



Breakaway Research

August 2015

Grant Craighead | Research Manager
gcraighead@breakawayinvestmentgroup.com

Mark Gordon | Senior Research Analyst
mgordon@breakawayresearch.com

www.breakawayresearch.com

Company Information

ASX Code	ATC
Share Price (24/08/2015)	A\$0.10
Ordinary Shares*	136.26m
Options - in the money	0.00m
Options – out of the money	10.13m
Performance Rights	21.00m
Market Cap (Diluted for in money options)	A\$13.63m
Cash (estimated) *	A\$1.70m
Notional cash on in money option conversion	A\$0.00m
Total Debt	A\$0m
Enterprise Value - Diluted	A\$11.93m

* Assumes Tranche 2 of July 31 placement is approved by shareholders, and includes all placement shares and cash

Directors and Management

Non-Exec Chairman	Luke Atkins
Managing Director	Iggy Tan
Non-Exec Director	Dan Tenardi
Non-Exec Director	Peter Bailey
Company Secretary	Shane Volk

Company Details

Address	Suite 8, 295 Rokeby Rd Subiaco, WA 6008
Phone	+61 8 6168 1555
Web	Altechchemicals.com

Top Shareholders*

Lake McLeod Gypsum Pty Ltd	18.26%
Melewar IIC Limited	12.44%
Mr. Dan Tenardi	6.38%
Australian Mineral Investments	3.12%
Sharbanee	2.51%
Top 20	62.44%
Board and Management	16.87%

* Assumes tranche 2 of 10 August 2015 placement is approved by shareholders, and includes all placement shares and cash

1 Year Price Chart



Altech Chemicals (ATC)

Robust BFS Driving a New Age Materials Boom

Recommendation: Maintain Speculative BUY
Midpoint Price Target of \$0.31/share

Company Update

Key Points

- **BFS points to a robust 30 year, 4,000tpa 4N High Purity Alumina operation**
- **High quality aluminous clay feedstock source at Meckering in WA owned 100% by Altech**
- **Proposed plant operations in southern Malaysia – low operating and capital cost environment**
- **The Project is now in the permitting and financing phase, with these planned to be completed by the end of 2015**
- **Expected simple permitting by virtue of the project size and relatively benign nature of the processing**
- **\$1.13m placement to sophisticated investors, including a Malaysian cornerstone**
- **Board and Management with broad technical experience in the alumina and chemicals industry, and significant holdings in the Company**

Altech Chemicals (ASX: ATC, “Altech”) has recently completed a Bankable Feasibility Study (“BFS”) on its proposed High Purity Alumina (“HPA”) specialty chemicals operation, and is now concentrating on permitting and sourcing funding for the estimated A\$100 million capital required to develop the project.

The BFS has returned very positive figures, indicating a robust, short payback project, with an NPV of around 4x the expected upfront capital. The BFS has also incorporated design changes as a result of ongoing optimisation and pilot scale metallurgical testwork, which has demonstrated the potential to produce a high quality 4N (99.99% Al₂O₃) HPA product.

We continue to rate Altech as a SPECULATIVE BUY, with a revised midpoint indicative price target of \$0.31/share, equating to a company valuation of \$42.0 million. Our view is that the key share price catalyst will be securing funding for the development of the project.

Company Overview

Altech is an ASX-listed mineral and chemical processing company focused on the development of an HPA production operation, to enter into what is forecast as a rapidly growing market driven largely by the increased demand for HPA products from LED lighting and computer chip manufacturers and sapphire glass from electronics industries.

Altech owns significant aluminous clay resources in Western Australia, which it has demonstrated represents a suitable high quality, low impurity feedstock for the proposed HPA production process. Plans are to mine and beneficiate the clay at Altech’s 100% owned Meckering deposit, some 130km east of Perth, and then ship the material for processing at the proposed HPA production plant at the Tanjung Langsat Industrial Complex (“TLIC”) in Johor, southern Malaysia.



Company Update

Substantial Progress

Altech has made steady but significant progress on the development of its proposed HPA operation since our December 2014 initiation research note.

Key advances have included:

- Completion of a robust BFS - June 2015
- Completion of initial Malaysian HPA plant permitting – June 2015
- Commencement of Meckering, WA permitting – July 2015
- Appointment of various project partners throughout 2015
- Study of a bulk kaolin mining opportunity
- Placement of \$1.13 million to sophisticated investors, including \$1 million to a Malaysian cornerstone investor – August 2015

Significant progress made on the proposed HPA operation

Technical work since our initiation report has resulted in enhancements to the beneficiation and HPA production processes, which have been incorporated into the BFS, resulting in indicative positive financial outcomes.

The Company is now in the permitting and financing stage of the project with these activities being run in parallel, with a target of completion by the end of 2015. Potential debt sources include Asian banks and European bonds.

Bankable Feasibility Study

BFS completed ahead of schedule, outlining a robust, commercially viable project

The Company released its BFS to the market on June 29, 2015, which was completed ahead of the anticipated timing of Q3, 2015. The financial outcomes indicate a robust project that, at 4,000tpa of 4N HPA, would make Altech, at current global production rates, the largest single producer.

Meckering and TLIC locations



Source: Adapted from Altech



The BFS is based on the mining and beneficiation of high quality aluminous clay at the Company's 100% owned Meckering deposit, located some 130km east of the Port of Fremantle in Western Australia. Approximately 18.5kt of beneficiated clay will then be bagged, containerised, and trucked 130km to Fremantle. From there it is planned to ship it ~3,900km to the Port of Tanjung Pelepas in Malaysia, and then truck it around 90km to the proposed plant site in the TLIC.

Inputs and Results

Financial analysis has resulted in an NPV of A\$362 million

A DCF analysis has resulted in a NPV₁₀ of A\$362.4 million for the planned 30 year life of the operation, with a steady state production annual EBITDA of A\$66 million based on an annual 4N HPA production rate of 4,000 tonnes. Sensitivity analysis indicates that the project is robust, and will comfortably absorb adverse 10-20% changes in any of the key parameters.

Key financial parameters and the sensitivity analysis are presented in the tables below. Note that the Company has used an AUD/USD exchange rate of 0.78 for the upfront capital, and a long term exchange rate of 0.90 for all other parameters.

Key financial parameters

Parameter	US\$m	A\$m	Notes
Capital Costs	\$76.905m	\$98.595m	AUD/USD ER of 0.78
Revenue per annum	\$92.0m	\$102.2m	Based on 4,000tpa HPA, USD23,000/tonne revenue
Operating costs per annum	\$32.6m	\$36.2m	AUD/USD ER of 0.90
Operating cost per tonne HPA	\$8,140	\$9,050	AUD/USD ER of 0.90
EBITDA per annum	\$59.4m	\$66.0m	Steady State 4,000tpa HPA
EBITDA per tonne HPA	\$14,850	\$16,500	AUD/USD ER of 0.90
Payback	3.8 years	3.8 years	
IRR	30.3%	30.3%	
Pre-tax NPV ₁₀	\$326.1m	\$362.4m	AUD/USD ER of 0.90
NPV/Capex	4.24	3.68	

Source: Altech

Sensitivity Analysis

Sensitivity analysis indicates a robust project, that can absorb adverse movements in key parameters

DR	A\$'s million (pre-tax)								
	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%	619.7	604.0	635.5	570.6	668.9	746.6	504.7	769.2	500.1
8%	470.5	456.0	485.1	430.4	510.7	572.3	379.1	590.3	374.7
10%	362.4	348.9	376.0	328.8	395.9	445.9	288.0	460.6	283.8
12%	282.0	269.0	295.1	253.4	310.7	351.9	220.5	364.2	216.3
14%	221.0	208.5	233.5	196.1	245.9	280.5	169.2	290.9	165.1

Source: Altech

Key production parameters used in the study are presented in the table below.

Key production parameters

Sufficient resources for a long life operation

Parameter	Value	Notes
Production Ramp Up	5 years	Initial production of 2,000tpa HPA, ramping up to 4,000tpa in year 5
Life of Operation	30 years	Modelled life – resource can support a significantly longer operation
Meckering aluminous clay mined – peak production	40,599tpa	19% Al ₂ O ₃ wet – 9% moisture – mined on a campaign basis, with three years material mined per campaign. LOM strip ratio of 1:1. Waste and tailings to be placed back into pits.
Beneficiated aluminous clay produced and shipped – peak production	18,565tpa	~27% Al ₂ O ₃ , at 0.5% moisture. ROM screened at +500µm fraction to remove most of the free silica and quartz, around 50% mass recovery, and 65% recovery of Al ₂ O ₃ to beneficiated product.
4N HPA Produced – peak production	4,000tpa	80% HPA plant recovery of Al ₂ O ₃ , overall recovery of ~52%. Acid will be recycled, by-products, including silica can be sold.

Source: Altech



A summary of the financial inputs, including costs and sales prices are presented below.

Key financial inputs

Parameter	US\$	A\$	Notes	
Capital Costs – Total	\$76.905m	\$98.595m		
Meckering	\$16.047m	\$20.574m	Largely estimated in Australian dollars and Malaysian Ringgit using a AUD/USD rate of 0.78 and a USD/MYR rate of 3.58	
Tanjung Langsat	\$54.600m	\$70.000m		
Insurances	\$1.265m	\$1.621m		
Contingency	\$4.993m	\$6.401m		
Operating cost/kg HPA – Total	\$8.14/kg HPA	\$9.05/kg HPA		
Meckering mining	\$0.11/kg HPA	\$0.12/kg HPA	Largely estimated in Australian dollars and Malaysian Ringgit. Long term AUD/USD rate of 0.90 and USD/MYR rate of 3.17 has been used	
Meckering beneficiation	\$1.26/kg HPA	\$1.40/kg HPA		
Transport	\$0.69/kg HPA	\$0.77/kg HPA		
WA state royalty	\$0.09/kg HPA	\$0.10/kg HPA		
HPA production	\$3.76/kg HPA	\$4.18/kg HPA		
HPA marketing costs	\$0.76/kg HPA	\$0.84/kg HPA		
Corporate (Australia)	\$0.98/kg HPA	\$1.09/kg HPA		
Corporate (Malaysia)	\$0.50/kg HPA	\$0.55/kg HPA		
HPA selling price	\$23.00/kg	\$25.56/kg		Based on established HPA supplier pricing

Relatively low costs, with estimated operating costs in the lowest quartile

Source: Altech

Beneficiation and Processing

Ongoing optimisation testwork carried out as part of the BFS has resulted in generally minor modifications to the beneficiation and HPA production processes, which have improved expected efficiencies and lowered estimated capital and operating costs.

Ongoing optimisation testwork has resulted in improvements to the beneficiation and processing circuits – these have been incorporated in the BFS

The original Meckering beneficiation circuit included dry screening; optimisation testwork has indicated that wet screening is a more efficient route, leading to improved alumina recoveries to a higher grade beneficiated product. Environmentally this has also resulted in a lowering of expected dust levels.

Pilot plant testwork of the HPA process has demonstrated the high quality of the product, which contains lower impurities than the products of some current producers. This work has also led to the optimisation and simplification of the plant design with a resultant reduction in estimated up-front capital, although the overall flowsheet is largely unchanged.

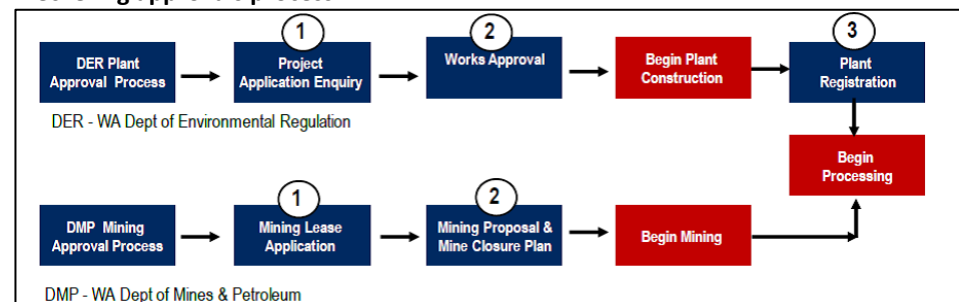
Permitting

Altech has commenced permitting activities at both the Australian and Malaysian sites, and initial indications are, given the relatively small scale of the operation and generally benign nature of reagents, products and waste products, that permitting will be relatively straight forward, and is expected to be completed by the end of 2015.

Given the nature of both the Meckering and TLIC operations, permitting should be relatively straight forward with no impediments foreseen

An outline of the Meckering approvals process is shown in the figure below.

Meckering approvals process



Source: Altech

The Company has lodged the Mining Lease (“ML”) application with the DMP and the Project application has been accepted by the DER. The next stage of the DER approvals process is a Works Approval application, which upon grant will allow construction of the



Permitting has commenced for both sites

beneficiation plant. Given the processing rate of <50,000tpa, it is anticipated that the plant will only require registration to operate, rather than an Operating Licence.

The ML application is the first step in the DMP approvals process. Following grant of the ML, a Mining Proposal and Mine Closure Plan then needs to be lodged, which, upon approval, will allow mining to begin.

Also, given the small size of the proposed operation, a full Environmental Impact Assessment (“EIA”) will not be required – the Company is also of the view that there will be no environmental impediments to the proposed operations.

Similarly, permitting at the TLIC in Malaysia is expected to be relatively straight forward. The Company has received approval from the Department of Environment (“DOE”) for its Preliminary Site Assessment (“PAT”), in effect confirming that the proposed site and use are compatible with gazetted land use guidelines.

In addition the DOE, in its response to the PAT, confirmed that based on the plant’s proposed output of <100tpd an EIA will not be required. The next stage of the environmental approval process will include the approval and registration of air pollution control systems, chimneys and fuel burning equipment.

Engagement of Key Partners and Consultants

Altech has continued to engage key project partners and consultants throughout the year, assembling a highly experienced team to take the project forward.

These appointments include (listed in chronological order of announcement to the market):

- Transport and Logistics – Memorandum of Understanding (“MoU”) signed with Seatram, a Western Australian based freight forwarder and logistics provider
- Malaysian EPCM – Appointment of M+W Group, a Stuttgart based global engineering and construction business with extensive Asian experience
- HPA plant composites supply – MoU signed with ATEA Group, a group with extensive experience in the provision of equipment for extreme operating conditions, and with a manufacturing plant in Penang, Malaysia
- Meckering mining and processing – MoU signed with Castle Equipment Pty Ltd, a Western Australian based mining services provider
- HPA Plant Construction – MoU signed with Melewar Integrated Engineering, a Malaysian based engineering and construction group
- Meckering EPCM – Simulus Engineering Pty Ltd, which has been the engineering partner during the BFS, has been appointed as the EPCM partner for the proposed Meckering operations
- HCl system supply, HPA plant – MoU signed with SGL Group, a group with global experience in materials and equipment for extreme operating environments
- HPA plant kiln supply – MoU signed with Drytech International, a South African based company specialising in dryers and high temperature kilns.

The Company is in the process of assembling a team of experienced partners and consultants to take the Project forward

Bulk Kaolin Study

Although feed for the proposed HPA Project is the key component of the Meckering operations, the Company has recently signed an MoU with Dana Shipping and Trading S.A. (“Dana”) to fund a scoping study looking at the commercial viability of mining and processing bulk kaolin from Meckering. Dana is an Athens based global shipping company, with a focus on bulk dry cargo operations.

The MoU provides a first option, exercisable by September 15, 2015, over 10Mt of kaolin.

There is the potential to also produce bulk kaolin at Meckering – an MoU has been signed to evaluate this



Should Dana exercise the option they will be required to subscribe for \$1 million worth of Altech shares, priced at a 10% premium to the VWAP of the preceding 120 days, and pay Altech a 2% gross production royalty. Upon exercise of the first option, a second option can be granted over a further 10Mt of kaolin, on similar terms as for the first. The second option will be exercisable within three months of the first commercial sale of bulk kaolin from Meckering.

Other Projects

No work has been carried out on the Company's other projects. Midas Engineering Group Pty Ltd withdrew from Altech's South West Titanium Project in March 2015.

Placement

Placement for \$1.13 million, including \$1 million from Malaysian cornerstone investors

On August 10, 2015 the Company announced it has raised \$1.13 million from a placement to sophisticated investors. This raising, comprising 19.14 million shares at \$0.059/share (a ~10% discount to the 5 day VWAP prior to the date the price was set), will be made in two tranches; the first of 8.97 million shares will be done under the Company's 15% placement capacity, with the second of 10.17 million shares subject to shareholder approval at a meeting to be held on 30 October, 2015.

The placement includes \$1 million to cornerstone investor Melewar IIC, a diversified Malaysian industrial firm, who will also nominate a non-executive director to Altech's board. It also includes a subscription of \$100,000 (subject to shareholder approval) from current director Mr. Dan Tenardi and \$29,500 from a sophisticated investor.

Funds raised will be largely used for the detailed design for the HPA project, as well as general working capital and corporate purposes.

Upcoming Activities

Key activities now include permitting and securing project funding

Critical activities now include securing funding and completing permitting (as outlined above) of the HPA Project to allow it to progress to development, with the planned timeline shown below. The recent placement will also allow detailed design work to commence.

With regards to project financing, the Company will be mainly looking towards Asian banks and European bonds for the debt component.

HPA Project Timeline

OVERALL PROJECT SCHEDULE	2015				2016				2017			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Bankable Feasibility Study												
Lab Pilot Plant Testing												
Meckering Mining Approval												
Meckering Community Consultation												
Malaysia Approval												
Project Funding												
Detailed Design												
Order Long Lead Items												
Site Works Commences												
Construction												
Meckering Campaign Mining												
Meckering Process Commissioning												
Malaysia Process Commissioning												
First HPA Product												

Source: Altech



Valuation

We have updated our indicative valuation – our midpoint is now \$0.31/share

We have updated our indicative valuation of Altech, with a risked Company value of between \$19.4m and \$64.5m, and a midpoint of \$42.0m. This is an increase of some 30% on our December 2014 valuation.

This equates to an undiluted price range of \$0.15 to \$0.48 per share, with a midpoint of \$0.31/share, a 210% premium to the current share price. The valuation assumes shareholder approval of tranche 2 of the current placement, giving total shares on issue of 136.3 million.

The valuation for the HPA Project, as in our initiation note, is a composite of DCF and EBITDA multiples, with a 7.5x EBITDA multiple being used.

Changes to our valuation have come from:

- Updating inputs in our indicative DCF model to match those as published in the BFS
- Increasing the HPA project discount multiple from 7.5% to 10% to reflect de-risking of the Project since our previous report
- Changes to the nominal values of the other projects

Indicative Valuation

Item	Risk Multiple	Total Value (m)			Per Share Undiluted			
		Low	Mid	High	Shares	Low	Mid	High
HPA	10.0%	\$15.7	\$38.3	\$60.8	136.3m	\$0.12	\$0.28	\$0.45
SW Titanium	100%	\$1.00	\$1.00	\$1.00	136.3m	\$0.01	\$0.01	\$0.01
Constance Range	100%	\$0.00	\$0.00	\$0.00	136.3m	\$0.00	\$0.00	\$0.00
Donnelly Graphite	100%	\$1.00	\$1.00	\$1.00	136.3m	\$0.01	\$0.01	\$0.01
Cash	100%	\$1.70	\$1.70	1.70	136.3m	\$0.01	\$0.01	\$0.01
Total	N/A	\$19.4	\$42.0	\$64.5	136.3m	\$0.15	\$0.31	\$0.48

Source: Breakaway Analysis

Breakaway's View

Altech has continued to make steady progress, and met key milestones

Altech has continued to make steady progress on its HPA project, with the release of the BFS ahead of schedule pointing the way towards development. The Company is headed by Mr. Iggy Tan, who has extensive experience in the chemicals industry (including in specialty chemicals) and has a track record of building projects. Altech has taken a measured approach to the Project, and continues to deliver results as promised.

As discussed in our initiation report, forecasts indicate double digit growth in the near term demand for HPA, and Altech is in a prime position to take advantage of this.

Robust BFS delivered

The BFS has returned robust results, and delivered no unpleasant surprises. Our analysis of the inputs and results indicate that they are reasonable, and the DCF valuation may in fact be conservative. The Company has used a long term AUD/USD exchange rate of 0.90 for the operating parameters, when our view is that it is likely to be closer to 0.75. Given most inputs will be in local currencies, and the product selling price is USD, we see the potential for operating margins, and hence the valuation, to be higher than that presented.

One key outcome of the DCF analysis is that the NPV to initial capex ratio in the order of 4:1 – we consider this a healthy figure. Also, we have extrapolated the sensitivity data to look at adverse movements of up to 20% in key parameters – the Project has the capacity to absorb these.

In our view the recent placement is a vote of confidence in Altech, and is strategically



astute in that it has brought a Malaysian group in as a cornerstone investor.

A summary of key project risks are given below – these are largely the same as those presented in our initiation report, however we have now added funding as the key risk for Altech.

We now see project financing as the key risk

- **Funding Risk** - With the BFS now completed, the key risk will be project financing, with short term funding now largely resolved by virtue of the recent placement. Capital markets are still very tight, and Altech may have to look at different and innovative funding solutions should the traditional debt/equity route prove unviable to fund the development of the HPA project.
- **Resource Risk** - We see only minor resource risk – the previously defined aluminous clay resources are more than adequate to meet the Company's requirements for the foreseeable future.
- **Technology Risk** - We still see this as being the main technical risk in the project; however ongoing work, including the optimisation studies and the successful pilot scale production of 4N HPA has continued to de-risk this facet of the Project. Although most components of the proposed flow sheet are well understood and proven processes, there is a significant jump to take this to a full blown commercial operation.
- **Market Risk** - Available forecasts suggest a strong market for HPA, albeit with slightly decreasing prices due to technological improvements in the production process. Expected shortfalls in HPA supply will require new capacity to come on-stream. However current supply is concentrated amongst a relatively small number of powerful players, and an important issue is how they react to the threat of a potentially low cost newcomer that is likely to undercut their higher cost operations. Although on the face of it there will be room for all, there is always the risk of "cartel" style behaviour by larger players to drive out newcomers.
- **Permitting Risk** - Permitting is a perennial consideration in any resources and industrial development. This is mitigated at both potential sites – Western Australia is a mining friendly jurisdiction, and the small scale of the proposed Meckering aluminous clay mine should be a positive in the approvals process. The Company also has a number of other suitable aluminous clay resources. In Malaysia, the proposed location of the HPA plant in an established industrial park which is host to a number of chemical industries and the relatively small scale of the operation has also been shown to be a positive for the Malaysian permitting process. This is also mitigated by the generally benign nature of reagents, products and waste.

We continue to rate Altech as a SPECULATIVE BUY, with a mid-point price target of \$0.31/share

Given the above, we continue to rate Altech as a medium term **Speculative Buy** with a midpoint valuation risked for the project stage of \$0.31/share – we note that this valuation is at a significant premium to the current price – this largely reflects the current market conditions and the need for the Company to secure project financing.

Another factor possibly affecting the share price may be a general lack of understanding of the HPA industry by potential investors - with the BFS now released the Company will be increasing its marketing activities, including providing background information on the HPA industry.

Our view is that securing project financing will be the catalyst for share price moves.



Analyst Verification

We, Grant Craighead and Mark Gordon, as the Research Analysts, hereby certify that the views expressed in this research accurately reflect our personal views about the subject securities or issuers and no part of analyst compensation is directly or indirectly related to the inclusion of specific recommendations or views in this research.

Disclosure

Breakaway Investment Group (AFSL 290093) may receive corporate advisory fees, consultancy fees and commissions on sale and purchase of the shares of Altech and may hold direct and indirect shares in the company. It has also received a commission on the preparation of this research note.

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Breakaway Investment Group

AFSL 290093 ABN 84127962387

T+61293928010

F+61292792727

PO Box H116 Australia Square

Sydney, NSW 2001

Suite 505, 35 Lime Street,

Sydney, NSW 2000