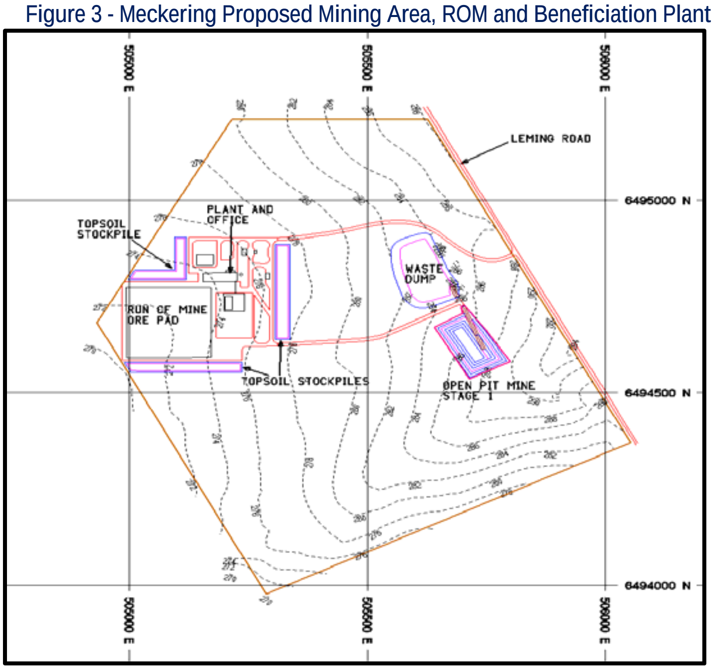
Approximately 1.3Mt of the 65Mt kaolin mineral resource will be mined over 30 years, in 10 discrete mining campaigns. A mining contractor will conduct the mining campaigns at three-yearly intervals and the mine will be a simple quarry-style operation.

Of the 1.3Mt to be mined, approximately 71% will be from indicated mineral resources, with the balance (29%) from inferred mineral resources. There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.

The first mining campaign is planned for 129,000 tonnes of kaolin, with 123,000 tonnes of overburden removed; the campaign will last approximately two months and the resultant kaolin will be stockpiled on the ROM stockpile, from where it will be drawn at a rate of ~40,600tpa for beneficiation.

The life of mine strip ratio is a very low 1.08:1. Life of mine waste tonnage is estimated at 1.42Mt for the mining of 1.31Mt of kaolin.

Figure 3 - Meckering Proposed Mining Area, ROM and Beneficiation Plant locations



1.5.2 Meckering beneficiation

The Meckering beneficiation plant will be located adjacent to the ROM stockpile (refer Figure 3) and will consist of a wet processing plant to remove oversized silica. The ROM material will be screened to less than 500 micron (<500µm) and beneficiated to 27-30% Al_2O_3. The >500µm reject material will consist primarily of quartz and silica and will be returned to the open pit.

A four-stage wet screening circuit has been designed and will comprise of drum scrubber, screening and pressure filter and dryer. The <500µm dry kaolin product will be delivered to a bagging station where the filter cake will be bagged into two-tonne (2t) “bulka bags”, which will be containerised and transported by road to the port of Fremantle, Western Australia for shipping to the Company’s HPA plant in Malaysia.

Beneficiation operations will be conducted on a continuous basis, 5 days per week on a single 12 hours shift, with weekend for scheduled maintenance. Production of beneficiated kaolin will be at a rate of ~18,565tpa (dry), with ~20,300tpa (wet) of oversized quartz and silica sand tailings returned to the open pit; a beneficiated kaolin yield of ~48.5%.

Figure 4 - Meckering Beneficiation Plant Flow Diagram

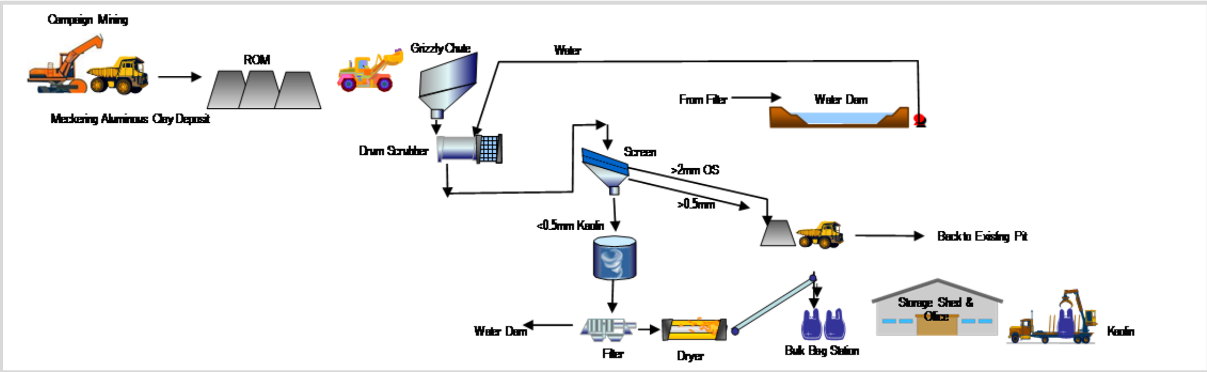
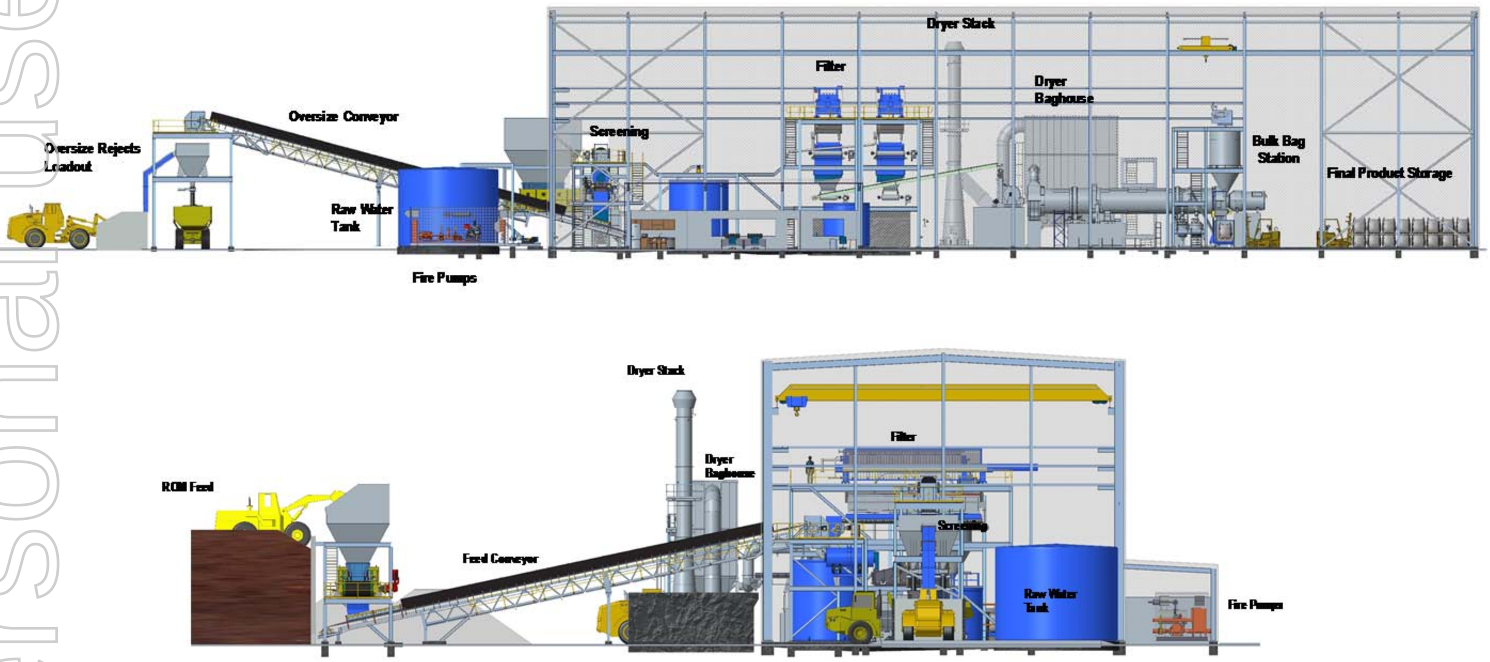


Figure 5 - Meckering Beneficiation Plant Elevations



1.5.3 Transport of beneficiated kaolin (Meckering to Tanjung Langsat, Malaysia)

Beneficiated kaolin will be bagged in 2t “bulka bags”, containerised and transported from Meckering via road to the port of Fremantle (a distance of ~153kms). The containers will be shipped from Fremantle to the port of Tanjung Pelepas (a container port located in south-western Johor, Malaysia ~90kms by road from Tanjung Langsat), and then transported via road from Tanjung Pelepas to Tanjung Langsat.

The estimated cost of shipping (Meckering to Tanjung Langsat) is US$148.91 (A$165.46) per tonne of beneficiated kaolin, or US$0.69 (A$0.77) per kg of finished product HPA.

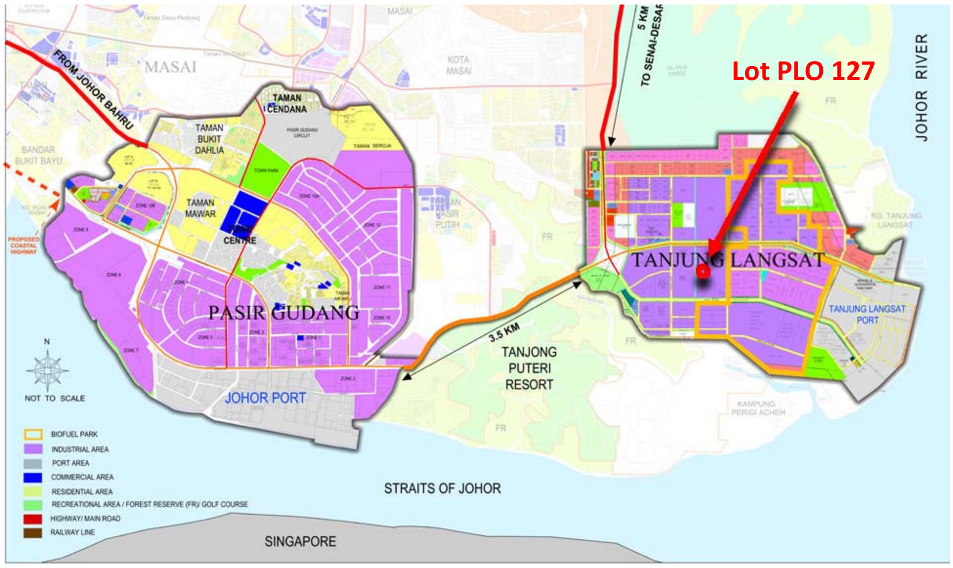
1.6 HPA Plant Location - Malaysia

The Tanjung Langsat Industrial Complex, Johor, Malaysia has been selected as the location for the HPA plant.

A number of potential locations in South East Asia were considered for the plant, including Kwinana, Western Australia. Tanjung Langsat was chosen based on significant economic and developmental benefits associated with this dedicated industrial park, which includes the ready availability of hydrochloric acid, power and natural gas – all at highly competitive prices, and for its proximity to international container ports and international airports (Johor Bahru and Singapore). Other advantages of Malaysia as the plant's location include the availability of skilled labour at competitive cost, a corporate tax rate of 25%, various investment and tax incentives on offer, English as the predominant business language, and the legacy of legal and government systems modelled on British equivalents.

The Company has identified a ~4 hectare site in a section of the Tanjung Langsat Industrial Complex reserved for chemical facilities as the location for its HPA plant (refer to Figure 6).

Figure 6 – Tanjung Langsat Industrial Complex, Johor, Malaysia



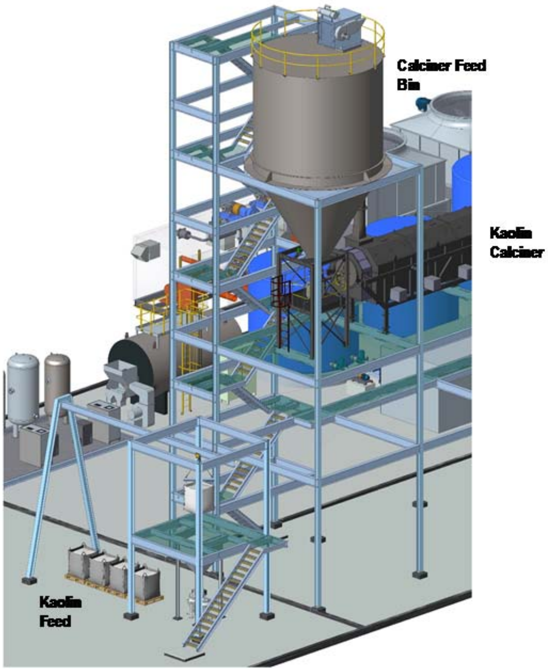
1.7 HPA Processing Plant

1.7.1 Plant scale – 4,000tpa

The proposed Malaysian HPA plant is a single train continuous processing plant, which will provide economies of scale in terms of operating costs and will position Altech as the largest producer of HPA in the world, surpassing Sumitomo Chemicals that currently states its annual HPA production capacity at 3,200 tonnes. Altech's HPA plant has been designed to be highly automated; manning levels in Malaysia will be ~83 persons, inclusive of administration and support staff.

In optimising the design of its HPA plant, the Company has specifically focused on minimising technological risk by selecting proven "off-the-shelf" plant and equipment. For example, the leaching circuit is conventional, kilns are standard rotary kilns and centrifuges are "off-the-shelf" units commonly used in the chemical industry.

1.7.2 HPA processing description



Bulka bags of beneficiated kaolin will be unloaded at the HPA process plant's bag unloading station and the kaolin will be fed by conveyor into the kiln feed bin, the bin will have a storage capacity of ~24 hours of feed demand. In the first stage of the process, kaolin will be calcined at around 600˚C in an indirect rotary kiln to convert the crystal structure of the clay to a more reactive form. The kiln will be indirectly fired by natural gas with associated cyclone and bag-house to collect off-gas fines. The calcine will be cooled, screened and any oversized crushed to a particle size of <500µm.

Leaching follows, during which the calcine will be mixed with recycled wash liquor containing hydrochloric acid (HCl) at up to 36% w/w. The leach reaction is exothermic and the oxide components (except silica) are converted to soluble chlorides, producing a high concentration of aluminium chloride ($AlCl_3$) solution. The leached slurry is then pumped to leach residue filtration. The silica residue slurry will be filtered and the silica residue neutralised before being disposed of to local vendors, such brick works or cement plants. The pregnant liquor solution, known as "PLS" is directed to crystallisation where aluminium chloride hexahydrate ($AlCl_3 .6H_2O$ also known as "ACH") is crystallised out of solution. This will be achieved by increasing the acid concentration of the liquor (ACH is insoluble at strong acid concentrations) by bubbling anhydrous HCl gas. ACH crystals are then filtered and washed from the solution.

The resultant ACH filter cake will be transferred to a slurrying tank where the ACH crystals will be dissolved in ultra-pure water and then fed to the second crystallisation circuit. This dissolution process makes it possible to release residual impurities, which may have become trapped in the crystals during the first crystallisation. Like the first stage crystallisation, the ACH acid concentration in the liquor is increased by bubbling HCl gas and crystallised ACH filtered and finally washed to remove any residual acid and/or impurities. The third stage of crystallisation is identical to the second. The purified ACH cake is heat treated in two stages via natural gas fired rotary kilns. The first stage involves heating the ACH to around 600˚C in order to decompose the ACH to a mixture of basic aluminium chlorides (oxychlorides) and alumina. Most of the chloride is liberated as HCl, recovered and reused in the process.

The partially-calcined solids from the roaster fall directly into the second rotary kiln that then heats the solids further to remove the remainder of the HCl and water (H_2O) to produce highly pure alpha (α) alumina (Al_2O_3), in other words, HPA. The HPA will discharge to a cooler and is then fed directly to a final acid leach stage to remove surface trace impurities. The HPA is washed and filtered in two stages and dried before feeding to a fine grinding mill to produce product with a particle size of <10µm.

The milled HPA will be bagged into 20kg plastic-lined paper bags stored for dispatch to customers.

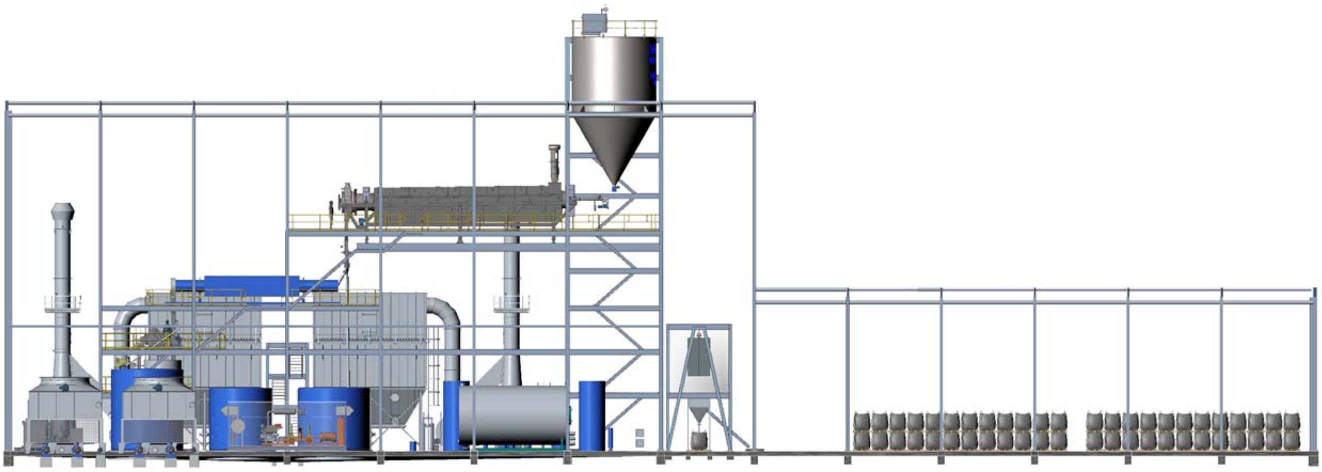


Figure 7 – HPA Plant Flowsheet

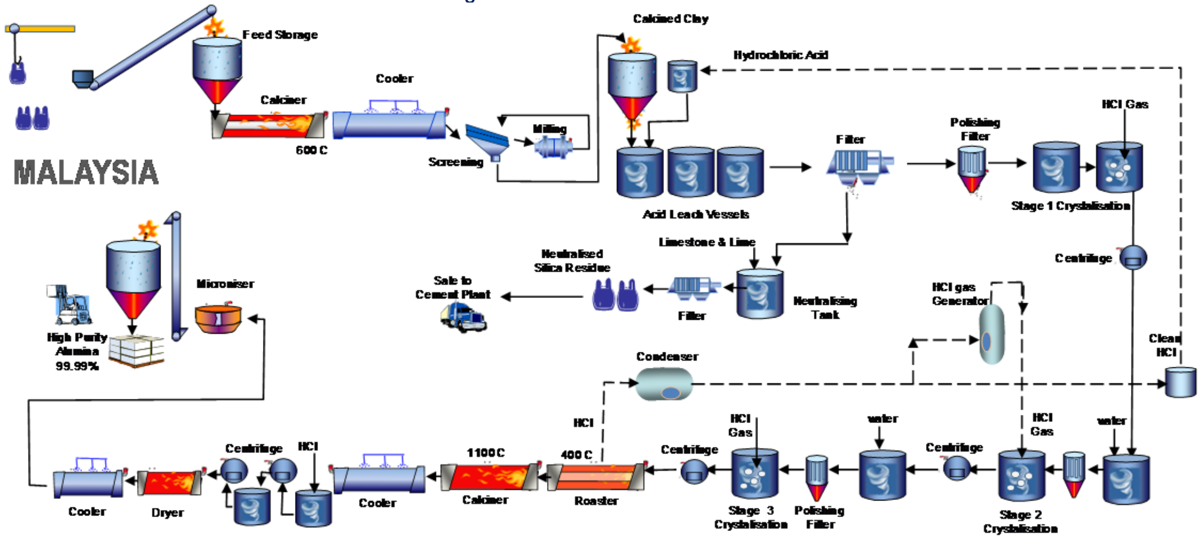
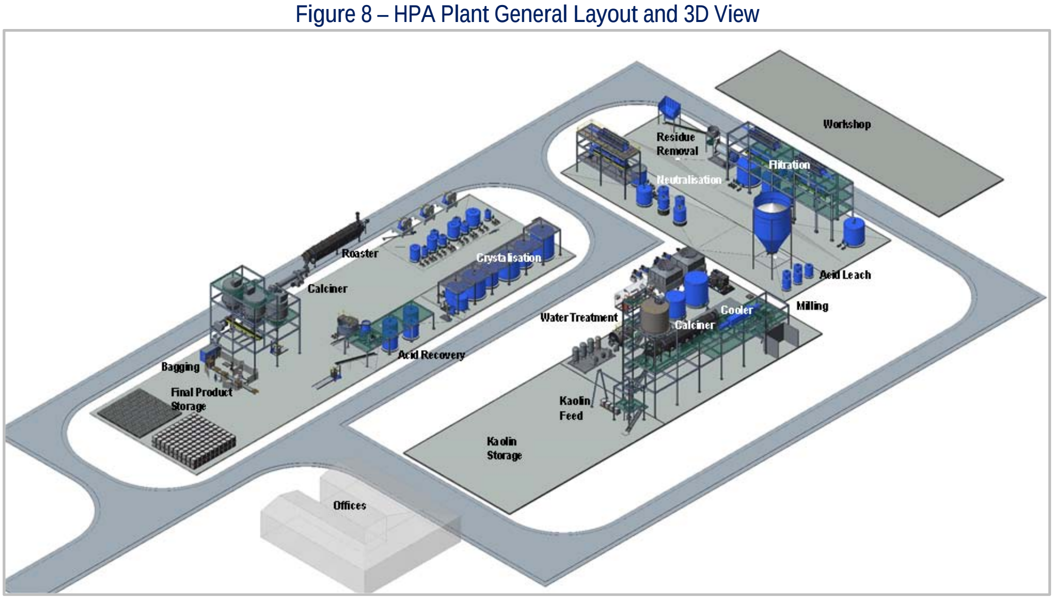


Figure 8 – HPA Plant General Layout and 3D View

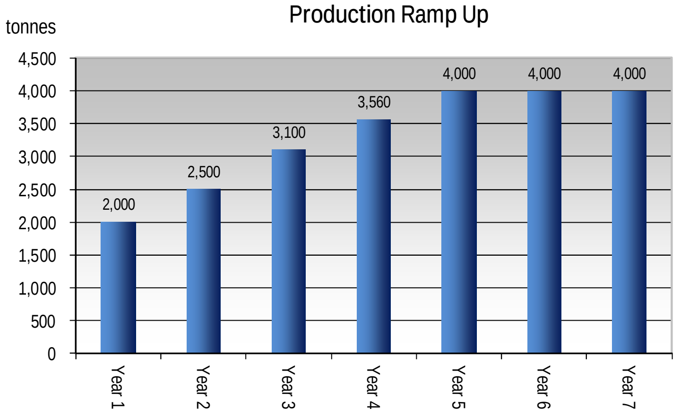


1.7.3 Production ramp-up

A conservative approach has been adopted for plant commission and start up. Specifically, it has been assumed that during the first year of operation the plant will produce at 50% capacity (2,000tpa) and that only 70% of production will be HPA, the balance of will be a combination of 99.9% (3N) alumina and SGA. Plant production is assumed to gradually increase from year 1 until full capacity and steady state production is attained from year 5, as illustrated in Figure 9.

Allowance has also been made in the sales ramp-up for an anticipated period of product qualification and acceptance with customers; it has been assumed that this may take up to six months. These conservative production and sales ramp-up profiles have been incorporated into the BFS financial model.

Figure 9 – HPA Plant Assumed Production Ramp Up



1.8 Environmental and Project Approvals

1.8.1 Meckering beneficiation plant and mine

The Meckering beneficiation plant and mine have been referred to the Western Australian state government for environmental approval in accordance with the prevailing state legislation and regulations. Baseline environmental surveys have been completed and investigations to date have not identified any environmental issues or potentially adverse impacts that would compromise approval of the developments, as the proposed operations are considered a low-level extraction activity and the permitting process will therefore be simple and straightforward.

The proposed Meckering operation was not referred to the Environmental Protection Authority (EPA) for assessment, because the proposed project does not fall within the referral guidelines in the Memorandum of Understanding signed by the EPA and the Department of Mines and Petroleum (DMP). The project will be assessed under the provisions of the Western Australian Mining Act 1986 (Mining Proposal and Mine Closure Pan) and the operations managed under Part V of the Environmental Protection Act (Works Approval and Licencing).

1.8.2 Malaysian HPA plant

The Company has received approval from the Department of Environment, Johor (DOE) of its Preliminary Site Assessment (colloquially referred to as a "PAT") for the HPA plant. In general, the approval of the PAT confirms that the proposed location of the HPA plant at Tanjung Langsat and its proposed activity are compatible with gazetted structure and local plans, surrounding land use, provision of set-backs or buffer zones and waste disposal requirements.

The DOE, in its response to the Company's PAT, also advised that an Environment Impact Assessment (EIA) will not be required for the HPA plant, as the processing capacity of the plant will be less than 100 tonnes per day. This is a positive outcome for the Project and simplifies the permitting and environmental approval process.

The next stage in the environmental approvals process is the approval and registration of air pollution control system, chimneys and fuel burning equipment, each required under various Malaysian environmental quality regulations. The Malaysian environmental approval process is relatively straightforward and the Company will continue to work with its local environment consultant (Daya Eco Techno Sdn Bhd) to satisfy these requirements.

Altech's proposed HPA plant has been designed to meet international environmental standards as well as the standards of the Malaysian Environmental Quality Act (EQA) 1974. Specifically, Altech has designed its plant to ensure that all off-gasses that vent to exhaust stacks meet Malaysian environmental emission limits and that any discharges vented to the atmosphere pass through appropriate dust removal systems such as bag-houses or electrostatic separators. In addition, any potential HCl vapour streams will be cleaned via caustic scrubbers before venting to atmosphere. Solid residue from the plant will predominantly be in the form of neutralised benign silica residue that will be made available to local brickworks or cement plants. Any acidic residue from the plant will be neutralised and treated on-site and disposed of via local waste vendors. All process water from the plant will be treated on-site to established environmental standards.

1.9 HPA Sales and Off-take

The Company has been in discussion and correspondence with numerous HPA customers since mid-2013 and interest and support for a new supplier into what is a rapidly growing market has been high. Post publication of this BFS, the Company intends to commence more earnest discussions with potential customers with the aim of determining individual buyer purchasing intent, and/or executing off-take arrangements. Interest shown from existing HPA users underpins the Company's view that market demand for its HPA will be strong.

Selling and marketing costs have been estimated at US$ 0.76 (A$0.84) per kg of finished product HPA.

1.10 Capital and Operating Costs

The engineering, design and operating costs for the HPA plant and the Meckering beneficiation plant have been estimated by Simulus, which has considerable experience in the design and engineering of similar projects. Other operating costs (such as freight, insurance, contract mining, administration expenses) have been determined from quotations submitted by prospective suppliers, contractors or expert consultants, and during the course of the BFS the Company established partnerships with key service providers and equipment vendors for the purpose of enhancing the accuracy and transparency of quoted pricing, which flows through to the accuracy of the Project financial model and also positions the Project for a rapid transition to final design and construction post BFS, subject to securing finance.

1.10.1 Capital costs

Major equipment costs and electrical, piping, earthworks, structural and civil works, equipment installation and concrete costs are based on vendor pricing and take-offs, and the costs for minor items have been determined by reference to Simulus' database of equipment costs. Allowances have been applied as factored percentages for insulation and ducting, temporary facilities, freight and vendor representatives and site commissioning. Insurance costs are based on actual quotations, as is the costs of land acquisition in Malaysia and Australia. Capital items that are not priced in Australian dollars have been converted to Australian dollars at prevailing exchange rates, and visa versa to estimate USD capita costs. A USD:AUD exchange rate of 0.78 has been assumed for capital cost estimation.

The capital cost for both the Meckering beneficiation and Malaysia HPA plants is estimated at US$76.9 million (A$98.6 million).

The capital cost for the Meckering kaolin beneficiation plant and associated mining support infrastructure is estimated at US$17.3 million (A$20.6 million).

The Malaysian HPA plant is estimated at US$55.1 million (A$68.9 million), and there is an overall contingency of US$5.0 million (A$6.4 million) allowed. See Table 2, 3 and 4 for the capital costs breakdowns.

Simulus assesses that its capital cost estimates for plant and equipment are +/-15%.

Table 2 – Summary of capital cost estimates

Area	US$m	A$m
Meckering	16.047	20.574
HPA Plant (Tanjung Langsat)	54.600	70.000
Insurances	1.265	1.621
Contingency	4.993	6.401
TOTAL CAPITAL COSTS	76.905	98.595

Table 3 - Capital cost estimate Meckering beneficiation and mining

Meckering Operation	US$m	A$m
Kaolin Beneficiation	0.419	0.537
Kaolin Solid Liquid Separation	1.527	1.958
Kaolin Drying	1.339	1.717
Mine Reagents and Utilities	0.391	0.502
Installation, Civils, electric & piping etc.	8.813	11.299
Total indirect costs	2.778	3.561
Other	0.780	1.000
TOTAL CAPITAL COSTS	16.047	20.574
Contingency	1.145	1.468

Table 4 - Capital cost estimate HPA plant

Malaysia Operation	US$m	A$m
Kaolin Calcination & Kaolin Leach	1.386	1.777
Leach Residue Filtration	0.974	1.249
Crystallisation Stage 1	1.244	1.594
Crystallisation Stage 2	1.234	1.582
Crystallisation Stage 3	1.073	1.376
ACH Roast & Calcine	2.332	2.990
Micronising & Packaging	0.754	0.966
Product Washing & Product Drying	0.856	1.097
HCl Recovery & HCl Absorber	7.986	10.239
Silica Residue Neutralisation	0.697	0.894
Reagents	0.639	0.819
Water & Utilities	1.336	1.713
Installation, Civils, electric & piping etc.	19.905	25.520
Total indirect costs	10.891	13.963
Other	3.292	4.220
TOTAL CAPITAL COSTS	54.600	70.000
Contingency	3.848	4.933

1.10.2 Operating costs

Operating costs are based on actual quotations from service providers for mining, kaolin beneficiation plant operations, transport and shipping, IT support, insurances, and for consumables such as HCl, power, water, gas, reagents etc. from published pricing. Labour rates are based on recent market survey data and overhead costs are estimated based on experience.

Total operating cost to produce HPA including mining, beneficiation, shipping and chemical processing is US$32.6 million (A$36.2 million) per annum or US$8,140 (A$9,050) per tonne of finished product HPA. The gross margin at full operating capacity is in the region of 65%.

Table 5 – Operating cost estimate by activity (per kg HPA)

OPEX SUMMARY (per kg HPA)			
Activity	USD	AUD	MYR
Meckering Mining	$0.11	$0.12	0.34
Meckering Beneficiation	$1.26	$1.40	3.99
Transport (Meckering to Malaysia)	$0.69	$0.77	2.19
WA State Royalty	$0.09	$0.10	0.30
HPA Manufacturing (JB)	$3.76	$4.18	11.94
HPA Selling Costs & Misc.	$0.76	$0.84	2.41
Corporate (Aust)	$0.98	$1.09	3.10
Corporate (Malaysia)	$0.50	$0.55	1.58
TOTAL per kg	$8.14	$9.05	25.85

1.10.3 HPA selling price assumption

A conservative long-term selling price of US$23.00 (A$25.56) per kg of finished product HPA, FOB Malaysia has been assumed for the BFS. Table 6 below compares this assumed price with established HPA supplier pricing, as understood by the Company.

Table 6 - Competitor HPA Pricing (4N – 99.99% Al2O3)

Producer	Quality	US$ /kg
Supplier 1	Poor	20
Supplier 2	Good	23
Supplier 3	V Good	26
Altech (BFS price)	V Good	23

1.11 Financial Evaluation

Cash flow modelling of the Project shows a pre-tax net present value of US$326.1 million (A$362.4 million) applying a discount rate of 10%. The payback period is 3.8 years and the pre-tax internal rate of return is 30.3%. The financial model used constant dollars and has not factored in any inflationary impact on revenue or costs.

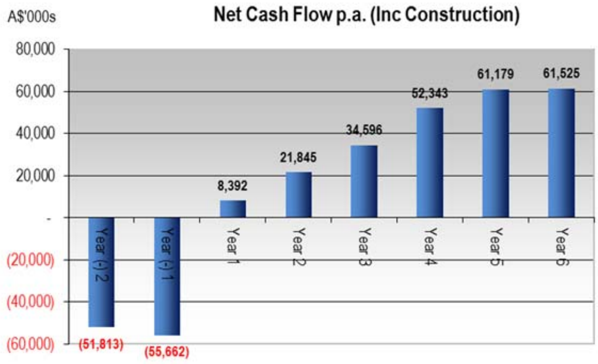
The Project generates annual average net free cash of ~US$55.3 million (A$61.5 million) at full production (allowing for sustain capital and before debt servicing and tax), with an attractive margin on HPA sales of ~65%.

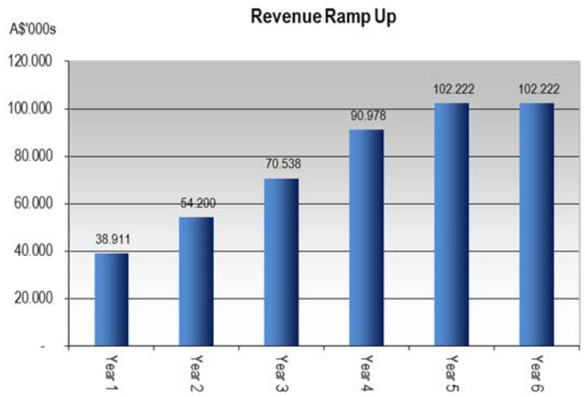
At full production, total annual sales revenue is US$92.0 million (A$102.2 million) applying an FOB sales price of US$23,000 (A$25,560) per tonne of finished product HPA. Total operating costs, including mining, beneficiation, shipping and chemical processing are US$32.6 million (A$36.2 million) per annum or US$8,140 (A$9,050) per tonne of finished product HPA.

Table 7 below sets out a summary of the key financial results from the financial model in various currencies.

Table 7 - Summary of key financial outputs from the Project Financial Model

Altech Chemicals Limited	HIGH PURITY ALUMINA PROJECT					
	Bankable Feasibility Study					
	Australian Dollars		US Dollars		Malaysian Ringgit	
FINANCIAL OUTPUT SUMMARY						
HPA Production	4,000	tonnes	4,000	tonnes	4,000	tonnes
Exchange Rate	0.90	USD/A$	0.90	USD/A$	3.17	USD/MYR
Capex Exchange Rate	0.78	USD/A$	0.78	USD/A$	3.58	USD/MYR
Project Capex	$98.6	million	$76.9	million	275.4	million
Corporate Costs	$8.9	million	$8.0	million	22.8	million
Opex p.a.	$36.2	million	$32.6	million	103.4	million
NPV	$362.4	million	$326.1	million	1,035.3	million
Discount Rate	10%		10%		10%	
Payback	3.8	years	3.8	years	3.8	years
IRR	30.3%		30.3%		30.3%	
Revenue p.a.	$102.2	million	$92.0	million	292.1	million
Costs p.a.	$36.2	million	$32.6	million	103.4	million
EBITDA p.a.	$66.0	million	$59.4	million	188.7	million
HPA Selling Price	$25.56	per kg	$23.00	per kg	73.0	per kg
Cost of production	$9.05	per kg	$8.14	per kg	25.9	per kg
Margin %	65%		65%		65%	
Margin $/kg	$16.51	per kg	$14.86	per kg	47.2	per kg





1.11.1 NPV sensitivity

Analysis of the sensitivity of the Project NPV to changes in key assumptions or estimates used in the financial model (base case) shows that the NPV is most sensitive to a movement in the USD/AUD exchange rate and a movement in the HPA selling price (which is denominated in US dollars). The NPV is not as sensitive to changes in capital or operating costs, as illustrated in Table 8, below.

Table 8 - Net Present Value (NPV) sensitivity analysis

HIGH PURITY ALUMINA PROJECT

Bankable Feasibility Study

SENSITIVITY ANALYSIS (NPV)

Altech Chemicals Limited

A$'s million (pre-tax)										
Discount Rate	Base Case	Capex +10%	Capex -10%	Opex +10%	Opex -10%	HPA Price +10%	HPA Price -10%	AUD/USD 0.80	AUD/USD 1.00
6%	619.728	603.952	635.504	570.571	668.886	746.634	504.740	769.240	500.134
8%	470.521	455.961	485.082	430.378	510.664	572.277	379.078	590.325	374.691
10%	362.371	348.690	376.052	328.800	395.942	445.860	288.041	460.599	283.799
12%	282.045	269.016	295.073	253.388	310.701	351.934	220.465	364.211	216.320
14%	221.014	208.481	233.547	196.120	245.908	280.542	169.156	290.945	165.076

1.11.2 Discount rate

The 10% discount rate used in the Project financial model to calculate the NPV is conservative considering the low risk profiles of both Australia and Malaysia and prevailing interest rates for the US dollar and the domestic currencies of Australia and Malaysia. The Global Competitiveness Report (GCR) is a yearly report published by the World Economic Forum and based on the reports 2014-15 rankings, Australia and Malaysia sit in the top 30 countries, ranking 22 and 20 respectively.

In the current economic environment a discount rate of 8% is commonly used for project evaluations. If a discount rate of 8% is applied, the NPV of the Project climbs by ~30% to US$423 million (A$471 million).

1.11.3 Exchange rates

A USD:AUD exchange of 0.78 has been used to convert capital items priced in US$'s to A$'s (and visa-versa to estimate total US$ capital costs, where capital items are priced in A$'s).

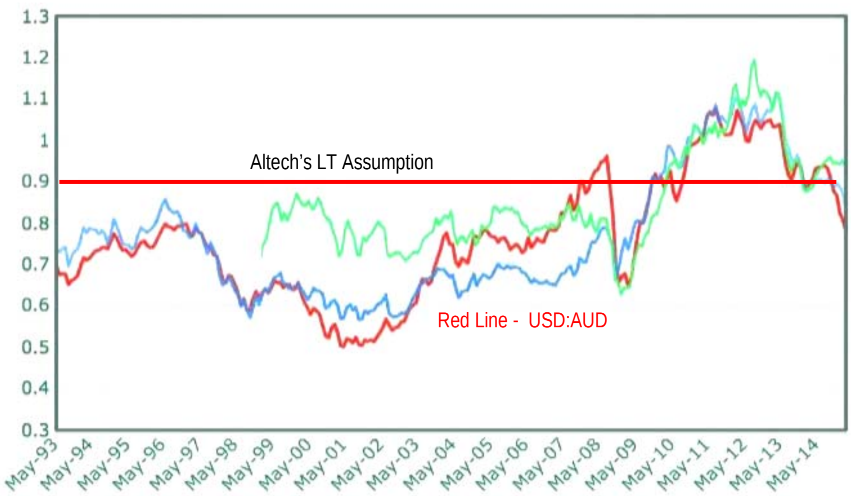
A more conservative USD:AUD exchange rate of 0.90 has been adopted in the Project financial model to convert US$ denominated items, such as the selling price of HPA, to A$'s over the 30 year life of the Project (see Table 9). The Company has selected this long-term exchange rate based on an analysis of the USD:AUD exchange rate since 1993 (see Figure 10).

HPA is priced and sold in US dollars; operating costs however are predominantly incurred in either Australian dollars or Malaysian ringgit, consequently a lower USD:AUD exchange yields increased payback and earnings for the Project. For example, if a USD:AUD exchange rate of $0.80 is applied to the financial model, the NPV of the Project increases by 23% to US$369 million (A$461 million).

Table 9 – Currency assumptions

Currency	Capex	LT Model
USD	0.78	0.90
AUD	1.00	1.00
MYR	3.58	3.17

Figure 10 – Monthly USD/AUD exchange rates (1993-2015)

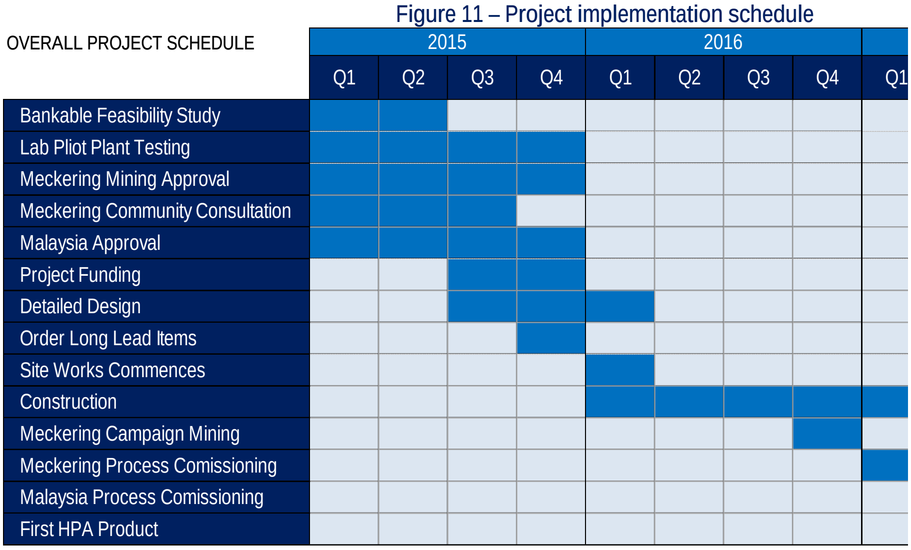


1.12 Project Schedule

Subject to successful funding, the project schedule sees campaign mining at Meckering commence in Q4-2016.

Site works at both development locations (Meckering and Tanjung Langsat) are scheduled to commence during Q1-2016 and the overall construction period at Meckering is estimated to be approximately 15 months, and at Tanjung Langsat approximately 18 months. Commissioning of the Meckering beneficiation plant is scheduled to commence in Q1-2017, which will provide sufficient time to build an inventory of beneficiated kaolin and make initial shipments of the kaolin to Malaysia. Six months of plant commission has been allowed for the HPA plant, which is scheduled to commence during Q2-2017, with the first saleable production of HPA in Q4-2017. During commissioning, start up and an anticipated qualification period for Altech's HPA, the BFS has assumed a gradual increase in annual production from a starting-point of 2,000tpa in year 1, and has also assumed that during production years 1 to 3, there will be a proportion of finished product sales that are not HPA, but either 99.9% (3N) alumina or SGA.

Figure 11 – Project implementation schedule



1.13 Project Risk

An Integrated Risk Assessment has been undertaken on the Project that included qualitative and quantitative analysis of the risks and uncertainties associated with the Projects' development and culminated in the development of a comprehensive risk register, which included mitigation actions. The identification and management of risk is an ongoing process and as such will form part of the approach that the Company will adopt as it advances the Project to final design and construction.

1.14 Project Funding

Based on a capital cost estimation of ~US$77 million, the Company is aiming to secure a debt component of ~US$50–US$55 million, and has been in discussion with various banks and other potential investors in respect to debt financing and other funding options. The Company is open to less conventional financing arrangements, which could include structured financing, and/or bonds from European markets and/or joint venturing.

The Company anticipates that the finalisation of financing will take two or three quarters and that during this time it intends to proceed to detailed design and continue with permitting and approvals activities for the Project, subject to funding.

1.15 Competitor Analysis

A recent report (December 2014) by Breakaway Research, a well-established niche advisory firm specialising in equities research, funds management, private equity funding and corporate advisory services, estimated that the current industry average cost of HPA production is in the range of US$14,000 to US$17,500 per tonne, underpinned by the established HPA producers using an expensive and highly processed feedstock material such as aluminium metal, for the production of HPA.

The BFS estimates that Altech's total cost of production will be US$8,140 (A$9,050) per tonne of finished product HPA, and the Company anticipates that this will firmly position its production cost in the bottom quartile of the production cost curve for all HPA producers. The five main reasons are:

1) Altech owns its feedstock supply and does not use expensive aluminium metal as the feed;
2) The 4,000tpa single train HPA plant will be the largest in the industry, which will provide economies of scale, diluting overheads and thereby reducing unit cost of production;
3) Altech's production process will recycle the primary reactant (HCl), i.e. it is re-used, which substantially minimises operating costs;
4) Altech's kaolin feedstock has few impurities, consequently impurity removal costs are minimised; and
5) The HPA plant will be located in a low-cost country, Malaysia thereby reducing the overall unit costs of production.

1.16 Conclusion and Recommendations

The BFS is a comprehensive and detailed study of the technical and commercial viability for the construction and operation of a 4,000tpa HPA processing plant at Tanjung Langsat, Johor, Malaysia, and the associated development of an aluminous clay (kaolin) beneficiation plant and mining operation at the Company's 100% owned kaolin deposit at Meckering, Western Australia to provide feedstock for the HPA plant.

The BFS has identified the preferred chemical processing method and associated design for the HPA plant, the preferred beneficiation and mining method for the Meckering kaolin deposit and other infrastructure requirements and capacities for the Project. Detailed capital cost and operating cost estimates have been obtained from prospective suppliers, contractors, or expert consultants, enabling detailed financial modelling of the proposed development.

Overall, Altech anticipates that its proposed HPA plant will be in the bottom quartile of the production cost curve for the world's HPA producers.

The BFS has established that Altech's HPA Project is a financially robust and attractive business case. The Project is a high margin, high value proposition, requiring a relatively low level of capital investment. Considering the technical and commercial analysis presented in the BFS, the Company will now proceed to the funding phase of the Project, and concurrently, the Company intends to proceed to detailed design, permitting and approvals, and subject to funding, ordering long lead items, commence site clearance and proceed to construction.

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Appendix 1 – Meckering Mineral Resource estimation (JORC 2004)

Classification	Tonnage	–45 micron (%)[1]	Brightness[2]
Indicated Resource	16,770,000	42.3	83.2
Inferred Resource	48,280,000	41.8	83.5
Total Mineral Resources*	65,000,000	41.9	83.4

** rounded to the nearest one hundred thousand tonnes*

Notes:
1. *The minus 45 micron percentage was measured by wet screening*
2. *Brightness is the ISO brightness of the minus 45 micron material*

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About Altech Chemicals (ASX: ATC)

Altech Chemicals Limited (Altech/the Company) is aiming to become one of the **world's leading** suppliers of **99.99% (4N) high purity alumina** (HPA) (Al_2O_3).

HPA is a high-value, high margin and highly demanded product because it is the critical ingredient required for the production of sapphire substrates which are used in the manufacture of LED lights, for the manufacture of alumina semiconductor wafers that are widely used in the electronics industry and for the manufacture of scratch resistant artificial glass used for scratch resistant watch faces, camera lenses and by various smartphone manufacturers. There is no substitute for HPA in the manufacture of sapphire substrates, sapphire semiconductor wafers or scratchproof sapphire glass.

Global HPA demand is approximately 19,040tpa (2014) and demand is growing at an annual rate of 28%, primarily driven by the growth in LED's as this energy efficient, longer lasting and lower operating cost lighting that replaces traditional incandescent bulbs. HPA demand is expected to at least double over the coming decade.

Current HPA producers use an expensive and highly processed feedstock material such as aluminium metal to produce HPA. Altech has completed a Bankable Feasibility Study (BFS) for the construction and operation of a 4,000tpa HPA manufacturing plant at Tanjung Langsat, Malaysia. The plant will produce HPA directly from kaolin clay which will be sourced from the Company's 100% owned kaolin deposit at Meckering, Western Australia. Altech's production process will employ conventional "off-the-shelf" plant and equipment to extract HPA using a hydrogen chloride (HCl) leaching process. Production costs are anticipated to be considerably lower than established HPA producers.

The Company is currently in the process of securing project financing with the aim of commencing project development in Q1-2016.

Altech is focused on manufacturing high quality HPA to supply the growing global demand for this vital ingredient for the LED industry and the next generation of high-performance technologies.

Forward-looking Statements

This announcement contains forward-looking statements which are identified by words such as 'anticipates', 'forecasts', 'may', 'will', 'could', 'believes', 'estimates', 'targets', 'expects', 'plan' or 'intends' and other similar words that involve risks and uncertainties. Indications of, and guidelines or outlook on, future earnings, distributions or financial position or performance and targets, estimates and assumptions in respect of production, prices, operating costs, results, capital expenditures, reserves and resources are also forward looking statements. These statements are based on an assessment of present economic and operating conditions, and on a number of assumptions and estimates regarding future events and actions that, while considered reasonable as at the date of this announcement and are expected to take place, are inherently subject to significant technical, business, economic, competitive, political and social uncertainties and contingencies. Such forward-looking statements are not guarantees of future performance and involve known and unknown risks, uncertainties, assumptions and other important factors, many of which are beyond the control of our Company, the Directors and management. We cannot and do not give any assurance that the results, performance or achievements expressed or implied by the forward-looking statements contained in this announcement will actually occur and readers are cautioned not to place undue reliance on these forward-looking statements. These forward looking statements are subject to various risk factors that could cause actual events or results to differ materially from the events or results estimated, expressed or anticipated in these statements.

Competent Persons Statement – Meckering Kaolin Deposit

The information in this report that relates to Mineral Resources for the Company's Meckering Kaolin (Aluminous Clay) Deposit is based on information compiled by Ms Sue Border, who is a Fellow the AusIMM and of AIG and is a consultant to the Company. Ms Border has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that she is undertaking to qualify as a Competent Person as defined in the 2004 edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". The information contained in this report is extracted from the ASX announcement entitled *"new exploration licence granted with JORC Kaolin Resource of 65Mt at AMMG's Meckering project"* dated 13 January 2011 and is available to view on the Company web site www.altechchemicals.com. Ms Border has reviewed this statement and can confirm the resource figures are current, and approves the inclusion in this 2014 annual report addendum in the form and context in which they appear.