30 August 2016

Completion of Syerston Scandium Project Feasibility Study

Clean TeQ Holdings Limited (**ASX: CLQ**) announces the results of the Syerston Scandium Project (**Project**) Feasibility Study (**Study**). All figures are quoted exclusive of GST.

Highlights:

- **Based on a long term scandium oxide (99.9% purity) price of US$1,500/kg (A$2,000/kg), the Project delivers a Post-tax NPV of A$273M and 33% post-tax IRR**
- **Average production of 49.2 tonnes per annum scandium oxide (Sc_2O_3) after 18-month ramp-up**
- **Initial 20-year mine life, with additional resources available for decades of additional production**
- **Capital cost of A$100 million (US$75 million[1]) including $4.5M (4.7%) contingency**
- **Average 2-20y cash operating cost (C1) of A$593/kg Sc_2O_3 (US$444/kg Sc_2O_3[1])**
- **Scandium oxide offtake discussions ongoing with the global transport and energy sectors**
- **Pre-Feasibility Study underway to assess potential for a large scale development at Syerston to produce nickel and cobalt sulphate products with scandium oxide by-product**

1 Study Parameters

The Study was based on a processing plant with designed capacity of 64,000tpa of ore feed from Syerston's near-surface resource over an initial 20-year mine life. The processing plant consists of a high pressure acid leach (**HPAL**) circuit followed by Clean TeQ's proprietary Resin-In-Pulp (**RIP**) technology for scandium recovery, followed by purification. The plant and infrastructure construction timeframe is estimated to be 18 months. An 18-month commissioning and ramp up period has been allowed with design throughput and production capacity forecast to be achieved in year 2 of the initial 20-year mine life. The processing plant produces 99.9% scandium oxide (**Sc_2O_3**) at an average rate of 49.2 tonnes per annum over years 2-20.

The current global supply of scandium oxide is approximately 10-15tpa, with prices ranging from US$2,000-3,000/kg Sc_2O_3[2]. In order to facilitate wider-scale adoption in key emerging markets (such as high performance aluminium alloys), and consistent with the Scoping Study released in May 2015, Clean

[1] A$/US$ 0.75
[2] QYResearch Scandium Oxide Industry Research Centre, Global and Chinese Scandium Oxide Industry Report 2014

Clean TeQ Holdings Limited
ABN 34 127 457 916

12/21 Howleys Rd, Notting Hill VIC Australia 3168
PO Box 227, Mulgrave VIC 3170 Australia
T: +61 3 9797 6700 F: +61 3 9706 8344
W: www.cleanteq.com E: Info@cleanteq.com

TeQ has adopted a long term scandium oxide price of US$1,500/kg (A$2,000/kg) in the Study, which is at a significant discount to current market prices.

The Study was based on a Measured, Indicated and Inferred resource, completed by OreWin Pty Ltd (**OreWin**), which was compiled utilising data from over 1,300 historical drill holes (for further detail see ASX announcement dated 17 March 2016).

The following table provides a summary of the key parameters used in the base case evaluation of the Project:

Table 1: Syerston Project Summary Table

Parameter	Assumption / Output
Processing Plant Throughput	**64,000tpa** [1]
Processing Plant Average Feed Grade (Years 2-20)	**583g/t Sc** [2]
Sc_2O_3 Average Production Rate (Years 2-20)	**49.2tpa Sc_2O_3**
Processing Plant Sc Recovery (Years 2-20)	**88%**
Construction period	**18 months**
Commissioning and ramp up period	**18 months**
Life of Mine (including commissioning and ramp up period)	**20 years**
Long Term Sc_2O_3 Price Assumption (99.9% purity)	**U$1,500/kg Sc_2O_3**
Exchange Rate	**A$/USD 0.75**
Total Capital Cost	**A$100M** [3]
Average Sc_2O_3 C1 Cash Cost (Year 2-20) [4]	**A$593/kg Sc_2O_3** **US$444/kg Sc_2O_3**
Net Present Value (NPV) – post tax	**A$273M** [5]
Internal Rate of Return (IRR) – post tax	**33%**

1. *Autoclave feed rate. Following 18-month commissioning and ramp up period*
2. *Includes pit selection, dilution and mining factors applied*
3. *Includes A$4.5M contingency on capital costs*
4. *Excludes commissioning and ramp-up operating costs and scandium oxide production during year 1 and royalties*
5. *Post Tax, 8% discount rate, 100% equity, real terms*

All $ are in Australian Dollars (A$) unless otherwise stated

Laboratory test work was undertaken by ALS Metallurgy and SGS Metallurgy in Perth and internally at Clean TeQ's laboratory in Melbourne, utilising Syerston ore taken from site. The testing regime included the operation of a pilot plant which produced scandium oxide samples for customer validation and qualification (for further details see ASX announcement dated 20 January 2016) and ore variability testing. Potential customer counterparties confirmed that the samples of scandium oxide met their required chemical specifications.

12/21 Howleys Rd, Notting Hill VIC Australia 3168
PO Box 227, Mulgrave VIC 3170 Australia
T: +61 3 9797 6700 F: +61 3 9706 8344
W: www.cleanteq.com E: Info@cleanteq.com

OreWin Pty Ltd (**OreWin**) undertook mine pit optimisation and scheduling and the estimation of mining costs.

GR Engineering Services Ltd (**GRES**) completed the capital cost estimate, and provided the design of the processing plant from ROM pad to tailings slurry discharge to the tailings storage facility. The estimate included the power generation, fuel storage and handling, reagent supply and storage, water supply from Syerston's established borefield to the south of the Project area, as well as all offices, workshops, warehouses and supporting infrastructure required for the operation of the facility.

SNC-Lavalin (**SNCL**) provided the design inputs and optimisation of the HPAL section of the plant due to the specialist nature of the HPAL process. SNCL has extensive experience with HPAL design and construction, as well as a detailed understanding of the metallurgical aspects of Syerston through the two previous feasibility studies completed by SNCL for the Project. Clean TeQ provided the design for the RIP plant and purification processes.

Golder Associates Pty Ltd (**Golder**) provided the design for the tailings storage facility (**TSF**) and undertook geotechnical studies for the mine and process plant and infrastructure. Golder completed the geotechnical and TSF design on the previous Syerston feasibility studies undertaken by Black Range Minerals and Ivanplats Syerston.

The operating cost estimates and financial modelling and analysis was performed by Clean TeQ.

2 Scandium Resource Estimate and Ore Reserves

The Project Mineral Resource Estimate incorporates a re-interpretation of the historical mineralisation with a focus on scandium and subsequent infill drilling. A total of 1,334 holes and 31,711 scandium assays were used for the Resource Estimate. This includes 725 RC drill holes by Black Range Minerals for a Feasibility Study in 2000; 117 RC drill holes by Ivanplats Syerston for a 2005 Feasibility Study Update; 14 holes by Ivanplats Syerston in 2014; and 92 holes drilled by Clean TeQ in 2015, focussing on high-grade scandium mineralisation in the northern part of the exploration licence.

Table 2 provides a summary of the Mineral Resource Estimate, at scandium cut-offs of >300ppm Sc and >600ppm Sc. Further information can be found in the ASX announcement dated 17 March 2016.

The Measured and Indicated Resource Estimate was used for the Feasibility Study. Key features of the Resource Estimate include:

- Approximately 94% of the high-grade mineralisation (calculated at a cut-off grade of >600ppm scandium), the focus of the Feasibility Study development plan, is classified as Measured or Indicated.
- Of the global Resource Estimate (calculated at a cut-off grade of >300ppm scandium), 77% of the deposit is now classified as Measured or Indicated.

12/21 Howleys Rd, Notting Hill VIC Australia 3168
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W: www.cleanteq.com E: Info@cleanteq.com

Table 2: Syerston Scandium Mineral Resource Estimate

Cut-off	Classification Category	Tonnage, Mt	Sc Grade, ppm	Sc Tonnes	Sc_2O_3 Equiv Tonnes*
Sc >300ppm	Measured	5.8	454	2,635	4,032
	Indicated	15.9	420	6,697	10,247
	Inferred	6.4	386	2,487	3,805
	Total	**28.2**	**419**	**11,819**	**18,083**
Sc >600ppm	Measured	0.6	685	394	603
	Indicated	0.8	663	545	834
	Inferred	0.1	630	57	87
	Total	**1.5**	**670**	**996**	**1,524**

** Sc tonnage multiplied by 1.53 to convert to Sc_2O_3.*

The economic factors determined as part of the Feasibility Study were used by OreWin to estimate Proved and Probable Ore Reserves for the Project. The Ore Reserves have been estimated using the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves 2012 (JORC 2012) and are presented in Table 3 below.

Table 3: Syerston Scandium Ore Reserves

Classification Category	Tonnage, kt	Sc Grade, ppm
Proved	367	640
Probable	833	557
Total	1,201	583

** Ore Reserve is reported as Autoclave Feed tonnes.*

3 Mining

The Syerston mineralisation is shallow, allowing for small-scale mining activities with minimal dilution. The Study assumed that mining will be undertaken by conventional open pit methods, utilising small backhoe excavators, coupled with small trucks. The shallower depth material was treated as waste due to the limited assay information. The average strip ratio over the life of the Project is 2.28:1.

The Scoping Study assumed an average annual production rate of 42.5 tonnes per annum of Sc_2O_3. A mining schedule optimisation, carried out by OreWin as part of the Feasibility Study, determined that the potential exists to increase the average scandium oxide output to an average annual rate of 49.2 tonnes per annum over the life of the mine following an initial 18-month commissioning and ramp up period. The increase in production can be achieved while maintaining the same level of ore throughput (i.e. ore processed through the same processing plant) by targeting of high grade sections of the deposit in the mining schedule.

4 Metallurgy & Processing

Subsequent to the Scoping Study completed in 2015, HPAL variability testing was carried out on representative composite ore samples taken from site, approximating the ore grades and characteristics during the first 5 to 10 years of operation. This variability testing allowed for the optimisation of the HPAL process resulting in an increase in scandium extraction at the ore leaching stage.

Resin cycling test work was also undertaken to confirm performance of the resin in the process. A pilot plant campaign was undertaken in September 2015 using Syerston ore to produce a bulk sample of scandium-containing liquor for testing and optimisation of the purification process. This allowed the purification flow sheet to be confirmed at scale on liquors generated from Syerston ore, as well as producing high purity scandium oxide samples for customer qualification.

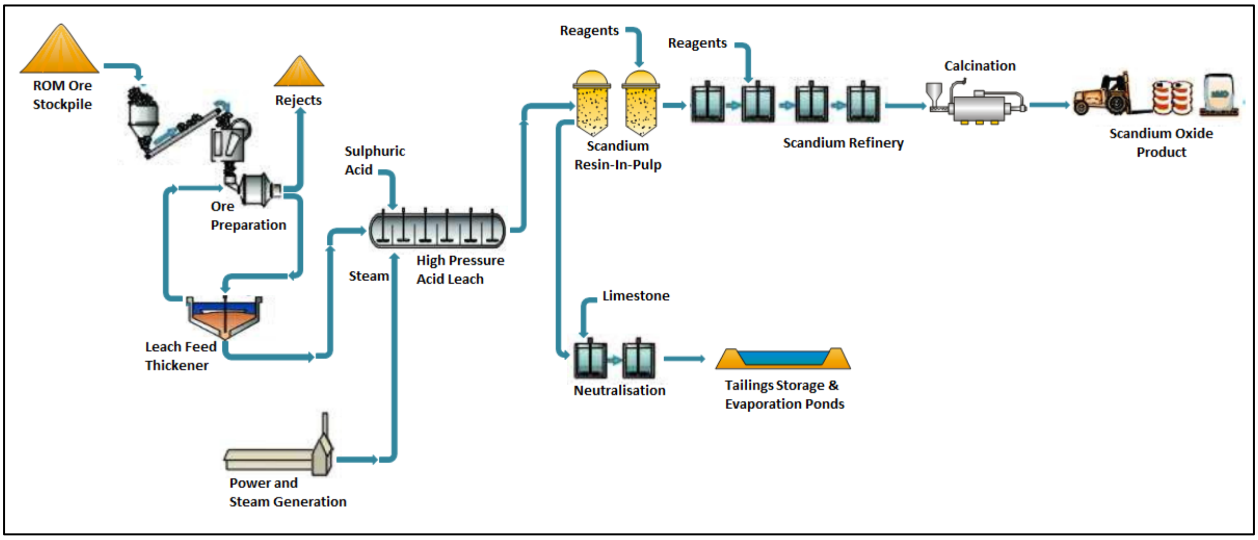

Figure 1: Simple Flowsheet of Syerston Scandium Processing Plant

The base case plant assumes a milling circuit, a high pressure acid leach (**HPAL**) and a Resin-In-Pulp (**RIP**) circuit to recover scandium. Slurry is finally neutralised and sent to the TSF. The scandium-rich solution is purified through a multi-stage process to produce the final high purity Sc_2O_3 product. Based on the current and historical test work, overall scandium recovery is estimated at 88% when producing a 99.9% purity Sc_2O_3 product.

12/21 Howleys Rd, Notting Hill VIC Australia 3168
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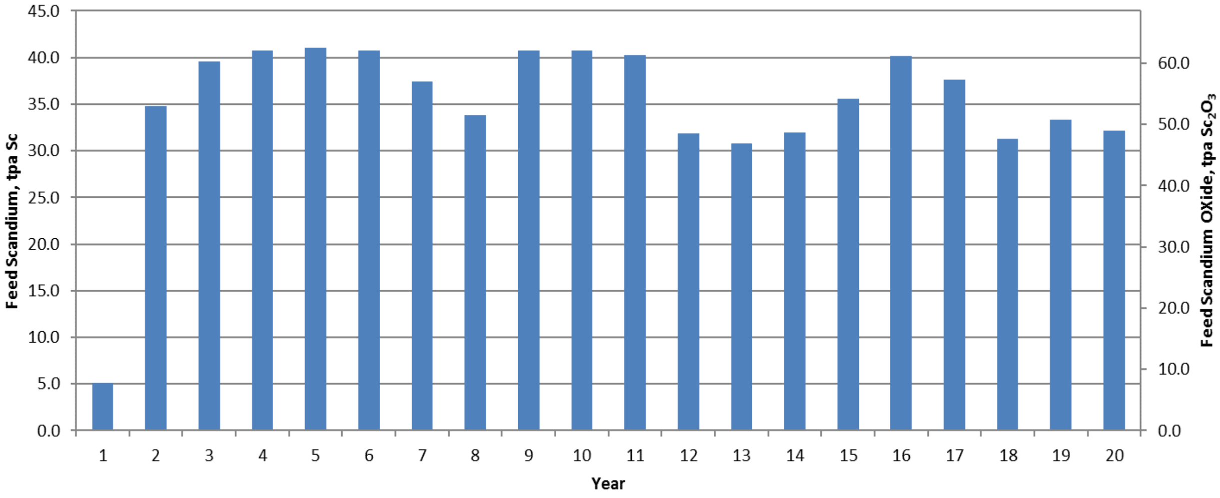
W: www.cleanteq.com E: Info@cleanteq.com



** Chart shows pre-beneficiation feed Sc metal and Sc_2O_3.*

Figure 2: Life of mine scandium oxide production profile from commencement of construction

5 Capital Cost Estimate

Table 3 provides a breakdown of the capital cost estimate provided by GRES.

The capital estimate of A$100M includes A$4.47 million (4.7%) contingency. The estimated construction period is 18 months. Sustaining capital is not included in this capital estimate, but has been included in the financial analysis (discussed in Section 7).

A sustaining capital allowance of A$0.7 million per annum was assumed in the Feasibility Study financial model. There is also an allowance for expenditure after the commencement of production in years 1 and 2 for a total of A$10.9 million for capital works which are not part of plant and infrastructure required for scandium production. The majority of this expenditure is for commitments to local councils for community and local government road upgrades in the Project area as detailed in the Project Voluntary Planning Agreements.

Table 3: Syerston Capital Cost Estimate

Plant Area	(A$M)
Mining, earthworks and ore preparation	$7.5
High pressure acid leach (HPAL)	$20.4
Resin in Pulp (RIP)	$4.9
Scandium refining	$4.4
Reagent handling and storage	$3.5
Power and steam plant	$5.8
Water supply and treatment	$9.1
Plant control systems	$2.2
Tailings storage facility	$2.3
Site buildings	$2.0
Total Direct Costs	**$62.1**
Indirects, including EPCM, Spares & First Fills	$23.9
Owners Costs	$9.5
Total Indirect Costs, excluding Contingency	**$33.4**
Contingency	$4.5
Total Capital Cost Estimate (A$M)	**$100**

Note: figures may not sum due to rounding

6 Operating Cost Estimate

Table 4 provides a summary of the average operating cost estimate over years 2-20. An average long term exchange rate of A$/US$ 0.75 was applied.

Table 4: Average C1 Cash Costs[3] Years 2-20

Cost Centre	A$M. Years 2-20	A$ per kg Sc_2O_3 Years 2-20	US$ per kg Sc_2O_3 Years 2-20
Mining	$36	$39	$29
Processing	$458	$491	$368
Services	$12	$12	$9
General & Administration[4]	$47	$50	$38
Total Operating Cost	**$553**	**$592**	**$444**

Note: figures may not sum due to rounding

[3] Excludes royalties
[4] Includes an allowance for scandium oxide transportation cost

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A labour study was undertaken which determined a steady state operational manning requirement of 65 full time equivalent roles plus contractors for maintenance and mining.

Mining costs were estimated by OreWin assuming contractor mining. All processing inputs are derived from mass balance and process design criteria which were established based on the detailed testwork and pilot plant processing of Syerston ore in late 2015. All reagents and services costs are based on supplier quotes. Maintenance costs were derived from applying industry factors to the installed capital cost. Commonwealth, state and local government charges and levies are included as appropriate in the cost estimates.

The financial model also incorporated the impact of the 4% NSW state royalty (net of allowable deductions) and the 2.5% gross revenue royalty payable to Ivanhoe Mines.

7 Valuation & Sensitivity Analysis

A valuation of the Project was undertaken via an assessment of the discounted cash flows of the Project over the construction period and initial 20-year life based on inputs from the technical model/mass balance and the engineering cost estimate completed by GRES.

The model assumes an 8% discount rate, 100% equity finance and a 30% corporate tax rate. For the base case, no expansions of the mine were assumed.

A long term scandium price of US$$1,500/kg Sc_2O_3 was applied in the model. Based on extensive market research and engagement with potential end users, Clean TeQ believes that this price is necessary to facilitate the wider-scale adoption of scandium in key emerging industrial applications, such as high performance aluminium alloys.

Cash flows are discounted back to the start of Year 0 (commencement of the 18-month construction period) and include the impact of an 18-month commissioning and ramp up period to reach full capacity.

Based on this analysis the Project has a NPV (post-tax) of A$273M with an IRR (post-tax) of 33%.

A sensitivity analysis was also carried out to determine the effects of key variables in relation to a post-tax NPV of A$273M.

Table 5: Syerston Project NPV Sensitivity Analysis

NPV_8 (US$M)	+20%	+10%	Base	-10%	-20%
Autoclave Feed Grade	382	328	273	218	163
Capital Cost	252	262	273	283	294
Operating Cost	237	255	273	291	309
A$/US$	239	256	273	290	307
Scandium Oxide Price	382	328	273	218	163
Scandium Recovery	382	328	273	218	163

8 Environmental & Permitting

8.1 Environmental Impact Statement and Development Consent

An Environmental Impact Statement (**EIS**) was prepared in 2000 by Black Range Minerals as a requirement to apply for Development Consent for the Project. Potential environmental impacts, impact assessments, mitigation measures and environmental management, rehabilitation and monitoring strategies are documented in the EIS. The Project was granted Development Consent in May 2001 and a modified Development Consent was granted in 2006.

In April 2016 Clean TeQ applied for a modification of the Development Consent to include scandium oxide as a product and to operate an initial smaller scale scandium operation while preserving the approval for a larger nickel/cobalt operation which may be considered in the future. The modification is expected to be approved by the end of Q3, 2016.

The modification application included draft Voluntary Planning Agreements (**VPA**) which have been agreed with each of the local Shires outlining contributions that Clean TeQ will make to local road upgrades and road maintenance and contributions to a range of community based activities. These contributions are included in the Financial Analysis.

Resource Strategies Pty Ltd (**RSPL**) provided input into the environmental, community and permitting sections of the Development Consent modification. RSPL completed the EIS for Syerston for the Project's previous owners.

8.2 Water Borefield

Water investigations determined that the closest viable source of water for the Project is the Company's established borefield near the Lachlan River, approximately 65km south of the Project area. Black Range and Ivanplats Syerston completed the EIS and Development Consent assuming utilisation of this borefield.

Water Bore Licenses have been granted to the Project by the NSW Office of Water for 3.2GL p.a., providing sufficient capacity to meet the Project's immediate water requirements, as well as any future expansions. This access to water represents a key benefit for the Project. The estimated cost of the water pipeline has been included in the capital cost estimate.

9 Scandium Market

Scandium oxide offtake discussions are ongoing with the global transport and energy sectors.

While the potential applications of scandium are broad, Clean TeQ has focussed on two key areas: aluminium scandium alloys for light-weighting the global transport industry and the use of scandium in solid oxide fuel cells.

12/21 Howleys Rd, Notting Hill VIC Australia 3168
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9.1 Aluminium-Scandium Alloys for Aerospace

Aluminium-scandium (**Al-Sc**) alloys represent one of the critical alloys for future application in the aerospace, automotive, marine and rail industries. Al-Sc alloys are stronger than other high-strength aluminium alloys, strengthen welds, eliminate hot cracking in welds and exhibit high resistance to corrosion.

While Al-Sc alloys have been used in the aerospace industry for decades, their high price and the lack of a secure scalable supply of scandium have limited their use to high performance parts on military aircraft. However, over the last two decades a significant amount of development work has been undertaken on the use of Al-Sc alloys for commercial aircraft components.

The high strength and weldability of Al-Sc alloys means that future aircraft can significantly benefit from their broader application, through fuel savings by reduced weight and manufacturing costs.

Airbus has developed a scandium alloy product (Scalmalloy®), with a focus on its next generation A320-neo aircraft. Similarly, Boeing has been focused on the use of Al-Sc alloys in its 737MAX aircraft. Clean TeQ has a Collaboration Agreement with AP Works, a subsidiary of the Airbus Group, to develop and promote the use of Scalmalloy in aerospace and other applications.

Clean TeQ has a Collaboration Agreement with Universal Alloy Corporation (one of the world's largest extruded parts suppliers to the aerospace industry) and Deakin University to investigate the benefits of scandium addition to their alloys to improve overall strength and reduce total production time.

9.2 Aluminium-Scandium Alloys for Automotive

The potential application of Al-Sc alloys in the automotive industry is also highly significant. The amount of aluminium used in cars today ranges from 50 to 200kg per vehicle. However, aluminium competes with other lightweight materials for broader application and maintains a preferred position due to its unique advantages including availability, good recyclability and mass production capabilities at a reasonable price.

With a significant increase in the focus on light-weighting in order to meet existing and future fuel economy regulations, scandium is likely to play a key role in this sector. Clean TeQ is in discussion with several automotive companies and their suppliers to develop applications for scandium-containing alloys for a lighter weight automotive industry.

9.3 Solid Oxide Fuel Cells (SOFCs)

Fuel cells were invented over a century ago and have been used in practically every NASA mission since the 1960s. However, they have not gained widespread adoption until now because of their higher cost relative to other sources of baseload power. Solid Oxide Fuel Cells (**SOFCs**) hold the greatest potential of any fuel cell technology. With low cost ceramic materials and extremely high electrical efficiencies, SOFCs can deliver attractive economics.

SOFCs convert a fuel source (typically natural gas) and oxygen into electricity, water, carbon dioxide and heat. SOFC's use a hard ceramic material as a solid electrolyte between an anode and cathode, which, when subjected to high temperatures, catalyses the conversion of natural gas to energy. In the absence of scandium, the high temperatures quickly degrade the ceramic electrolyte, adding to the capital and maintenance costs of the units. The use of scandium in the solid electrolyte allows the system to operate at much lower temperatures than conventional SOFC's, lowering the costs and allowing the potential for wide spread adoption for distributed power generation.

10 Nickel/Cobalt Project and Next Steps

Clean TeQ is currently completing a Pre-Feasibility Study to evaluate the potential for a large scale Nickel/Cobalt project development at Syerston to produce nickel and cobalt sulphate products to supply growing demand from the lithium-ion battery sector (see ASX announcement of 22 August 2016). The deposit geology is such that the dedicated scandium project outlined in this release and the larger nickel/cobalt project have the potential to be developed independently of each other.

Clean TeQ has commenced discussions with a number of key participants in the lithium-ion battery industry to assess potential demand for nickel and cobalt sulphate from the Syerston Nickel/Cobalt Project. These participants include precursor and cathode manufacturers, LiB cell and battery manufacturers and end users of LiB batteries, as well as metals/chemicals traders. To date the Company has received strong initial expressions of interest for offtake of Syerston nickel sulphate and cobalt sulphate products. Work is underway for recommissioning the Clean TeQ pilot plant at the ALS facility within the next few months to produce samples for customer testing purposes.

This large scale Nickel/Cobalt project will also have the potential to produce significant quantities of scandium oxide as a by-product. Upon completion of the Nickel/Cobalt Pre-Feasibility Study the Company will be able to compare the two possible development scenarios for Sc_2O_3 production:

1) The small scale, Scandium-only Project which is the subject this Feasibility Study announced today; and,

2) The potential large scale Nickel/Cobalt project which will be the subject of the Nickel/Cobalt Pre-Feasibility Study currently underway.

In the event that the preferred development option is construction of a large-scale Nickel/Cobalt project, Clean TeQ expects that the bulk of the engineering and design work completed in this Scandium Feasibility Study can be incorporated directly into the larger project.

The Nickel/Cobalt Pre-Feasibility Study is anticipated to be completed by the end of September 2016 at which time the Company will update shareholders on the proposed development scenario. If the Company elects to adopt the large scale Nickel/Cobalt development scenario, it is anticipated that a Nickel/Cobalt Feasibility study will be immediately initiated with a target completion date of early Q4 2017.

12/21 Howleys Rd, Notting Hill VIC Australia 3168
PO Box 227, Mulgrave VIC 3170 Australia
T: +61 3 9797 6700 F: +61 3 9706 8344
W: www.cleanteq.com E: Info@cleanteq.com

For more information about Clean TeQ contact:

Sam Riggall, Executive Chairman or Ben Stockdale, CFO +61 3 9797 6700

About Clean TeQ Holdings Limited (ASX: CLQ) – Based in Melbourne, Clean TeQ, using its proprietary Clean-iX® continuous ion exchange technology, is a leader in metals recovery and industrial water treatment. For more information about Clean TeQ please visit the Company's website at www.cleanteq.com.

About the Syerston Scandium Project – Clean TeQ is the 100% owner of the Syerston Scandium Project, located in New South Wales. The Syerston Project is one of the largest and highest grade scandium deposits in the world.

The information in this document that relates to Exploration Results and Mineral Resources is based on information compiled by Sharron Sylvester, who is a Registered Professional Geoscientist (10125) and Member (2512) of the Australian Institute of Geoscientists, and a full time employee of OreWin Pty Ltd. Sharron Sylvester has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Sharron Sylvester, who is a consultant to the Company, consents to the inclusion in the report of the matters based on her information in the form and context in which it appears.

The information in this document that relates to Ore Reserves is based on information compiled by Bernard Peters, B. Eng. (Mining), FAusIMM (201743), who is a full time employee of OreWin Pty Ltd. Bernard Peters has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Bernard Peters, who is a consultant to the Company, consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

This release may contain forward-looking statements. The actual results could differ materially from a conclusion, forecast or projection in the forward-looking information. Certain material factors or assumptions were applied in drawing a conclusion or making a forecast or projection as reflected in the forward-looking information.

The Syerston Scandium Project is at the Feasibility Study phase and although reasonable care has been taken to ensure that the facts are accurate and/or that the opinions expressed are fair and reasonable, no reliance can be placed for any purpose whatsoever on the information contained in this document or on its completeness. Actual results and developments of projects and the scandium market development may differ materially from those expressed or implied by these forward looking statements depending on a variety of factors. A key conclusion of the Feasibility Study, which is based on forward looking statements, is that the Syerston Scandium Project is considered to have positive economic potential.

Syerston 2016 Feasibility Study JORC Code, 2012 Edition – Table 1

Section 4 Estimation and Reporting of Ore Reserves

Criteria	JORC Code explanation	Commentary
Mineral Resource estimate for conversion to Ore Reserves	· *Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.* · *Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.*	The Mineral Resources estimates that provide the basis for the Ore Reserve estimates are in the first part of this document. The Reserve is reported as Autoclave Feed tonnes and grades. The Measured and Indicated Mineral Resources reported in the first part of this document are inclusive of those Mineral Resources modified to produce the Ore Reserves.
Site visits	· *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* · *If no site visits have been undertaken indicate why this is the case.*	Bernard Peters visited the site on 12 August 2016. The visit included meetings with Scandium21 management, observing drilling for the bulk sample, pit and plant locations, borefield location and water pipeline route.
Study status	· *The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.* · *The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.*	The Syerston 2016 Feasibility Study has been undertaken to convert Mineral Resources to Ore Reserves. The mine plan is based on pit designs and modifying factors have been applied.
Cut-off parameters	· *The basis of the cut-off grade(s) or quality parameters applied.*	Autoclave acid consumption, post beneficiation autoclave feed grades, costs, NSR and value were applied to the blocks in the model to determine cut-off grade The Ore Reserve is based on an elevated cut-off grade of NSR A$1000/t. The marginal cut-off grade is approximately 140ppm Sc which is NSR A$360/t. Blocks with a value NSR > 0 A$/t and NSR < A$1000 /t were assigned as low grade and are stockpiled. The primary parameters for the cut-off are: Sc price applied is US$1500/kg Sc, recovery 88%, acid cost A$230/t, fixed processing costs of A$167/t, variable costs of $7.70/kg Sc and royalties.
Mining factors or assumptions	· *The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by*	The Mineral Resource model was regularised by a block size of 20 m E x 20 m N x 2 m RL Whittle pit optimisations were undertaken on the resource model with relevant dilution, cost, revenue and geotechnical inputs taken into

12/21 Howleys Rd, Notting Hill VIC Australia 3168
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W: www.cleanteq.com E: Info@cleanteq.com

Criteria	JORC Code explanation	Commentary
	optimisation or by preliminary or detailed design). · *The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.* · *The assumptions made regarding geotechnical parameters (e.g. pit slopes, stope sizes, etc.), grade control and pre-production drilling.* · *The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).* · *The mining dilution factors used.* · *The mining recovery factors used.* · *Any minimum mining widths used.* · *The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.* · *The infrastructure requirements of the selected mining methods.*	consideration Resultant 20-year pit shell was used for the detailed pit designs taking into account geotechnical considerations The Ore Reserve estimate is based on Measured and Indicated Mineral Resources. Inferred Resources are not included in the estimate Mining of Ore is planned to be undertaken on 1 m benches. Dilution and mining losses have been assumed to be include in the Resource model. The Syerston Feasibility Study considered infrastructure requirements associated with the conventional excavator and truck mining operation including pre-beneficiation, crushing and conveying systems, dump & stockpile locations, plant and maintenance facilities, access routes, fuel, water and power. Inferred Resources have been assumed to have zero grade.
Metallurgical factors or assumptions	· *The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.* · *Whether the metallurgical process is well-tested technology or novel in nature.* · *The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.* · *Any assumptions or allowances made for deleterious elements.* · *The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole.* · *For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?*	Processing of the ore comprises of: ore comminution, High Pressure Acid Leaching, Resin-In-Pulp and elution for scandium extraction, and purification via a multi-step precipitation process. Waste streams are neutralised prior to disposal in a Tailings Storage Facility. The use of High Pressure Acid Leach (HPAL) for laterite mineralisation is widely used within industry. The use of Resin-In-Pulp (RIP) is a novel unit process for laterite processing. However Clean TeQ has developed the process for RIP in laterite ore processing and scandium over 12 years, which has included multiple large scale piloting on several laterite deposits. Extensive metallurgical testwork and piloting has previously been carried out on several ore types and composites over the Project. Variability testing was completed on mineral samples which represented the first 5 years of production. Bench scale testwork for the purification process was also carried out, producing large scandium oxide samples used for customer testing. Based on the results of the metallurgical testing, a processing plant recovery of 88% was assumed. This includes a 91% HPAL extraction and 98% for RIP. An 18-month ramp up period was assumed.

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		The acid consumption calculation used for the Project was developed, with consideration for the main elements in the orebody contributing to acid consumption. The factors applied to each element was based on analysis of multiple samples and composites over the deposit. A large scale pilot plant operation was carried out on Syerston bulk sample, representing material likely to be processed in the first 10 years of operation.
Environmental	· *The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.*	Waste will be used in the walls of the TSF. No separate waste dump is planned. Additional waste from outside the pits is to be mined for construction of the TSF walls. The study has allowed for rehabilitation of the TSF in line with the EIS and Development Consent conditions in place. Erosion control measures will be provided along with the relocation and spreading of stockpiled topsoil material. Flora and fauna will be established in line with the development consent and EIS requirements
Infrastructure	· *The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.*	Processing plant and associated infrastructure is provided for in the project capita cost, including power and water supplies, off-site road upgrades as required under the Development Consent conditions for the project. The project lies within EL 4573 and several MLA's overlay the same project area. The company has 100% ownership of the EL and MLA's, as well as freehold ownership of the project area, and water rights for the project. The company has a water licence for 3.2GLp.a. from a bore field located 65km south of the Project area. A water pipeline will be constructed to supply water to the project and has been allowed for in the capital estimate. The borefield and water pipeline were a part of the EIS completed on the project. The Project is well serviced by roads, both for transport and access to the local communities for labour accommodation. As a part of the Development Consent in place on the project, upgrades to certain sections of roads have been agreed. The costs for these upgrades have been accounted for in the financial model. Transport of all bulk commodities and reagents to site are via road, with the main transport routes identified.
Costs	· *The derivation of, or assumptions made, regarding projected capital costs in the study.* · *The methodology used to estimate*	Projected mining capital costs have been calculated on the basis of contractor mining. The capital cost for the processing facility and associated infrastructure was derived by GR

12/21 Howleys Rd, Notting Hill VIC Australia 3168
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	operating costs. · *Allowances made for the content of deleterious elements.* · *The source of exchange rates used in the study.* · *Derivation of transportation charges.* · *The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.* · *The allowances made for royalties payable, both Government and private.*	Engineering Services with inputs from SNC-Lavalin, Clean TeQ and OreWin based on quotations for the study. The flowsheet and mass balance used to derive the design criteria is based on metallurgical testwork. These design criteria form the basis for design and equipment sizing. A 1.25% of directs was applied for sustaining capital each year of operation plus the cost of tailings dam wall lifts. Mining is to be undertaken by a mining contractor and operating costs were calculated from budget quotations. NSW state and Ivanhoe private royalties have been included. All costs are in Australian Dollars, with an exchange rate of US$ 0.75:1 A$ was assumed. Product transport costs are included. Mining and process plant production schedules were prepared from the pit design bench reporting and ore types. Process inputs to the operating cost model were established from a mass balance model and design criteria for all unit operations. Unit rates for reagents, utilities and consumables were based on vendor quotations. Operational labour numbers were established through development of a site organisational structure. The processing plant assumed a full time workforce with only contract labour used for certain ancillary positions. The mine includes a small supervisory team managing the mining contractor. Labour rates were provided by a human resources consultant. Maintenance consumables were derived as a percentage of direct costs for each unit processing area. Transportation charges are included in the unit rates for inputs as all costs are on a free in store basis. The study assumes that the refinery for scandium oxide is on site. No allowances were made for penalties for failure to meet specification.
Revenue factors	· *The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.* · *The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-*	A long term price of US$1,500/kg is used for a 99.9% purity scandium oxide, was assumed for the life of the project. The derivation of the price was based on extensive discussions within the aerospace and automotive industries to establish the price requirements to facilitate broader adoption of aluminium-scandium alloys (the estimated main market for scandium oxide). The current market price is estimated to be US$2,000/kg, however is very volatile due to the

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	products.	small and fragmented nature of the market. A long term stable price below this value will provide incentive for market uptake of scandium-containing aluminium alloys. A fixed exchange rate of US$0.75:1 A$1.00D was used for the life of mine. Head grades for the processing plant were established through a mine schedule. Treatment, refining and transportation charges were calculated via an operating cost model with estimates for costs calculated for each period. No allowance was made for penalties.
Market assessment	· *The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.* · *A customer and competitor analysis along with the identification of likely market windows for the product.* · *Price and volume forecasts and the basis for these forecasts.* · *For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.*	Current demand for scandium oxide is estimated at 15tpa for 99.9% purity product. The majority of scandium oxide production is through by-products, mainly titanium dioxide waste treatment and mining by-products. Only small scale production exists at each supply site, meaning the supply of scandium oxide is heavily fragmented. There is no terminal market for scandium, with most contracts being direct from supplier to consumer. While the majority of world scandium oxide supply is being consumed in solid oxide fuel cell production, the fragmented opaque nature of the market tends to limit its adoption in other applications, such as aluminium scandium alloys. Large scale primary scandium oxide production is likely to drive stability in the scandium market, making more material available at a steady price, which is a key driver for adoption of aluminium scandium alloys in the global transport sector. Other than current small scale by-product producers, there are 4 other identified scandium deposits in Australia, all at different stages of development. These projects provide additional potential large scale scandium oxide production in the future, which provides potential customers with lower-risk, diversified supply options. The largest potential market for the material is in lightweight aluminium alloys for transport, with particular focus on aerospace and automotive. The adoption of aluminium-scandium alloys in these industries is likely to be via replacement of heavier materials or through more expensive or exotic materials required to reduce weight and/or improve performance. A large stable supply base of scandium is required in order to provide customers with the confidence to support adoption of these materials into their components. Scandium21 has spent the last 2 years engaging with all levels in the aluminium alloy and solid oxide fuel cell supply chain in order to make a

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		determination on the price point for the study. The impact of Syerston scandium oxide production on the world market is significant, as it currently represents 3-4 times the world consumption. However, Scandium21 expects that direct marketing with customers will generate sufficient base-load demand to ensure the profitability of the mine. Clean TeQ has Collaboration Agreements with both Airbus APWorks, UAC and KBM Affilips to develop the scandium market for aerospace and other industrial sectors. A long term price of US$1,500/kg scandium oxide has been assumed as it provides a price point where this broader scale adoption can be considered by these industries. The initial capacity of 49tpa scandium oxide provides sufficient material to service early market adopters. As the market grows, the ability to expand the capacity of the operation as well as the establishment of new sources of supply will be key to ensure the long term growth of the market. The development and establishment of the scandium market is a significant factor is required for the project results to be achieved. A product specification of 99.9% has been used based on the specifications from both the solid oxide fuel cell and aluminium industries. In order to establish supply contracts, a sample of material needs to be provided. This has been completed for both industries.
Economic	· *The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.* · *NPV ranges and sensitivity to variations in the significant assumptions and inputs.*	The financial model uses the assumptions noted above and the Ore Reserve. The base case assumes a discount rate of 8% and has an NPV of A$273M. Results were calculated for a range of discount rates. No inflation or escalation assumptions were made. A company tax rate of 30% was applied. Sensitivity analysis of +20% and -20% of key variables were carried out, with NPV_8 ranging from A$163M to A$382M. Key sensitivities are autoclave feed grade, scandium price and scandium recovery.
Social	· *The status of agreements with key stakeholders and matters leading to social licence to operate.*	A Development Consent has been granted by the New South Wales government for the project based on an EIS submitted in 2000. Approvals for a modification to this consent to allow scandium oxide as a product has been submitted, June 2016, and is awaiting final approval. Voluntary planning agreements with local councils have been agreed in principle and subject to approval of the Development Consent

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		Modification by the NSW Department of Planning.
Other	· *To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:* · *Any identified material naturally occurring risks.* · *The status of material legal agreements and marketing arrangements.* · *The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.*	A Development Consent is currently in place for the project. The company has applied for a modification to the development consent for the inclusion of scandium oxide as a product from the site, as well as the provision for an initial small scale operation for scandium production. It is anticipated that this modification will be approved in Q3, 2016. An EL and MLA's are currently in place over the project area. A mining lease will be required to be granted prior to commencement of construction on site. There are no offtake agreements for scandium oxide currently in place for material produced from Syerston. A portion of the production capacity of the plant will need to be secured under offtake prior to commencement of operation on site. An EIS was completed for the Project, including the water pipeline and did not highlight any material risks. Subsequent environmental studies completed on the project have not identified any material risks to the Project.
Classification	· *The basis for the classification of the Ore Reserves into varying confidence categories.* · *Whether the result appropriately reflects the Competent Person's view of the deposit.* · *The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).*	The Ore Reserve estimates are based on the Mineral Resource estimates classified as 'Measured' and 'Indicated' after consideration of all mining, metallurgical, social, environmental and financial aspects of the project All Proved Ore Reserves were derived from the Measured Mineral Resources and all Probable Ore Reserves were derived from the Indicated Mineral Resources The Ore Reserve classifications reflect the Competent Person's view of the deposit
Audits or reviews	· *The results of any audits or reviews of Ore Reserve estimates.*	The study has been the subject of internal review by Clean TeQ and the contributing consultants prior to completion. No external audits of the Feasibility Study have been undertaken at the date of publishing.

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Discussion of relative accuracy/ confidence	· *Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.* · *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* · *Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.* · *It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	The accuracy and confidence levels of the study are suitable for the reporting of Ore Reserves in a Feasibility Study as defined in the JORC Code 2012. The Ore Reserve is a global estimate and is based on optimisation of the entire Mineral Resource. Modifying Factors were developed individually for the appropriate inputs to the study. The use of the elevated cut-off grade reduces the impact of any potential increases in cost, reduction in recovery, or reduced productivities. A significant area of uncertainty is the development and size of the scandium market. This may not directly impact the size of the Ore Reserve but could impact the rate at which it can be produced.

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