Altech Chemicals Limited ASX: ATC FRA:A3Y

Company Presentation

Iggy Tan
Managing Director







- Sapphire gemstone
- Purified alumina (Al₂O₃)
- 99.99% (4N) purity or greater
- Smelter Grade Alumina (SGA) ~ 99.5%
 Bayer Process uses sodium hydroxide (NaOH)
- Sodium impurity is a problem for sapphire and lithium-ion batteries

What is HPA?





Smelter Grade Alumina SGA 99.5% US\$400 per t



High Purity Alumina HPA 99.9% (3N) US\$6,000 per t US\$9,000 per t



High Purity Alumina HPA 99.99% (4N) US\$20,000 per t US\$40.000 per t



TRA SUBSTRICTOR LEDS

High Purity Alumina HPA 99.999% (5N) >US\$50,000 per to



Our Target Business

AM HPA Produces synthetic salphite diass



LEDs & LITHIUM-ION BATTERIES





LED Expansions

Osram opens \$440M Malaysian plant amid world's widening clamor for LED chips (UPDATED)

NOVEMBER 24, 2017 BY RAHUL1

Energy Efficient Lighting Market Rising at a CAGR of 13.4% from 2016 to 2024, will reach to US\$15 bn by 2024 ARTICLE COMMENTS (0) RELATED CONTENT

Sanan Optoelectronics to set up

LED production base in

Southeastern China

Sin Han, Talpei; Adam Hwang, DIGITIMES [Thursday 7 December 2017]

The largest China-based LED epitaxial wafer and chip maker Sanan Optoelectronics production base in Quanzhou, southeastern China

Xiamen Changelight Purchases AIXTRON MOGVD Technology to Expands ROY LED Production



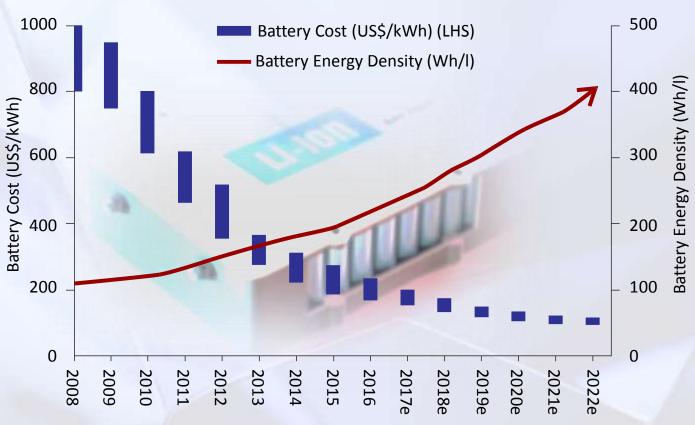


LEDs & LITHIUM-ION BATTERIES





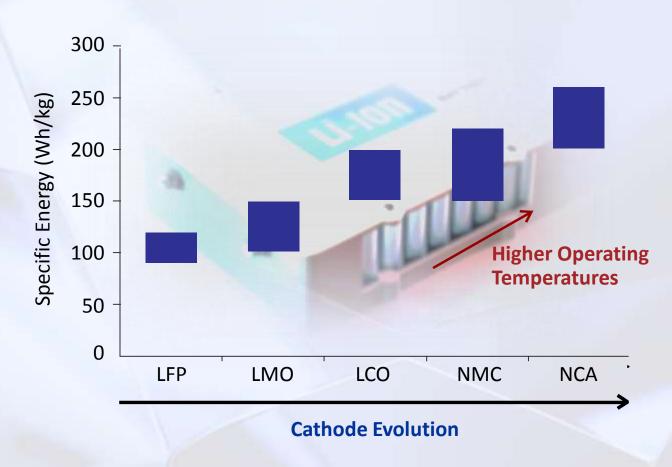
Battery Energy Density



Battery costs are reducing due to increased energy density

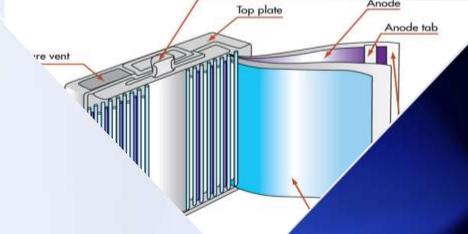


Battery Energy Density vs Temp



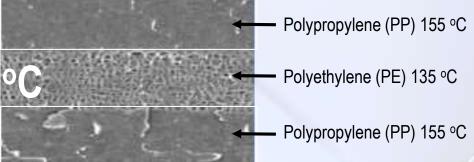
Cathode changes – higher operating temperatures





Normal Polymer Separators

<135 °C



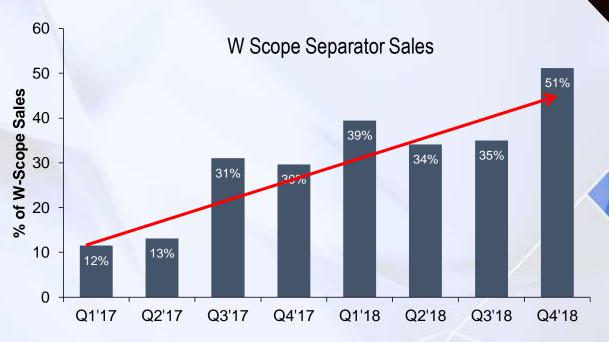
→ HPA layer

→ Polymer membrane

HPA Coated Separators (HPACS)

HPA required for higher temps





HPA Coated Separators



Japanese separator manufacturer reports 40% HPA coated separators 12% only 24 months ago



Capex Plans of Battery Manufacturers



Panasonic

Japan - JV with Toyota 50x capacity by 2020





Korea - 30 GWh by 2020

northvolt

Sweden - Spending US\$4 B to achieve 32 GWh



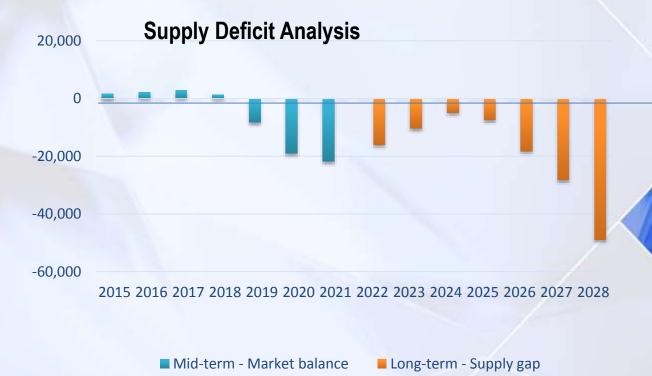




- 30% CAGR demand growth 2028
- Future LED market will require higher quality HPA
- LIB separators demand 187,000 tpa by 2028
- LEDs demand forecast 85,000 tpa by 2028
- Significant supply deficit forecast

CRU Latest
HPA Demand
Forecast





CRU warns of significant supply deficit

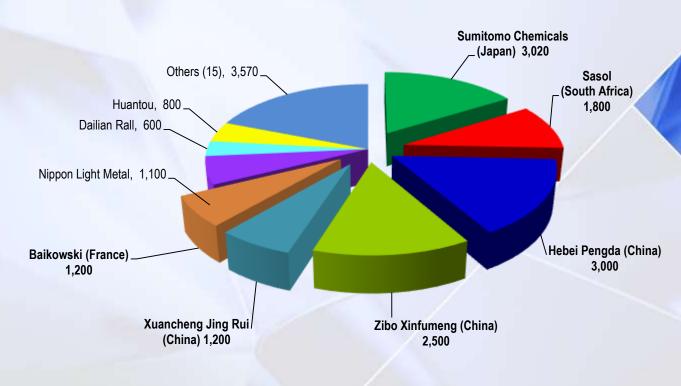
- HPA supply deficit about 20,000 tpa by 2021
- Peaking in 2028 at 50,000 tpa
- New entrants 3-4 years behind

Sapphire Glass Scratch Test





HPA producers – Chemical companies
 China (3), Japan (2), South Africa (1) France (1)

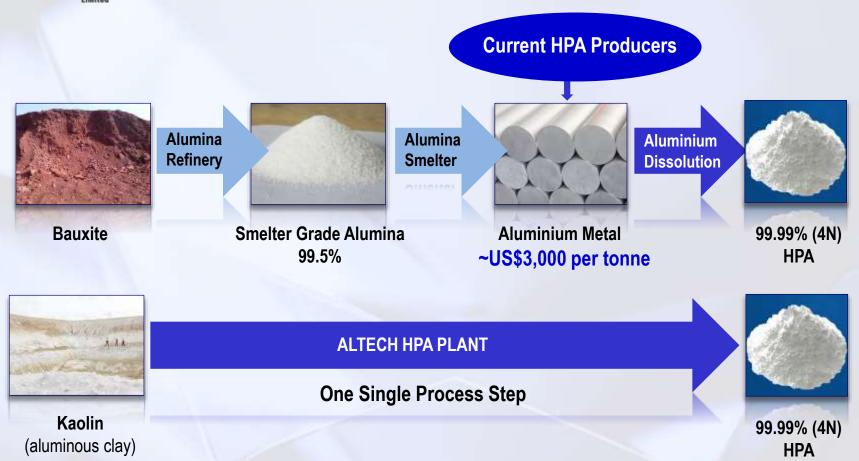


Current HPA Producers

Source: Technavio Research



Altech's Differentiation





Very low iron (Fe) due to weathering

12.7Mt JORC Mineral Resources[^] (250 yrs)

Measured Resources 1.5Mt @ 30% Al₂O₃

Indicated Resources 3.3Mt @ 30% Al₂O₃

Inferred Resources 7.9Mt @ 29.1% Al₂O₃

Meckering, Western Australia (130km east of Perth)

%	Bauxite Darling Range*	Altech Kaolin *
Al ₂ O ₃	34.5	30.0
SiO ₂	21.5	57.9
Fe ₂ O ₃	21.2	0.4
TiO ₂	2.00	0.7
K ₂ O	0.24	0.2
NaO	0.005	0.01

Low-Impurity
Kaolin Feedstock

^{*} Typical Mean Analysis

[^] JORC (2012) Mineral Resources (refer ASX Announcement 11 October 2016); the Company is not aware of any new information or data that materially affects the information included in this announcement and confirms that all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed.



- Mining approval granted
- Works approval granted
- Simple free dig mining
- Campaign mining, 2 months 3 years feed
- Then just sea container loading operation
- Fremantle to Johor easy shipping

Meckering Kaolin Deposit in West Aust





- 60% lower operating costs
- HCl plant nearby
- Services, natural gas, electricity, water
- Access to 17th largest container port
- 5-10 year corporate tax free
- No radioactive waste chemical park



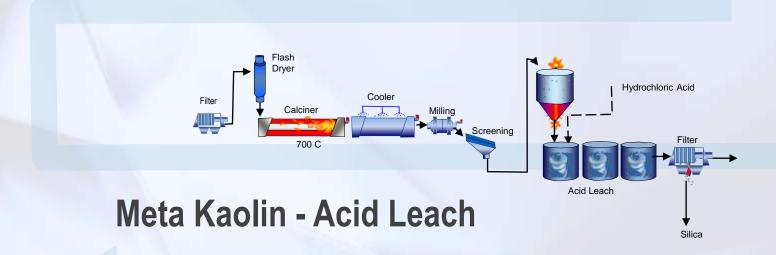






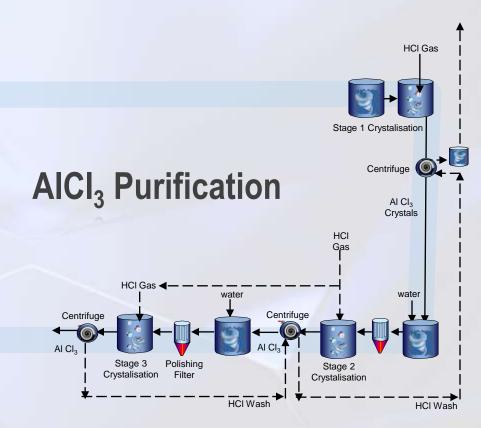






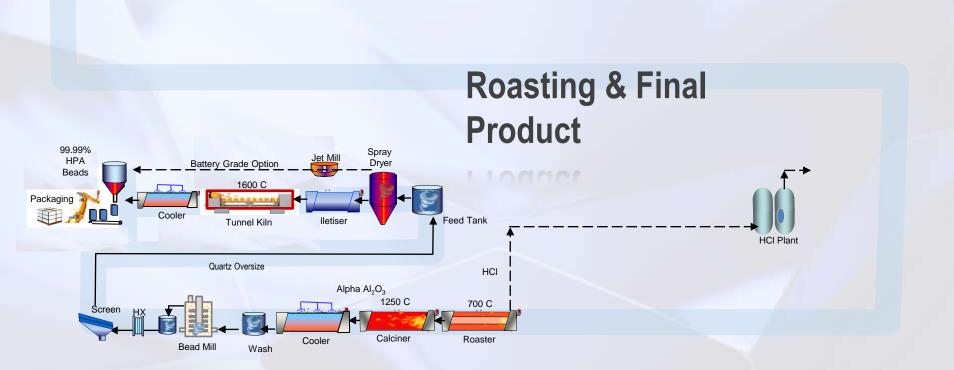






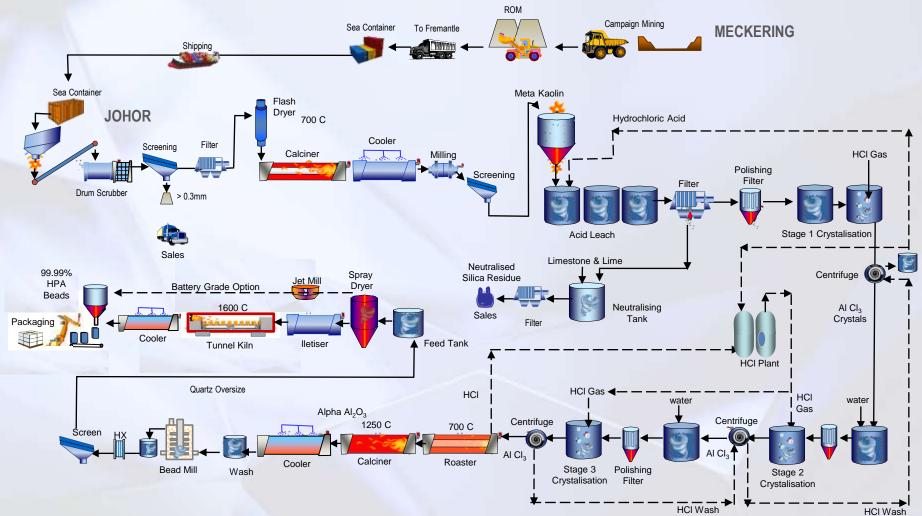






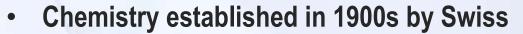












- US Govn't & Alcoa developed further 1980's
- No demand for HPA in 1980's
- New HPA growth demand (LEDs LIBs)
- Altech applied open chemistry to Meckering
- Very successful, disruptive, lowest cost
- One patent granted, 8 pending

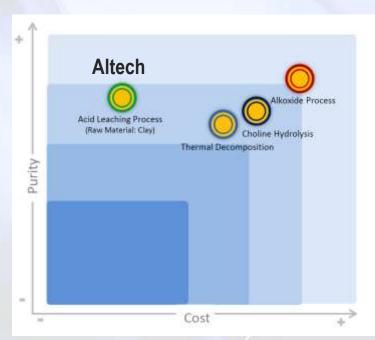
Established Proven Chemistry



CERTIFICATE OF GRANT
INNOVATION PATENT



- Competitors
 - 1. We own our feedstock
 - 2. Main reactant HCI re-used
 - 3. Plant in low cost country (Malaysia)







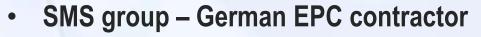


- Off-take sales agreement with Mitsubishi
- First 10 years of HPA operations
- Secures sales for HPA plant production
- Exclusive global distributor
- Experienced with HPA
- Strategic priority: lithium-ion batteries

Mitsubishi 10 year off-take







- Lump sum turn key contract
- Completion and cost risk
- Throughput guarantee
- Process & quality guarantee
- Third largest user of ECA finance
- Committed US\$ 15 mil equity

SMS @ group







Using 79% instead 90% Utilisation

Using 60% instead 90% Recovery

Using 30% instead 34% head grade

3 Yr ramp up instead of 2 Yr

Possibility of 6,000 tpa

Aiming to Under-promise Over-deliver



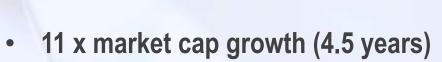
- Pre-tax NPV_{7.5} US\$ 505 million
- Internal Rate of Return (IRR) 22%
- Payback (full rate) 3.9 years
- EBITDA US\$ 76 million p.a.
- Capital cost US\$ 298 million*
- Production Costs US\$ 8.55 /kg
- LT Sale Price US\$ 26.9/kg
- Gross Margin 68%





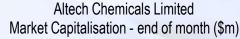






- Ave trade value \$2k/day to \$350k/day
- Mar Cap ~\$80m 723 m shares
- Cash \$8 m +\$2m to come
- No debt

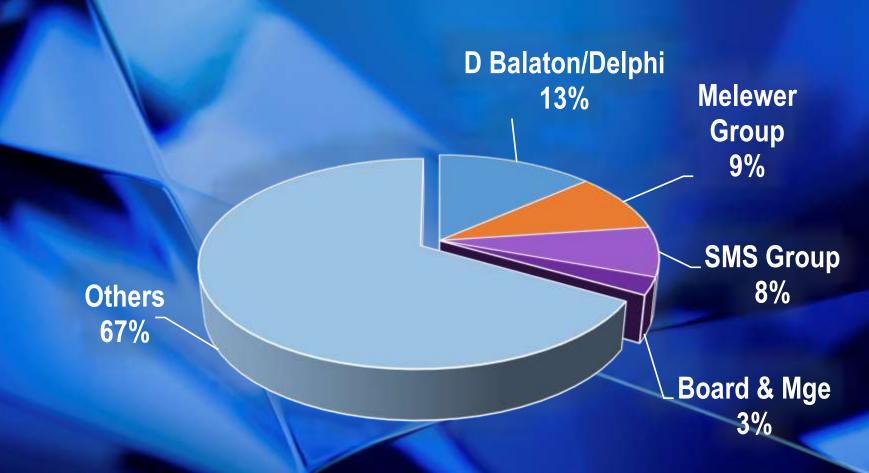
Altech Growth Performance







Quality Shareholders









- Total debt of US\$ 190 million
- US\$ 170 million export credit finance
- 50% of plant German suppliers
- Low interest, long tenure
- Best debt in the world

Debt Funding Successful



Four work streams

- 1) Subordinated mezzanine debt
- **Macquarie Term sheet of US\$90m**

CIMB BANK

- 2) Equity work stream
- **Lead Petra Capital**
- 3) Possible JV Partner
- Partial project sell down

4) German Equity Strategy



Due Diligence



Completed market due diligence by CRU

Internal financial modelling done

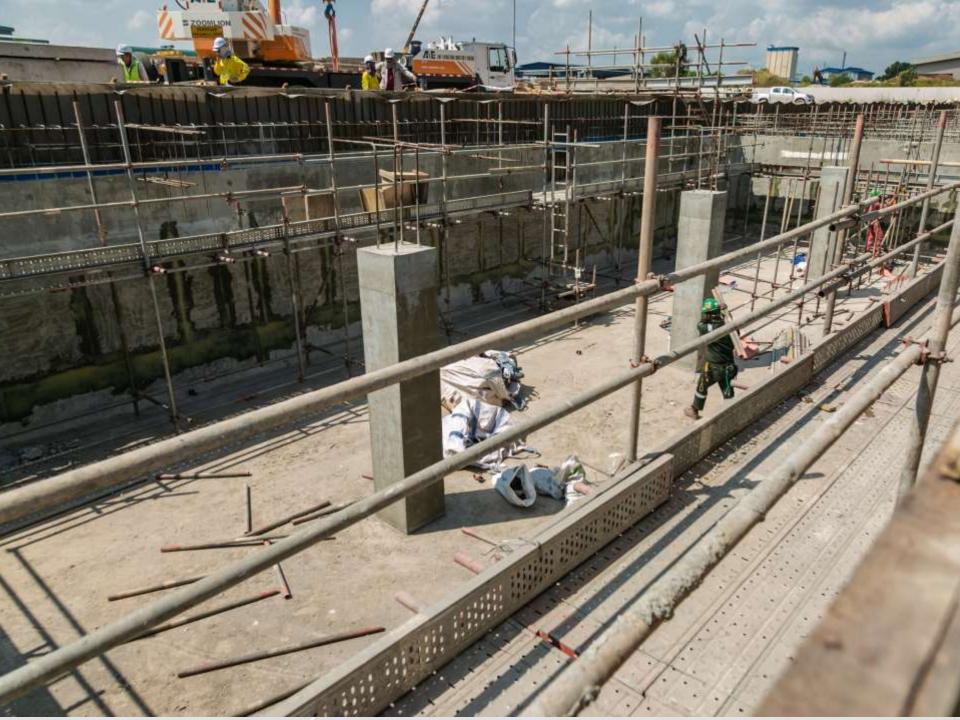
Legal due diligence to commence

Macquarie **Mezzanine Debt DD** Status















Global Quality Partners



- Kaolin mine
- Aust Technology



- Malaysian HPA plant
 - Major shareholder
 - Tax incentives

Germany

- German debt (KfW)
 - EPC contract (SMS)
 - Frankfurt dual listing

 Mitsubishi offtake Major markets





 Germany, France creation of a major battery industry in Europe

By 2024 capacity will be 147 GWh

 Stringent 2020 EU CO2 emission standards (95g/km)

 Push to electric vehicles (EVs) by European car manufacturers

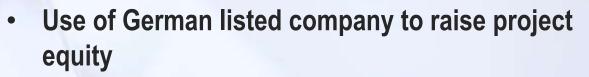
Less reliant on Asia

 Volkswagen - all supply chain in Europe

d 2308

Europe Battery Industry

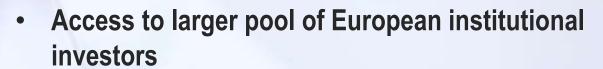




- Altech Advanced Materials AG (AAM)
- Raise US\$100m in Europe via AAM
- AAM can acquire up to 49% of project
- Altech buy-back 49% of project end of year 6
- Buy-back price at 15% pa return
- AAM right to cancel buy-back
- Secures further upside

German
Project Equity
Strategy





Many can't invest in Australian company

 European investors desire for battery materials exposure

- Enhanced project valuation
- Less dilution for current Altech shareholders
- Path to financial close equity headwinds in Australia

Benefits of German Equity Strategy



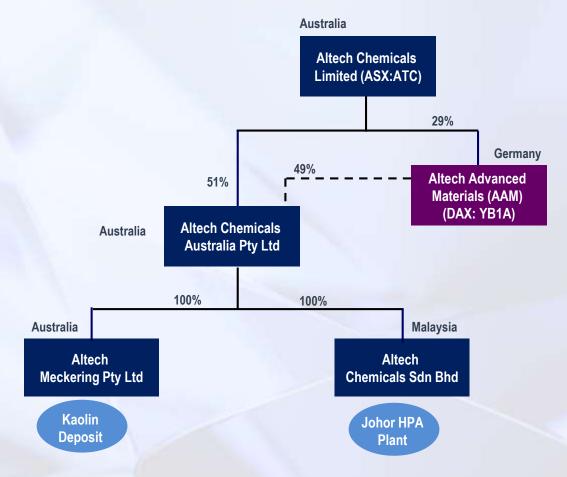


- 5 year development effort
- 250 year mine life deposit
- Intellectual property, process technology
- Mitsubishi 10-year off take
- Established KfW US\$190m senior debt
- Fixed price EPC contract with SMS
- Mezzanine debt term sheet of US\$90m with Macquarie

49% US\$100m Valuation



Proposed JV Structure









- Altech Board final approval
- Appointment of Iggy Tan & Uwe Ahrens to YAG operating Board
- YAG approving three Altech nominees to the YAG supervisory board
- YAG name change to Altech Advanced Materials AG (AAM)
- YAG approving capital increase of 63,102,080 new shares





Right Place
Right Time
Right Feedstock
Right Technology



Thank you





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.

The mezzanine debt facility terms referred to in this ASX announcement are indicative in nature; are non-binding; and contain the general terms of proposed a transaction. Any future commitment for the facility will be subject to and is contingent upon all internal approvals of the financial institution as well as the completion of detailed due diligence (including but not limited to HPA market, legal and technical due diligence) and legally binding documentation and senior lender agreement. There is no certainty that the mezzanine project debt finance will be approved or that a transaction will be concluded based on what is contemplated in the term sheet. The Company makes no representations or warranties whatsoever as to the outcome of the mezzanine debt finance process.

Competent Persons Statements – Meckering Kaolin Deposit

The information in this announcement that relates to Mineral Resources and Ore Reserves is extracted from the report entitled "Maiden Ore Reserve at Altech's Meckering Kaolin Deposit" released on 11 October 2016; the report is available to view on the Company's website www.altechchemicals.com. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of estimates of Mineral Resources and Ore Reserves, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.