

ASX Release  
29 November 2018

## Lithium Hydroxide Scoping Study: San Jose Delivers Outstanding Results

### Scoping Study – Cautionary Statement

The Study referred to in this announcement is a preliminary technical and economic investigation of the potential viability of the San Jose Lithium-Tin Project. It is based on low accuracy technical and economic assessments, (+/- 35% accuracy) and is insufficient to support estimation of Ore Reserves or to provide assurance of an economic development case at this stage; or to provide certainty that the conclusions of the Study will be realised.

Infinity is in Joint Venture with Valoriza Minería SA, a subsidiary of SACYR SA. Infinity have independently engaged the services of Wave International Pty Ltd ('Wave') to assess the technical and economic viability with regards to producing battery grade lithium hydroxide under the San Jose Project. Whilst the Scoping Study has yielded robust outcomes and provided independent perspective on the opportunity to produce battery grade lithium hydroxide, there is no guarantee that the JV will choose to adopt the outcomes of the study.

The Production Target referred to in this presentation is based on 91% Indicated Resources and 9% Inferred Resources for the life of mine life covered under the Study. In accordance with the twenty four (24) year mine plan incorporated into the Study, the first three (3) years of production (covering payback period) will come 96% from Indicated Resources.













The Study is based on the material assumptions outlined below. These include assumptions about the availability of funding. While the Company considers all the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the Study will be achieved. To achieve the potential mine development outcomes indicated in the Study, additional funding will be required. Investors should note that there is no certainty that the Company will be able to raise funding when needed however the Company has concluded it has a reasonable basis for providing the forward looking statements included in this announcement and believes that it has a "reasonable basis" to expect it will be able to fund the development of the San Jose lithium deposit.


To achieve the outcomes indicated in this Study, initial funding in the order of US\$288.3m (which includes a 10% contingency) will likely be required, and US\$343.9m (including a 10% contingency) over the life of the Project. Investors should note that there is no certainty that Infinity will be able to raise funding when needed. There is a pathway for Infinity to acquire a further 25% interest, going to a total of 75% interest in the San Jose project, with Valoriza Minería contributing a pro-rata 25% interest in the cost of development. It is also possible that Infinity can pursue a range of funding strategies to provide funding options. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of Infinity's existing shares. It is also possible that Infinity could pursue other value realisation strategies such as sale, partial sale, or joint venture of the Project. If it does, this could materially reduce Infinity's proportionate ownership of the Project. Given the uncertainties involved, investors should not make any investment decisions based solely on the results of this Scoping Study.

## San Jose Lithium Project Lithium Hydroxide Scoping Study

Infinity Lithium Corporation Limited (ASX:INF) ('Infinity', or 'the Company') is pleased to advise it has completed a Scoping Study ('the Scoping Study') with regards to the development of the San Jose Lithium Project ('the Project') including the production of battery grade lithium hydroxide. The Company had previously completed the lithium carbonate scoping study (ASX announcement 18 October 2018) which demonstrated the potential for a robust lithium chemicals development project strategically located in the Extremadura region of Spain. The delivery of the lithium carbonate scoping study and submission of the Mining Licence Application ('MLA') resulted in the earn-in to 50% project interest in the Project special purpose vehicle under the terms of the Project joint venture ('JV') agreement. The decision by the Company to shift the Project's focus from a lithium carbonate towards a lithium hydroxide output is consistent with the evolving battery market and that lithium hydroxide is a higher value battery chemical product due to it offering more energy capacity, longer life cycle and safety when compared to lithium carbonate cathodes.

### Scoping Study Project Economics (100% Project Basis)

NPV <sub>10</sub> NPV <sub>10</sub>	Pre-tax		US\$717m <sup>(1)</sup> US\$1,017m <sup>(2)</sup>	NPV <sub>8</sub> NPV <sub>8</sub>	Post-tax		US\$631m <sup>(1)</sup> US\$905m <sup>(2)</sup>
IRR	Pre-tax		51% <sup>(1)</sup>	IRR	Post-tax		37% <sup>(1)</sup>
Average OPEX			US\$5,343/t	CAPEX (Start-Up)			US\$288m <sup>(3)</sup>
Gross Operating Cash Flow (1 <sup>st</sup> 10 years production)			US\$122m pa	Payback Period			2.3 years
Project Life			24 years	Resource (2 <sup>nd</sup> largest in EU)			1.6Mt LCE
Annual Production of lithium hydroxide			14-15kt pa	Annual ROM			1.25Mt pa

 Fully integrated hard rock based project, from mining to producing battery grade lithium hydroxide, using a proven and low cost process, and generating high margins in a low risk environment.

Assumed Sales Price: (1) Average LOM LiOH US\$ 14,896/t  
(2) Average LOM LiOH US\$ 17,733/t

Assumed CAPEX: (3) All CAPEX includes 10% contingencies  
NPI CAPEX included at Start-up US\$11m (Inception to year 2)  
Ongoing CAPEX US\$17m (year 3 to 7)

ASX: INF ANNOUNCEMENT

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## San Jose Lithium Project Lithium Hydroxide Scoping Study

### SUMMARY

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- **Pricing Scenario 1:**  
Project generates NPV<sub>10</sub> of US\$717 million (pre-tax) with an IRR (pre-tax) of 51% at average LOM lithium hydroxide price of US\$14,896/t over LOM
- **Pricing Scenario 2:**  
Project generates NPV<sub>10</sub> of US\$1,017 million (pre-tax) with an IRR (pre-tax) of 74% at average LOM lithium hydroxide price of US\$17,733/t over LOM
- Project generates US\$5.1 billion in revenue and over US\$126 million in free cashflow (pre-tax) per annum, driving payback period of circa 28 months<sup>(1)</sup>
- Initial operational project life of 24 years, producing a high-quality lithium hydroxide
- Start-up capital cost including 10% contingency of US\$288 million
- Total capital cost including 10% contingency of US\$344 million
- Operating costs of less than US\$5,350/t, generates a robust operating margin of more than US\$9,562/t on Pricing Scenario 1
- Significant potential to enhance economics through the inclusion of by-product credits (tin and boron)
- Discussions continue to advance with strategic financiers, including global offtake companies
- Very high confidence with 91% indicated resource over LOM

Footnotes:

(1) Free cash flow generated in the 2<sup>nd</sup> year of production





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## Introduction

Infinity Lithium Corporation Limited (ASX:INF) ('Infinity', or 'the Company') is pleased to advise it has completed a Scoping Study ('the Scoping Study') with regards to the development of the San Jose Lithium Project ('the Project') including the production of battery grade lithium hydroxide. The Company had previously completed the lithium carbonate scoping study (ASX announcement 18 October 2018) which demonstrated the potential for a robust lithium chemicals development project strategically located in the Extremadura region of Spain. The delivery of the lithium carbonate scoping study and submission of the Mining Licence Application ('MLA') resulted in the earn-in to 50% project interest in the Project special purpose vehicle under the terms of the Project joint venture ('JV') agreement.

The rapidly evolving market and demand for battery grade lithium chemicals has seen a significant shift in the requirement for battery grade lithium hydroxide. Electric vehicles continue to maintain the position of the major driver in lithium chemical demand, and the dominant position of nickel-rich lithium hydroxide-based cathodes used in the production of lithium-ion batteries ('LIB') has seen a shift in the Project's focus from a lithium carbonate towards a lithium hydroxide chemical output.

The Scoping Study that has been completed in the production of lithium hydroxide is underpinned by extensive technical work and delivery of the prior lithium carbonate findings. The Scoping Study confirms that the Project's economic, financial and technical aspects are all robust, and highlights Infinity's potential to become a significant, long-life, high margin lithium hydroxide producer located strategically in Western Europe.

	<b>Lithium-ion battery evolution supporting lithium hydroxide growth</b>	<ul style="list-style-type: none"> <li>The rapidly evolving market and demand for battery grade lithium chemicals has seen a significant shift in the requirement for battery grade lithium hydroxide.</li> <li>Electric vehicles continue to maintain the position of the major driver in lithium chemical demand, and the dominant position of nickel-rich lithium hydroxide-based cathodes used in the production of lithium-ion batteries ('LIB') has seen a shift in the Project's focus from a lithium carbonate towards a lithium hydroxide chemical output.</li> </ul>
	<b>Solid results from the Scoping Study confirming the path to lithium hydroxide</b>	<ul style="list-style-type: none"> <li>The Scoping Study that has been completed in the production of lithium hydroxide is underpinned by extensive technical work and delivery of the prior lithium carbonate findings.</li> <li>The Scoping Study confirms that the Project's economic, financial and technical aspects are all robust, and highlights Infinity's potential to become a significant, long-life, high margin lithium hydroxide producer located strategically in Western Europe.</li> </ul>
	<b>San Jose's project features low OPEX</b>	<ul style="list-style-type: none"> <li>With an OPEX at \$5,343 per tonne of lithium hydroxide, Infinity's San Jose Project clearly sits at the lower end of the cost curve due to its fully integrated model.</li> <li>Beneficial location with world class infrastructure in place in addition to operating in an environment of a proactive mining region with no royalties payable.</li> </ul>
	<b>Revenues supported by strong pricing led by tremendous growth</b>	<ul style="list-style-type: none"> <li>Lithium hydroxide contracts prices are expected to remain strong in the future and at a pricing premium when compared to lithium carbonate, and mostly fixed on a long-term basis.</li> <li>Lithium hydroxide demand is projected to grow faster than carbonate, and supply will continue to be impacted by slow ramp ups and delays in addition to difficulties in providing the product to a high specifications and consistent purity.</li> </ul>



#### Strong financials highlighting a unique opportunity

- NPV<sub>10</sub> of US\$717m pre-tax, using realistic long-term average basket pricing assumption of US\$14,896 per tonne of lithium hydroxide.
- IRR at 51% pre-tax.
- Payback: 2.3 years from start of production.



#### Europe chasing behind China in the E-mobility race

- There is a wave of investment in Europe to support the development of electric cars including the construction of lithium-ion battery giga-factories as well as a number of cathode plants.
- The European Union ('EU') notes their intention to de-risk the lithium-ion battery supply through investment and developing domestic production. Europe is expected to become the second largest EV manufacturer and battery producer after China, leading to ongoing robust demand for battery raw materials.



#### San Jose to provide property to the Extremadura region

- VAT derived from the San Jose Project retained within Extremadura.
- More than 200 jobs created through mining and processing activities with a projected 1,000 supplementary jobs created in the region (excluding jobs created in the construction of the processing plant) will benefit in reducing:
  - Extremadura's unemployment rate (Q3 2018) in excess of 21%;
  - Reliance of approximately 400,000 people or more than 35% of the Extremadura population on approximately €700 per month, with more than 480,000 people (44.3%) at risk of poverty<sup>(1)</sup>;
  - Unemployment affects 45% of young people, and Extremadura loses 200 people aged between 20-39 every month because of emigration<sup>(1)</sup>.

(1) El Pais "Extremadura se ahoga" 4<sup>th</sup> November 2018 ("Extremadura drowns")



#### Infinity's Managing Director Ryan Parkin commented;

*"Infinity has been able to capitalise on evolving market conditions and this Scoping Study clearly demonstrates the significant advantages in the production of a higher value lithium chemical end product, lithium hydroxide. The evolution of cathode technologies used in higher density lithium-ion batteries has seen greater opportunities to capitalise on burgeoning electric vehicle demand for battery grade lithium chemicals, and in particular leaves Infinity well placed to alleviate geographical supply side risk of European cathode and battery producers.*

*The Scoping Study demonstrates that the long-life San Jose Lithium Project has suitable production scale capable of providing a materially significant option for cathode producers to diversify within Europe, whilst the long mine and processing life aligns to many European nations' targeted reduction in emissions and phase out of internal combustion engine ('ICE') vehicles. European automakers continue to launch large scale electrification plans and the region is projected to become the second largest electric vehicle market in the world.*

*The high margins and low operating cost environment benefit from a resource with a low strip ratio and economic benefits derived from processing variations aligned to lithium hydroxide production from hard rock sources. There is further upside yet to be factored in through the potential to generate by-product credits, as currently the attractive economic outcomes detailed throughout the Scoping Study are derived solely through the production of battery grade lithium hydroxide."*



## IMPORTANT INFORMATION

### Competent Persons Statements

Snowden Mining (2017) and Cube Consulting (2018) estimated the total Mineral Resource for the San Jose lithium deposit using Ordinary Kriging interpolation methods and reported above a 0.1% Li cut-off grade. Full details of block modelling and estimation are contained in the ASX announcement dated 5 December 2017 and updated 22 May 2018.

The Resource which supports this Study was announced to the ASX on the 22 May 2018. Infinity is not aware of any new information or data that materially affects the information included in this ASX release, and Infinity confirms that, to the best of its knowledge, all material assumptions and technical parameters underpinning the resource estimates in this release continue to apply and have not materially changed.

The resource information in this report that relates to the December 2017 and updates in May 2018, updated Mineral Resources is based on the information compiled by Mr Patrick Adams, FAusIMM CP (Geology) and Mr Adrian Byass B.Sc Hons (Geol), B.Econ, FSEG, MAIG. Mr Adams and Mr Byass have sufficient relevant professional experience with open pit and underground mining, exploration and development of mineral deposits similar to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Person(s) as defined in the 2012 Edition of JORC Code. Mr Adams has not visited the project area and has relied on the documented (Byass, 2016-2018, Peters, May 2017) drilling, logging and sampling techniques used by Infinity in collection of data used in the preparation of this report. Mr Adams is a Principal Geologist and a Director of Cube Consulting Pty Ltd and consents to be named in this release and the report as it is presented. Mr Byass is employed by Infinity as a geologist and has visited the site during pre and post drilling activities, and consents to be named in this release and the report as it is presented.

Production Target and Scoping Study: The information in this report that relates to Exploration Results is based on the information compiled or reviewed by Mr Adrian Byass, B.Sc Hons (Geol), B.Econ, FSEG, MAIG and an employee of Infinity. Mr Byass has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the JORC Code. Mr Byass consents to the inclusion in the report of the matters based on this information in the form and context in which it appears.

## IMPORTANT INFORMATION

### Forward Looking Statements

Some of the statements contained in this report are forward looking statements. Forward looking statements include but are not limited to, statements concerning estimates of tonnages, expected costs, statements relating to the continued advancement of Infinity's projects and other statements which are not historical facts. When used in this report, and on other published information of Infinity, the words such as "aim", "could", "estimate", "expect", "intend", "may", "potential", "should" and similar expressions are forward-looking statements. Although Infinity believes that its expectations reflected in the forward-looking statements are reasonable, such statements involve risk and uncertainties and no assurance can be given that actual results will be consistent with these forward-looking statements. Various factors could cause actual results to differ from these forward-looking statements include the potential that Infinity's projects may experience technical, geological, metallurgical and mechanical problems, changes in product prices and other risks not anticipated by Infinity.

Infinity are pleased to report this summary of the Scoping Study and believe that it has a reasonable basis for making the forward-looking statements in this announcement, including with respect to any mining of mineralised material, modifying factors, production targets and operating cost estimates.

This announcement has been compiled by Infinity from the information provided by the various contributors to the Scoping Study.

## Executive Summary

San Jose is a lithium-tin deposit located in the Extremadura region of western Spain. Infinity holds an equal 50% interest in the project with its partner, Valoriza Minería and has an agreement to go to 75% through the completion of a feasibility study on the deposit. San Jose is the site of tin mining until the 1960's and has been the subject of a historic feasibility study for the production of lithium carbonate on site, which was completed in 1991, and a Scoping Study to produce battery-grade lithium carbonate in 2017. This Scoping Study summarises the results of work completed over the past 28 months since announcement of the Joint Venture ('JV') between Infinity and Valoriza Minería.

The location of the Project is shown in Figure 1. The deposit is located within tenement 10343-00 P.I "Valderflorez" that was awarded to the Valoriza Minería in June 2016 after a public tender process run by the regional Extremadura government seeking parties to develop the San Jose deposit. Infinity announced its JV agreement with Valoriza Minería to the ASX on 14<sup>th</sup> June 2016 in which Infinity can earn at its election up to 75% in the project.



FIGURE 1: PROJECT LOCATION

The proposed development scenario outlined in this study is to mine lithium mica and treat this material using a sulphate roast and water leach process to produce battery grade lithium hydroxide on site. The production rate of circa 15,000 tonne per year (range of 12,100-15,120 tpa) of battery grade lithium chemicals was chosen based on deposit and market optimisation. The project is located and will be operated in Europe with operating expenses largely denominated in Euro (€) and revenue is denominated in US dollar (US\$). Valuations will be in US\$ for the basis of this study.

The project NPV is calculated on a 100% ownership basis, discounted utilising a weighted average cost of capital at 10% (pre-tax) and derived using cashflow modelling over the life of mine. The input and deterministic parameters used in this Scoping Study have been delivered to a range of +/- 35%. The range accommodates the fundamental uncertainty over many aspects of design and operation as well as pricing and other forecast



assumptions. This will be refined and estimate ranges reduced during the feasibility study process. A sensitivity analysis was conducted relating to capital, operating and product price. The greatest driver of NPV sensitivity is product pricing.

Whilst Infinity has been progressing the parallel lithium carbonate feasibility study, additional work has been undertaken to assess the opportunity to undertake a deviation in the process flow sheet to produce battery grade lithium hydroxide. The progression of the lithium hydroxide technical option study and scoping study is in direct response to evolving cathode and lithium-ion battery technologies towards a lithium hydroxide-based product.

Based on the inherent level of accuracy in a Scoping Study and reasonable estimates of capital and operating input cost variations, the base case, pre-tax NPV (weighted average cost of capital 10%) is US\$717.2 million under a base case pricing scenario, moving towards US\$1,017 million under Infinity's long-term pricing methodology. Over the anticipated life of the mine (LOM) production will average 14,338 of lithium hydroxide per year. The average over the first 10 years of full production is 14,757 tonnes of lithium hydroxide per year.

Material Assumptions and key economic metrics for the project on a 100% basis are presented in Table 1.

Parameter	Unit	Amount
Initial Life of Mine ('LOM') <sup>(1)</sup>	years	24.1
Project initial LOM ore feed	Mt	28.5
Average Strip Ratio	x:x	1.2 : 1
Indicated Resources	Mt	59.0
Inferred Resources	Mt	52.2
Annual throughput prior to beneficiation	Mt	1.25
Annual throughput process plant	Mt	0.52
Process plant feed grade average LOM	%	1.4%
Overall plant recovery	%	50%
Potential annual production of lithium hydroxide	t	15,120
Average LOM production of lithium hydroxide	t	14,338
Capital expenditure including 10% contingency	US\$	343.9m
Average C1 cost LOM without by-product credits*	US\$/t	5,343
Average long-term lithium hydroxide price	US\$/t	14,896
Revenue from lithium hydroxide (life of project)	US\$	5,121.1m
Gross operating expenses (life of project)	US\$	1,838.5m
Average gross operating cashflow per annum LOM	US\$	126.3m
Base case pre-tax NPV (WACC 10%)	US\$	717.2m
Base case pre-tax IRR	%	50.9%
Payback from commencement of production	years	2.3

(1) 16 year mine schedule and 8.1 year stockpile schedule. In total a 24.1 year production of battery grade lithium chemicals.

**TABLE 1: SAN JOSE ECONOMIC METRICS AND KEY ASSUMPTIONS (100% BASIS)**

There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Measured or Indicated Mineral Resources or that the Production Target or preliminary economic assessment will be realised.

(\*) Potential tin and boron credits are available and are being assessed in the ongoing optimisation studies. Additional work is required to define a value of the potential by-product credits, or if it would be economic to extract a value from these credits.

An average sales price assumption of US\$14,896/t LOM has been made for battery grade lithium hydroxide. This is based on assessment of price trends and market commentary LOM. Spot lithium hydroxide prices ex China as at October 2018 were US\$18,875 per tonne (Benchmark Mineral Intelligence) and reflect increased import tariffs. Please refer to Section 3.3.2 Product Pricing for more detail.

The San Jose Lithium Project is located in the Extremadura, western Spain. Spain is considered a low sovereign risk investment destination and enjoys a transparent mining law, no government royalties on mining and a low tax rate (corporate tax rate 25%). Extremadura is extremely well endowed with infrastructure and the Project is a recipient of adjoining electricity, road, and water and gas infrastructure.

Europe is a major consumer of lithium (approximately a third of worlds demand is consumed in Europe) but is a very small producer. Approximately 2% of the world's lithium is currently produced in Spain and Portugal. Infinity believes that the publicised expansion in European lithium demand, primarily led by battery storage requirements for electric vehicles and renewable energy projects will be a significant advantage to the potential development of the San Jose Lithium-Tin project.

Infinity currently holds an equal 50% interest with its partner, Valoriza Minería in the San Jose project. Valoriza Minería is a subsidiary of the large Spanish construction and engineering company Sacyr SA. Sacyr operates internationally and is an IBEX 35 traded stock with a market capitalisation in excess of €1.2 billion (approximately US\$1.4 billion). Under the terms of the JV agreement, upon completion of a feasibility study and Infinity earning a 75% Valoriza Minería would be a pro-rate contributing partner to construction and operational funding.

The San Jose Lithium Project has a very large JORC 2012 Mineral Resource Estimate. The majority of mineralisation is in the Indicated resource category (Table 2);

Classification	Tonnes (Mt)	Li(%)	Li <sub>2</sub> O (%)	Sn ppm
Indicated	59.0	0.29	0.63	217
Inferred	52.2	0.27	0.59	193
<b>TOTAL</b>	<b>111.3</b>	<b>0.28</b>	<b>0.61</b>	<b>206</b>

**TABLE 2: SAN JOSE MINERAL RESOURCE, REPORTED ABOVE 0.1% LI CUT-OFF**

*Estimated using Ordinary Kriging methodology. Note: Small discrepancies may occur due to rounding*

Lithium (Li) mineralisation is commonly expressed as either lithium oxide (Li<sub>2</sub>O) or lithium carbonate (Li<sub>2</sub>CO<sub>3</sub>) or Lithium Carbonate Equivalent (LCE). Lithium Conversion:

1.0% Li = 2.153% Li<sub>2</sub>O

1.0%Li = 5.32% Li<sub>2</sub>CO<sub>3</sub>

1.0% Li<sub>2</sub>CO<sub>3</sub> = 0.880% LiOH.H<sub>2</sub>O

Cube Consulting estimated the total Mineral Resource for the San Jose lithium deposit using Ordinary Kriging interpolation methods and reported above a 0.1% Li cut-off grade. Full details of block modelling and estimation are contained in the ASX announcement dated 5 December 2017 and updated 23 May 2018.

The Resource was last updated in Q2 2018 (ASX release 23 May 2018). Infinity is not aware of any new information or data that materially affects the information included in this ASX release, and Infinity confirms that, to the best of its knowledge, all material assumptions and technical parameters underpinning the resource estimates in this release continue to apply and have not materially changed.

Opportunities to include potential by-product credits including tin and boron are being investigated. There remains a further opportunity to consider the intermediary product of lithium sulphate, produced as part of Infinity's process flow sheet pathway to production of battery grade lithium hydroxide, as an alternative saleable product.

Due to the repetition of the mining plan, total material movement, area of impact and large parts of the process flow sheet, the scope of work undertaken as part of the lithium carbonate Scoping Study (announcement 18 October 2017) provided sufficient comfort for significant components of the Project, including previous technical work and analysis undertaken relating to non-process infrastructure, waste management, permitting and approvals, access and environmental. The process flow sheet clearly illustrates the potential to deviate post the lithium sulphate recovery process to produce either a lithium carbonate or lithium hydroxide end product and therefore the prior work undertaken up to this stage in the integrated project was amended for changes made at the front end of the process relating to updated geotechnical work and updated mining operating cost estimates. In the case of mining and other related operating costs a review has been done and there has been a small increase made to reflect current mine contracting conditions and rates by Mining Sense. Capital cost items for the process plant have been calculated from a fresh mechanical equipment list calculated by Wave and non process infrastructure ('NPI') has been reviewed and increased by Mining Sense.

#### Next Steps - Background to Work Undertaken

The lithium hydroxide Scoping Study was undertaken by Infinity to assess the opportunities available under the San Jose Lithium Project in the production of lithium chemicals. The lithium carbonate Scoping Study was announced on 18 October 2017 noting a viable and robust project in the production of battery grade lithium carbonate, however rapidly evolving cathode compositions required in the production of lithium-ion batteries has provided an opportunity for Infinity to assess a deviation in the processing flow sheet and consider the implications of producing battery grade lithium hydroxide. Electric vehicles are projected to be the major driver on lithium chemicals demand, and the movement towards higher energy density (high nickel content) and therefore vehicles with greater ranges comparatively to gross battery size require a lithium hydroxide-based cathode. Infinity responded to lithium chemicals market movements with the announcement of a technical option study with the announcement on 8 June 2018 confirming the ability to produce battery grade lithium hydroxide.

Infinity completed the technical grade feasibility study in response to the expressions of interest of industry participants and in particular the burgeoning demand for battery grade lithium hydroxide. The outcomes of the technical option study were presented by lithium industry leaders and experienced engineering company Wave International, leading to the progression towards a more detailed lithium hydroxide Scoping Study.

Infinity are in a position whereby the outcomes of the lithium hydroxide Scoping Study can be presented to the JV as a viable alternative to the production of lithium carbonate, and thereafter amended the progression of a feasibility study which will refine the inputs of this Scoping Study. Additional work will be undertaken on potential by-product credits to improve the Projects economics even further.

Additional drilling was undertaken and the JORC resource updated since the announcement of the October 2017 lithium carbonate Scoping Study. Further details contained in Section 4.2 highlight the subsequent upgrade in JORC resource which extended the mineralisation and increased resource category confidence within the open pit modelled under the October 2017 Scoping Study. The December 2017 updated mineral resource estimates included a 140% increase in tonnes in the Indicated resource category to 57.3 million tonnes, which was further refined with improvements in the quality and confidence levels through positive geotechnical works categorising another 1.7 million tonnes in the Indicated resource category in May 2018 (total Indicated resource 59.0 million tonnes).

Further work with regards to geotechnical studies has been conducted and it is likely that wall angles could be steepened. Drilling was conducted in 2017 and 2018 and Infinity believes that sufficient drilling has now been conducted to complete a feasibility study as defined under the JV agreement.

Infinity will continue to assess the opportunity to consider the intermediary product of lithium sulphate as an alternative saleable product resulting from the work undertaken for the delivery of the lithium hydroxide Scoping Study. The production of lithium sulphate as a proven alternative lithium chemicals end product provides another route, however the priority remains in the advancement of a fully integrated lithium chemicals project in the production of specialised battery grade lithium hydroxide. The amendment of the end product and requirements to deliver a feasibility study would require approval of the JV partners Valoriza Minería SA and the resubmission or amendment of the MLA.

#### **Next Steps – Project Advancement**

Infinity are encouraged by the robust opportunities presented by the lithium hydroxide Scoping Study and will continue to work collaboratively to assess the requirements to complete a feasibility study under the existing JV agreement in the production of lithium chemicals. In anticipation of amendments required under the MLA and earn in provisions of the JV agreement, Infinity considers the progression towards a lithium hydroxide pre-feasibility study as logical and advantageous in direct response to lithium chemical industry movements. The JV partnership will assess the outcomes of the lithium hydroxide Scoping Study and consider the implications of adapting the end lithium chemicals product.

Infinity, following support and in collaboration with the JV partners, would seek to progress technical work towards the completion of the lithium hydroxide pre-feasibility study and the delivery of a feasibility study within 12-18 months post pre-feasibility study. The next steps would include further metallurgical test work programs as required in the delivery of the feasibility study. Further test work and derivation of a program will include optimisation of beneficiation grade and recovery, extensive roasting optimisation, reagent recycle optimisation and confirmation of impurity removal.

The above noted test work will inform an updated process design criteria on which process plant engineering and design can be commenced to de-risk the capital and operating costs.

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## 1 INTRODUCTION

Infinity Minerals Limited ('Infinity', or 'the Company') has completed a lithium hydroxide Scoping Study (the 'Study') on the San Jose Lithium Project located in the Extremadura region of western Spain. This Scoping Study has been produced by Infinity and is separate to the required technical documents that form part of the public, Mining Licence Application which was lodged by Infinity and our partner, Valoriza Minería SA. The results of the Scoping Study confirm the Project has the potential to become a leading producer of lithium hydroxide as well as carbonate in Europe for the burgeoning lithium-ion battery and cathode industry.

Infinity proposes to develop a lithium hydroxide operation by treatment of lithium micas at San Jose by sulphate roasting and crystallisation on site. The Company will expand its review the lithium market as part of the feasibility study, including the possibility of producing lithium hydroxide.

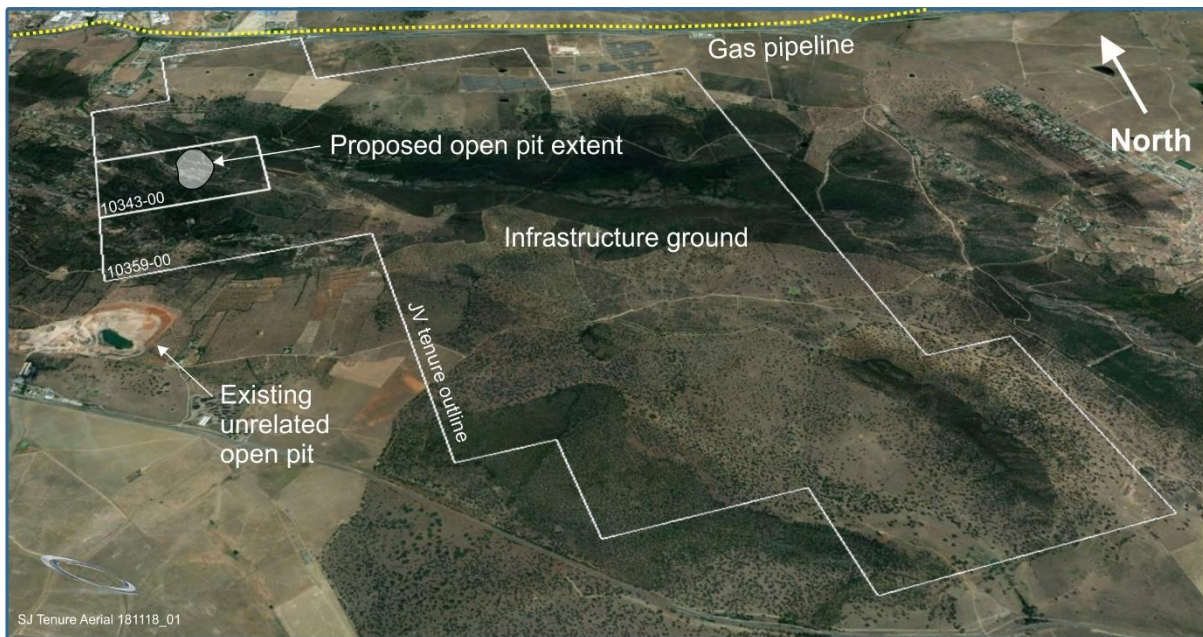
The preparation of the Scoping Study documentation was undertaken by a range of accredited and widely experienced consultants engaged by Infinity who managed this Study. These consultants in Spain and Australia include:

- Snowden Mining Consultants (Australia);
- Cube Consulting (Australia);
- Wave International (Australia);
- Knight Piesold (Australia);
- IMO Project Services (Australia);
- Mining Sense (Spain)
- Valoriza Minería (Spain); and
- AGQ laboratories (Spain).

The Company has used an in-house team of experienced technical staff to manage the work conducted to date on the Project and coordination of the Study program outcomes.

### 1.1 Location

The San Jose Lithium-Tin Project is located approximately 280km west-southwest of Madrid in the region of Extremadura. The Project open pit development is in a narrow valley (Valhondo Valley) directly to the east of the town of Cáceres. The town has a population of between 80 and 100 thousand people. Figure 2 shows the mineralisation within the project tenure.



**FIGURE 2: SAN JOSE DEPOSIT WITHIN TENEMENT BOUNDARY OVER AERIAL PHOTOGRAPH**

The climate in the site area is relatively dry with an average annual rainfall of about 505 mm and an average evapotranspiration rate of around 1,300 – 1,400 mm/year.

## 1.2 Study Team

### Owner's Team

Ryan Parkin	Australia	Managing Director
Vincent Ledoux Pedailles	UK	VP European Corporate Strategy & Business Development
Adrian Byass	Australia	Technical Director
David Valls Santos	Spain	Country Manager
Jesus Montero Gonzalez	Spain	Mining Engineer

### Consultants

Process and Plant	Australia	Wave International
Metallurgical Testwork & Management	Australia	IMO
Metallurgical Testwork	Germany	Dofner Anzaplan
Resource and Geotechnical	Australia	Cube Consulting
Resource and Geotechnical	Australia	Snowden Mining Consultants
Waste Dump Design and Stability	Australia	Knight Piesold
Logistics	Spain	Mining Sense (Spain)
Environmental	Spain	Valoriza Minería (Spain)
Permitting	Spain	Valoriza Minería (Spain)

## 1.3 Historical Feasibility Study

Tolsa S.A. completed a feasibility study for the production of lithium carbonate between 1987-1991 which involved extensive drilling, mining optimisation, process flow sheet design (including the process route selected by Infinity) and economic modelling. This study pre-dated and does not comply with JORC and ASX reporting requirements. Infinity completed a Scoping Study for the production of battery grade lithium carbonate (ASX release October 2017) which utilised historical data in conjunction with current test work. A large amount of technical work including drilling, geotechnical, environmental, hydrogeological and process metallurgy is readily incorporated into the current lithium hydroxide Scoping Study. Extensive data has been gathered and this has been used in some instances to provide supporting assumptions and input into the Scoping Study when alternative test work has not been conducted by Infinity or its consultants.

In regards to the lithium carbonate feasibility Study, Infinity purchased the rights to access and utilise this data for the benefit of this and further studies at the San Jose lithium-Tin Project and is bound by certain confidentiality clauses in the agreement with Tolsa S.A. Key aspects and findings of the Tolsa study are incorporated into this Scoping Study. These are yet to be fully validated (through equivalent feasibility level test work) by Infinity and are incorporated in several places and taken at face value.

## 2 ECONOMICS

### 2.1 Capital costs estimates

The capital estimates for the San Jose project based on the production of up to 15,120tpa of battery grade lithium hydroxide. The estimate is considered a Class 5 estimate (+/- 35% accuracy) and it is considered to be suitable for a preliminary project evaluation and the basis for further optimisation and de-risking work (Table 3).

#### Start Up CAPEX

	Capital Cost Category	US\$
Summary	General	18.0m
	Non-Process Infrastructure <sup>(1)</sup>	10.4m
	Processing Plant	233.7m
	<b>Total Ex-Contingency</b>	<b>262.1m</b>
	Contingency at 10%	26.2m
	<b>Total</b>	<b>288.3m</b>

(1) Non-Process Infrastructure CAPEX schedule as provided by Mining Sense (Spain) totalling US\$60.9m over the life of the project.

#### Total CAPEX over LOM

	Capital Cost Category	US\$
Summary	General	18.0m
	Non-Process Infrastructure	60.9m
	Processing Plant	233.7m
	<b>Total Ex-Contingency</b>	<b>312.6m</b>
	Contingency at 10%	31.3m
	<b>Total</b>	<b>343.9m</b>

Processing Plant	Crushing & Milling	15.7m
	Flotation & Tails	13.3m
	Mica & Sulphation	40.1m
	Water Leach	31.6m
	Sulphate Recovery & Precipitation	24.8m
	Purification & Precipitation	38.9m
	Product Handling	4.8m
		<b>169.2m</b>
	Pre-Production Costs	5.3m
	Indirect Costs	59.2m
	<b>Total Ex-Contingency</b>	<b>233.7m</b>
	Contingency at 10%	23.4m
	<b>Total</b>	<b>257.1m</b>

TABLE 3: CAPITAL COST ESTIMATES

### 2.2 Operating costs estimates

Operating costs are inclusive of mining, processing, infrastructure, waste storage, administration and product transport Free on Truck (FOT) at mine gate. An inclusive C1 cost is presented below in Table 4 with all costs allocated into appropriate mining/waste storage and processing. The major cost component of producing

lithium hydroxide on site is projected to be the mineral and hydrometallurgy processing components as detailed in Table 4.

	Operating Costs	US\$/t Lithium Hydroxide
<b>Summary Operating Costs</b>	General Costs	117
	Mining Costs	731
	Processing Costs	4,494
	<b>Total</b>	<b>5,343</b>
<b>Processing Plant Operating Costs</b>	Reagents	1,101
	Consumables	1,117
	Process Plant Labour	731
	Process Plant Electrical	860
	Process Plant Maintenance	339
	Process Plant General & Admin	346
	<b>Total</b>	<b>4,494</b>

**TABLE 4: OPERATING COST BREAKDOWN PROCESS PLANT OPERATING COSTS**

### 2.2.1 Mining

Mining is expected to use conventional drilling and blasting, truck and shovel open pit mining. All material is to be drilled and blasted and loaded by an excavator in backhoe configuration onto articulated dump trucks. The trucks will haul high grade ore via an appropriately constructed haul road to the onsite process facility. Lower grade ore will be hauled to an ore stockpile and stored for processing once all the higher grade ore has been depleted. Waste rock will be directly hauled by the same trucks to an appropriately constructed waste dump.

Mining costs are based on quotation and available information collated and summarised by Mining Sense, largely from comparable mining operations in Spain. Costs are allocated on a contract mining basis and include mining, transport to beneficiation plant and waste movement and storage. Infinity partner's in Spain, Valoriza Minería have several resource projects and engage contract mining services.

Previous underground tin mining at the San Jose Lithium Project was limited in scale and depth and is not considered to make a material impact on recovery of resources or the ability to mine using conventional bulk-mining methods.

### 2.2.2 General and administration

A number of general and administration costs have been allowed for in the operating cost estimate including, including insurances, freight, consultants, tenement fees, communications, and office expenses and process plant related, have been derived from a number of sources. These costs have been sourced from a variety of Spanish and Australian sources and reflect general mining operations and site/regional specific circumstances.

### 2.2.3 Labour

The labour costs have been estimated using an organisation chart for a typical mine and hydrometallurgical refinery. The organisation chart has been populated with personnel to cover specific roles within the plant operation. The required number of process plant operating personnel has been based on a 24 hour per day operation. The shift roster is based on 3 by 8 hour operating shifts with 1 shift on off days. The total number of



process plant personnel has been estimated at 135. The rate for each identified role in the organisation chart has been based on similar project studies based in Europe.

#### 2.2.4 Power and gas

For the Scoping Study it has been assumed that power will be available from the national electricity grid at commercial tariffs. Power requirements for the project were determined from a mechanical equipment list developed for each area of the Project. The primary power station cost is modelled at US\$0.098/kWh based on standard commercial tariff rates, which includes power provider costs. There is the potential to lower the electrical power usage costs through the negotiation of a long-term supply agreement. Initial power requirements have been estimated at approximately 16,658kw per annum.

There is a reticulated gas pipeline within 1,500m of the proposed plant site and that has been assumed to be available on commercial tariffs. Gas will be used for heating in the roasting process. Gas costs have been estimated to be US\$6/Mmbtu which are within the range of commercially available supply. The Extremadura region has benefitted from recent (2008) installation of gas infrastructure which includes that proposed for access at the San Jose facility.

Natural gas required for the kiln is a significant input into the operating costs. Access to gas from the neighbouring gas pipeline has been assumed as per normal industrial use and equivalent tariffs for bulk gas access assumed. The gas requirement has been estimated by a specialist thermal processing engineer, ANSAC Pty Ltd and verified to the level of this study by Wave International. This calculation is based on assumed data of concentrate mass flow, concentrate composition and the required kiln temperature and residence time. Additional work to finalise gas consumption is required in ongoing work and flow sheet optimisation.

#### 2.2.5 Reagents and consumables

Reagent consumptions have been based on the process mass balance with the criteria for each reagent backed up by the test work conducted as part of the study where available. Where test work was incomplete, reagent consumptions have been derived based on the known or expected chemistry. Reagent costs are on the basis of delivered to site to suit the local region and include components such as freight, handling, storage, documentation and transport to site. Costs have been reviewed for variation in the case of items previously consumed in the lithium carbonate Scoping Study and obtained from current market pricing in relation to larger quantities of new reagents and consumables related to lithium hydroxide (i.e. sodium hydroxide).

Consumables consumptions have been based on the process mass and energy balance and the in-house data base to suit equipment specific requirements calculations.

#### 2.2.6 Maintenance

Maintenance costs for the process plant equipment have been based on a fixed percentage of the equipment capital cost for each area. The maintenance percentage varies depending on the type of equipment and process conditions of operation in each area.

These percentage values have been developed from experience with similar operations and equipment.

### 3 SUPPORTING DATA

The following key assumptions and inputs used as part of the financial modelling and are presented on a 100% project basis. This analysis has been made assuming pre-tax revenue and excluding depreciation and costs of financing. No allocation has been made in the capital or operating costs analysis for the extraction of potentially economic by-products of tin or boron in the Study. Additional work is ongoing to include these in future studies.

#### 3.1 Project Ownership and Joint Venture Agreement

Results are presented on a 100% basis. The JV Agreement between Infinity and Valoriza Minería allows Infinity to earn up to 75% interest in San Jose. Upon mine development Valoriza Minería has the potential to be a pro-rata 25% contributing partner to mine development and capital costs. Infinity has earned a 50% interest and expects to increase its ownership to 75% of the Project through the completion of the feasibility study. The JV company which is equally held by Infinity and Valoriza Minería is the sole owner of the San Jose Lithium Project (See Section 7 and Section 8).

Economic analysis was conducted using the capital, operating and resource information compiled by Infinity.

#### 3.2 Results

Table 5 contains the key economic outcomes of the Scoping Study.

Summary	Key Economic Outcomes	
	Life of Mine ('LOM')	16 years
	Life of Production	24 years
	Annual Processing Plant Capacity	15,200 t/pa
	Capital Costs (including 10% contingency)	US\$ 343.9m
	Average C1 Cost Life of Project	US\$ 5,343 /t
	<b>NPV (pre-tax)</b>	<b>US\$ 717.2m</b>
	<b>IRR</b>	<b>50.9%</b>
	Payback period (from start of production)	2.3 years

**TABLE 5: KEY ECONOMIC OUTCOMES**

There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Measured or Indicated Mineral Resources or that the Production Target or preliminary economic assessment will be realised.

The above results are based on the assumptions in Table 6 and no escalator factors have been applied to revenue or costs.

General	Assumptions	
	Discount Rate (pre-tax)	10%
	Foreign Exchange Rate (€:US\$)	1.14
	Royalties Payable	nil
Pricing Range	Lithium Hydroxide Price (US\$/t) - low	12,197
	Lithium Hydroxide Price (US\$/t) - high	15,397

Conversion Factors	Li <sub>2</sub> O : Li <sub>2</sub> CO <sub>3</sub>	2.473
	LiOH.OH : Li <sub>2</sub> CO <sub>3</sub>	0.880
Recoveries	Beneficiation	65%
	Hydromet	77%

TABLE 6: ECONOMIC ASSUMPTIONS

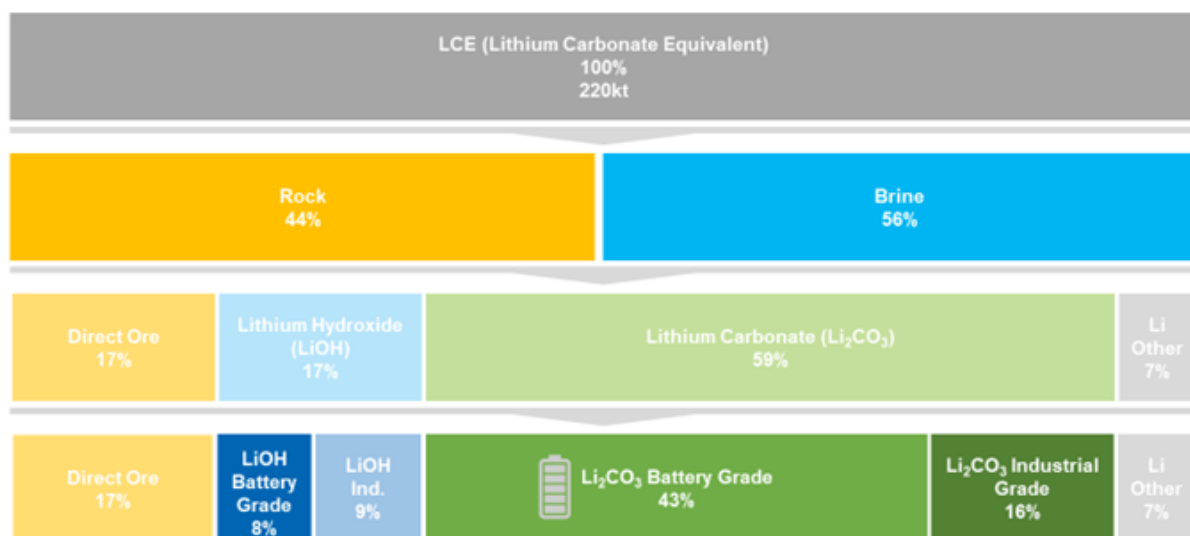
### 3.3 Market Overview

Lithium is produced from either brine-based deposits or from hard-rock mineral deposits. The brine production is derived predominantly from South America and more precisely from Chile, followed by Argentina. Lithium brine is extracted from salt flats and pumped into ponds where it is stored and water evaporated for up to a year. Lithium is then purified into lithium chemicals.

Lithium can also be produced from hard rock mining and the majority of this form is derived from spodumene in Western Australia. The lithium is often shipped to China as either direct shipping ore ('DSO') or as spodumene concentrate to China where it is further processed to lithium battery chemicals.

#### 3.3.1 Supply

Lithium carbonate presently accounts for the majority of all forms of lithium chemicals, followed by lithium hydroxide. Lithium carbonate and hydroxide are then further split into either battery grade or technical grade classifications. Lithium hydroxide has traditionally been used in the production of greases and lubricants, but the rapidly changing dynamic in battery cathode technologies has seen a surge in demand for high purity lithium hydroxide. Lithium derived from hard rock mining can also be used directly as a mineral into technical applications such as heat proof glass and ceramics.

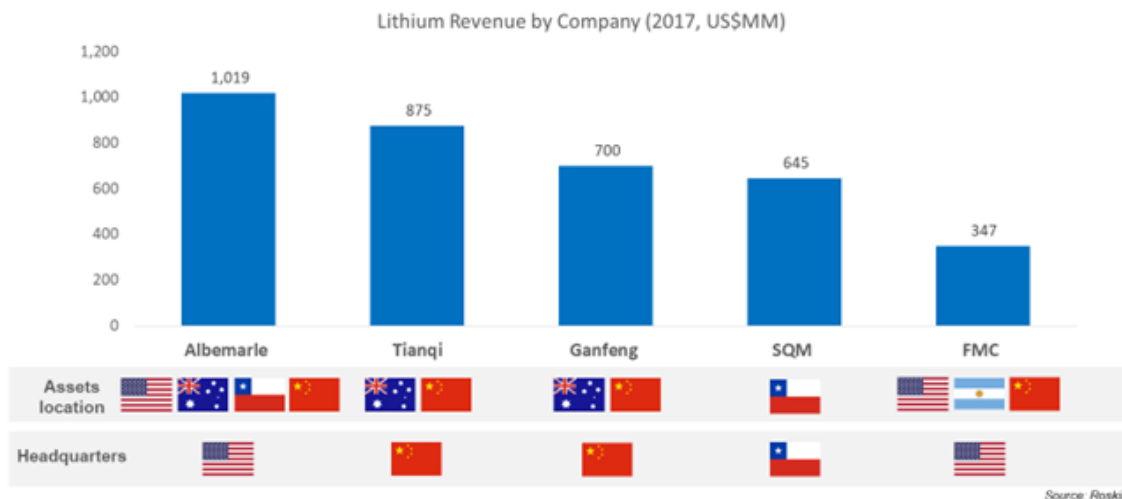


Source: Roskill, Macquarie, Morgan Stanley, Estimates

FIGURE 3: LITHIUM CARBONATE EQUIVALENT ('LCE') ALLOCATION - 2017

Lithium supply was dominated by 4 major participants for a number of years, and in 2014 they accounted more than 90% of market share. There are now more producers and more projects coming on stream competing with existing players and therefore reducing their market share. Albemarle, SQM, Tianqi and FMC

accounted for around 70% of global supply in 2017. The above noted market shares represent lithium production from brine and hard rock sources, however it does not represent lithium which is converted into lithium chemicals, where the Chinese players dominate.



**FIGURE 4: TOP LITHIUM COMPANIES BY REVENUE - 2017**

Supply is under constant pressure to satisfy demand. The process of bringing a lithium plant on stream is complicated and takes a long time. In 2012 the expected capacity requirements projected to be completed by 2017 was expected to amount to 2.5 times the actual 2012 capacity with a mix of expansions and new projects. However, almost 50% of the expected capacity did not come on stream and now between 2017 and 2025, supply needs to increase 4-5 times to match with demand.

Most brines are situated in adverse location with high altitude, very hot and dry weather and far away from cities and transport infrastructure. It makes building lithium sites logistically, technically and humanly, difficult and expensive. The requirement to provide a lithium product of sufficiently high specification can have long lead times and is hard keep specifications of the lithium consistent.

Each brine source is unique therefore every project is unique and can't be replicated. Furthermore, brines have varying amounts and types of impurities which needs to be reduced to a minimum for battery grade product. Developing a battery grade product takes a long time and to get the battery-grade specification right and approved by the customer is challenging. It is not unusual for a lithium producer's output to require further refining by another company to reach the required grade.

Many brines are located in very remote places with harsh climates. Brine operations have evaporation ponds, however they are subject to climatic risk noting rainfall can affect the concentration process and lead to production delays

Lithium produced from hard rock sources are likely to growth faster than brine supplies for a number of reasons. Hard rock is faster to bring on stream than a plant based on brine, with many hard rock resources located in safe and mining friendly countries such as Australia or Canada.

Lithium hydroxide, which is becoming the preferred chemical for cathode production, is increasingly produced from hard rock. It involves a straight conversion process as opposed to a brine, which first need to produce carbonate and then convert it to hydroxide. However, the issues affecting lithium chemicals derived from hard rock sources is not the underlying process but rather the concentration of process facilities. Very few companies are both mining spodumene and converting it into battery grade lithium chemicals. There are hard rock miners

who sell their product to Chinese third-party converters and there are a number of converters with limited experience, leading to financial instability. There are many other factors influencing conversion efficiency such as the feedstock grade, the age of the conversion plant and environmental inspections.

More conversion processing plants are planned in Australia with a number of market participants planning to build lithium hydroxide plants domestically. It is crucial to develop integrated conversion facilities in order to improve operating costs and margins.

### 3.3.2 Demand

In 2017, lithium demand was estimated around 224,000 tonnes. Traditionally lithium has been used in industrial applications including glass, ceramics, grease, synthetic rubber, pharmaceuticals and air treatment. In 2017, industrial applications still accounted for the majority of lithium demand. However, it is rapidly changing due largely to lithium usage in batteries. In recent years, lithium has been increasingly used in batteries for portable devices such as laptops, mobile phones, power tools and cameras. Today lithium demand is driven largely by electric mobility ('eMobility') applications including not only electric cars but also electric buses, bikes and scooters.

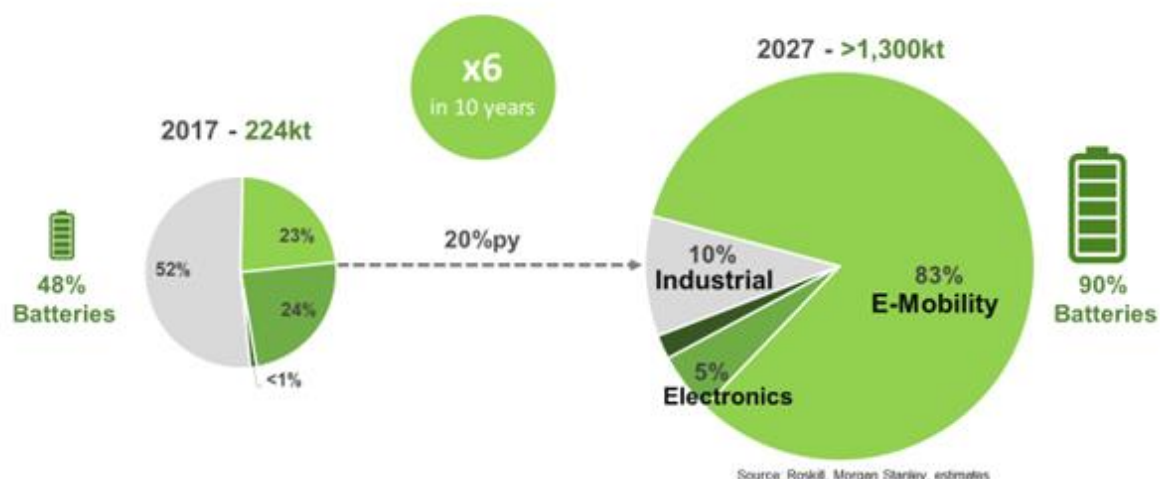


FIGURE 5: eMOBILITY LEADING GLOBAL LITHIUM DEMAND

Total lithium demand is expected to grow at around 20% per annum to 2027 with the size of the market being multiplied by 6 times within 10 years. Battery applications are responsible for most of this growth, accounting for more than 90% of demand by 2027. Electric cars are primarily driving this increase in demand as opposed to hybrids, as they have much larger battery packs and the size of the battery packs are increasing.

LIBs are also used for storage of electricity and are an indispensable technology to EVs. An exponential number of LIBs are therefore needed to keep pace with the rapid growth of this market. The LIB market was merely approximately 2GWh in 2000, however by 2017 it was estimated at more than 134GWh, a growth mostly led by demand in portable devices. From 2017 to 2025, projected growth will be led by demand in EVs and energy storage applications.



FIGURE 6: EVs LEADING GROWTH IN LIB DEMAND

In order to be able to feed demand, battery manufacturers are building giant plants, or so called Mega or Giga factories (>1 GWh capacity) ensuring economies of scale. Today there are more than 42 mega factories across the world, with Benchmark Mineral Intelligence projecting an increase from 135 GWh in 2017 to almost 1,000 GWh by 2028. This continued growth will not only be progressed solely in the traditionally dominant Asian LIB factories, but also in Europe. There is a wave of investment in new battery capacity on the old continent however many investments to date have been made by Asian based companies including Samsung, LG Chem, SK Innovation. However, there are some European based organisations such as Northvolt planning giga capacities in Europe. Tesla has also flagged Europe as the site for its third battery plant.

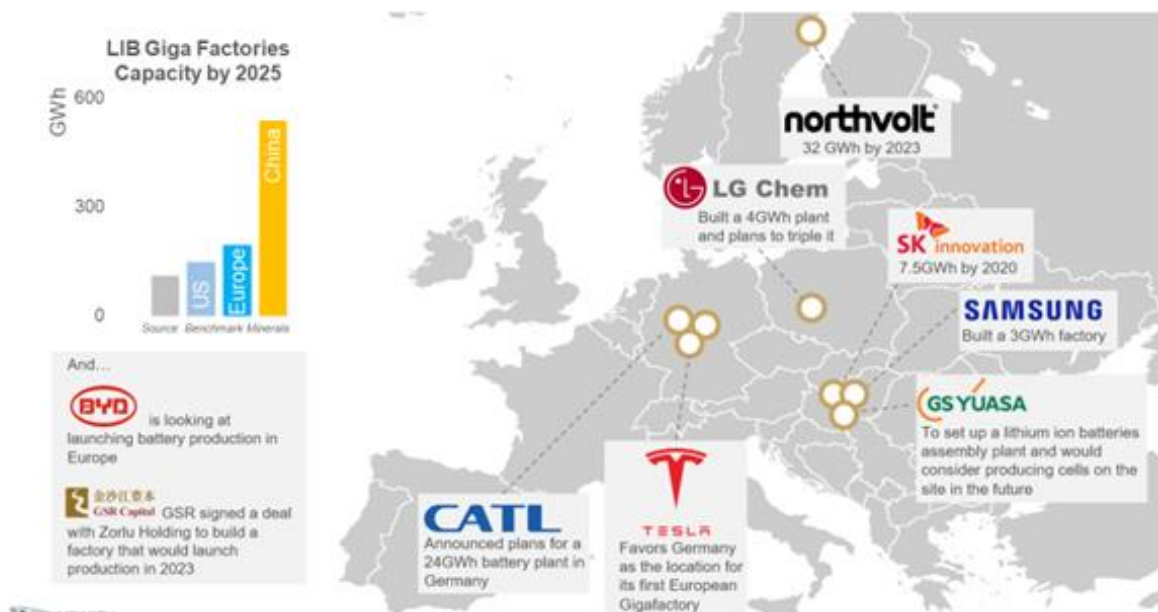


FIGURE 7: LITHIUM-ION FACTORIES PLANNED FOR EUROPE



The commitment to invest in large LIB factories in Europe is important for the automotive industry, however back integrating production into cell manufacturing and cell components such as cathodes is vital if Europe wants to truly be a major battery producer.

The large majority of battery components are produced in Asia. Cathode production is dominated by Chinese companies followed by Japanese and South Korean cathode producers. Those cathodes and other battery components will be used in European factories, therefore the batteries produced in Europe will not truly be a domestic product. However, Europe is also starting to move towards building its own cathodes and other battery components. Umicore, BASF and Johnson Matthey have all announced plans supporting this strategy.

The cathode is the largest cost component of a battery cell and where key products such as lithium, cobalt, nickel and manganese are required. In each cathode technology there is a different blend of raw materials. An NMC (or NCM) cathode utilises nickel, manganese and cobalt, and its applications are dominating the EV space and other eMobility applications. Cathode producers have expressed a desire to reduce their reliance on cobalt. The movement towards higher nickel content cathodes increases the energy density of LIBs (and therefore range for EVs), noting the shift towards this evolving technology is reliant on battery grade lithium hydroxide as opposed to lithium carbonate.

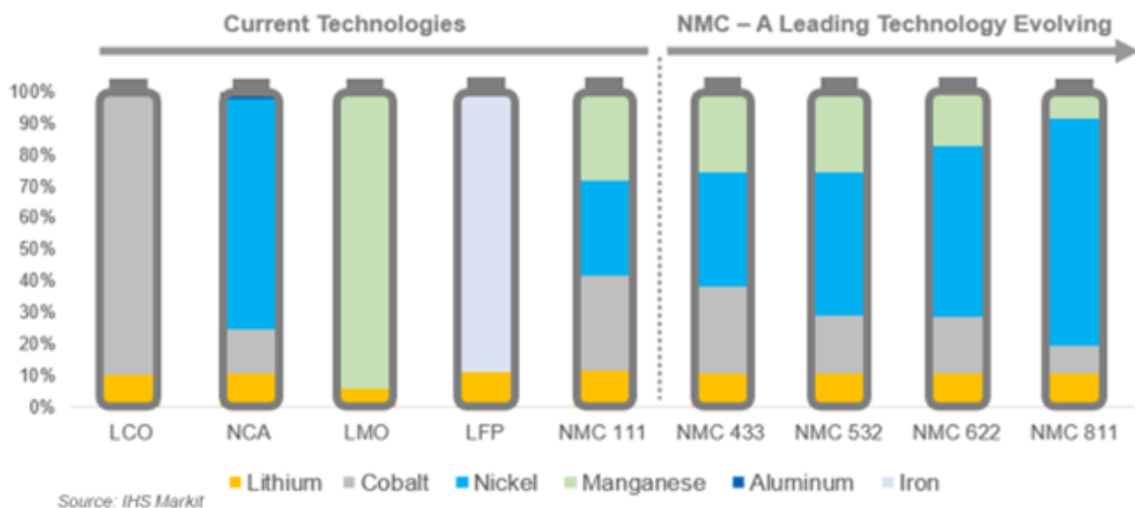


FIGURE 8: LIB CATHODE COMPOSITION TRENDING TOWARDS NMC

Moving towards nickel-rich cathodes and advanced battery technology requires:

- 1) the need for high purity lithium; and
- 2) the need for lithium hydroxide.

The demand for lithium hydroxide is forecast to surpass lithium carbonate before the mid 2020's, growing at 40% per annum over the next 10 years. Lithium players understand that demand has adapted and thus recent expansion announcements and new projects have been linked to hydroxide. Furthermore, cost is a major consideration in the production of lithium hydroxide a straight conversion process is possible from hard rock resources. Brines need to produce lithium carbonate and then further convert it to hydroxide. There is the potential that future lithium carbonate demand will be largely sourced from brines and lithium hydroxide from hard rock.

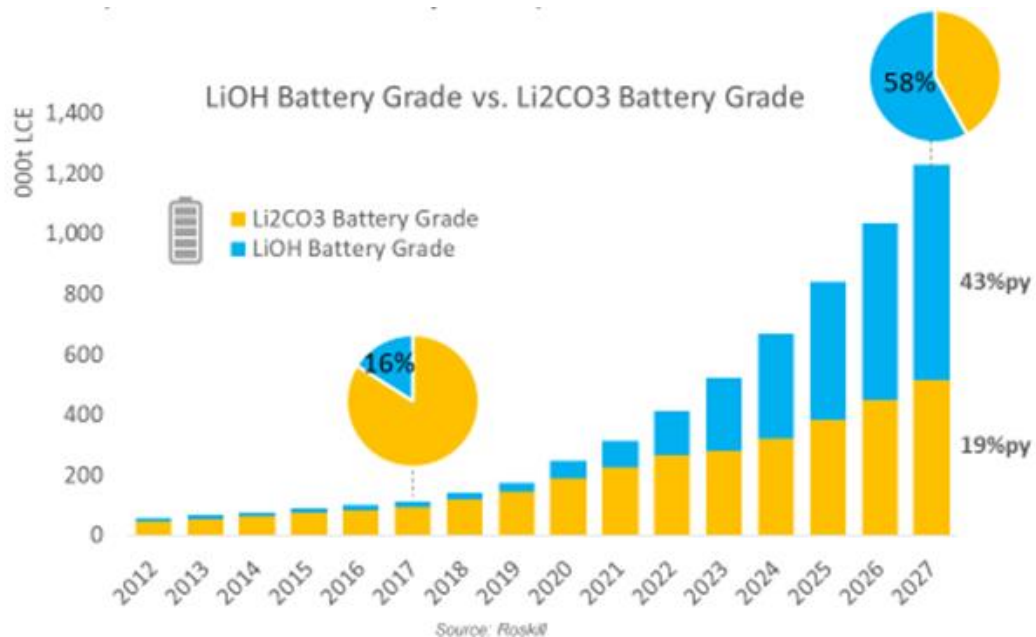


FIGURE 9: BATTERY GRADE LITHIUM CARBONATE AND HYDROXIDE OUTLOOK

#### Lithium-ion Battery Supply Chain Integration

The LIB supply chain remains very fragmented. From extracting raw materials to converting them to chemicals, producing precursors, battery components, cells and packs to finally manufacturing EVs, integration is limited. With the tightening of the market and higher prices for several battery raw materials, not only battery makers but also EV producers are starting to invest upstream. Battery producers are also increasingly signing offtake agreements with lithium, cobalt and nickel producers in order to secure long term supply.

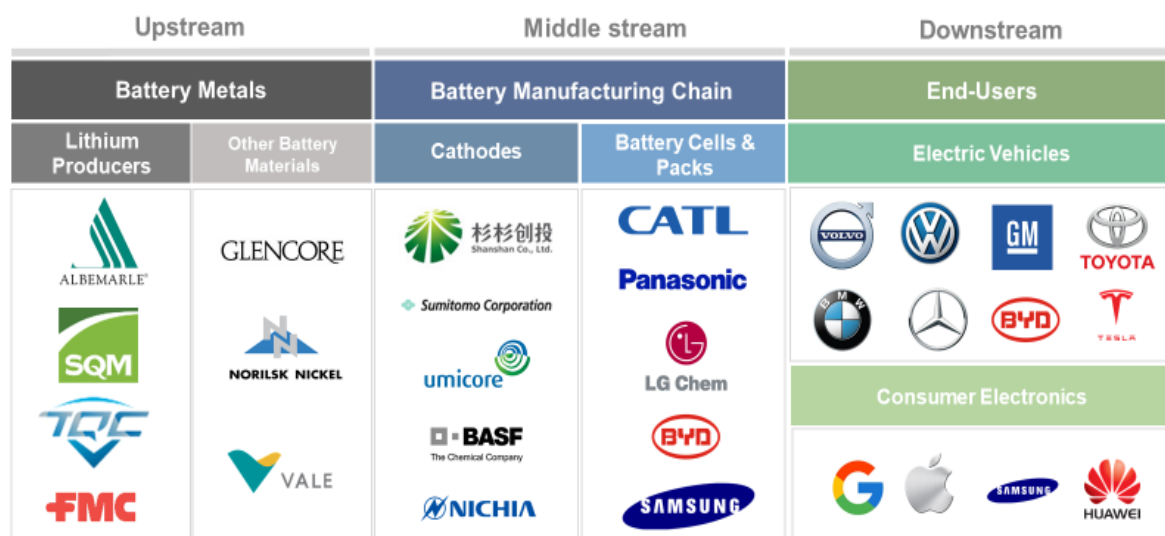


FIGURE 10: THE LIB SUPPLY CHAIN

### 3.3.3 Market Balance

Earlier this year several banks released reports calling the lithium market long as they anticipated large volumes of supply coming on stream over a very short period. However, so far in 2018, many supply issues have emerged, illustrating the fact that lithium production is not straight forward. Large producers in South America have delayed their expansion plans, revised their production numbers down, and experienced various issues with their local governments including water rights, royalties and production quotas in Chile. In Australia, the commencement of new projects did not lead to a wave of new lithium chemicals supply because of the lack of processing facilities to efficiently convert spodumene to battery grade chemicals.

Various data providers and banks forecast supply to increase to around 800,000 tonnes by 2025 and demand to reach around 900,000Mt. Despite capacity additions, the market is likely to be short by 2025. Even with sufficient capacity, operational issues need to be considered, not all plants will produce battery grade product, and there will be delays in expansions and new start-ups.

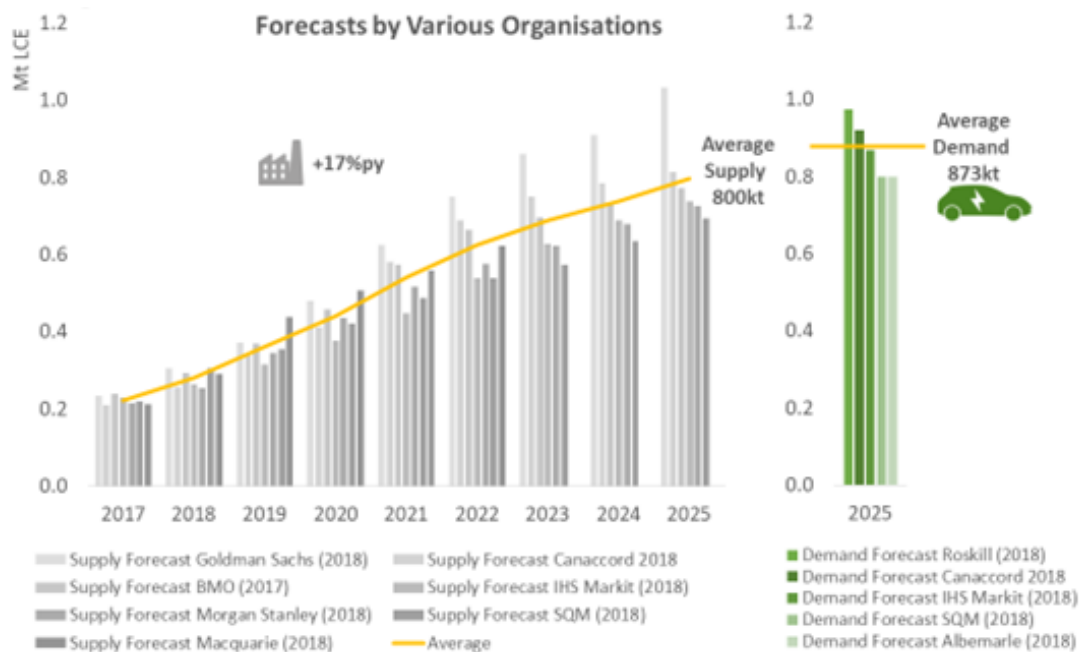


FIGURE 11: MARKET BALANCE

### 3.3.4 Product pricing

Pricing Assumption: Lithium Hydroxide Battery Grade Europe, Contract, (Year 1-8) US\$16,606/t under Infinity's Lithium Hydroxide European contract price forecast, with economic outcomes assuming an average (Year 1-8) US\$13,949 under a Pricing Scenario 1.

## Lithium Hydroxide European Contract Price Forecast

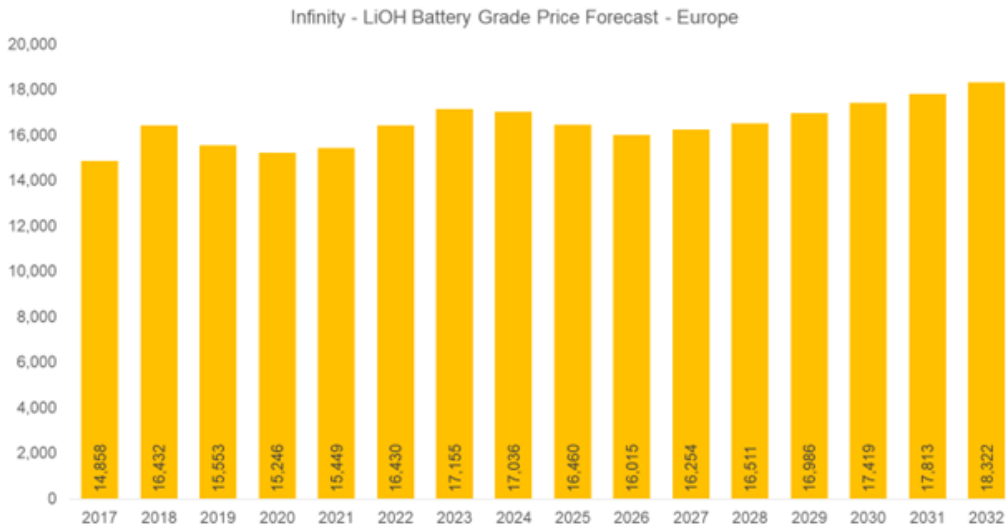


FIGURE 12: LITHIUM HYDROXIDE EUROPEAN PRICE FORECAST

There are a number of variables impacting our forecast as described below:

- 1) **Lithium hydroxide growth is faster than lithium carbonate.** Lithium hydroxide is estimated to take over carbonate by the mid-2020s. This growth is supported by cathode technologies moving to high nickel content and therefore requiring lithium hydroxide as opposed to carbonate. Cathodes with NMC compositions are projected to be the most popular type of cathode used in eMobility applications. The industry is gradually moving from NMC 111 to NMC 622 and NMC 811 and advanced batteries will therefore require hydroxide as opposed to carbonate in the future. Due to its stronger demand, lithium hydroxide is likely to maintain at a premium compared to lithium carbonate.
- 2) **Higher production cost for hydroxide to dissipate.** The price premium over carbonate is also led by the higher cost of producing hydroxide over carbonate, mostly from brine sources. However, as lithium hydroxide will increasingly be produced from hard rock which has relatively similar costs between producing carbonate and hydroxide, the premium on prices will mostly be supported by demand as opposed to higher production costs.
- 3) **Lithium hydroxide contracts are going to be set as long-term contracts.** Existing producer new plants or expansions plans will likely be seeking multi-year deals and cathode manufacturers will also be looking at security of supply with long term agreements. Creating partnerships between suppliers and buyers will be vital because lithium hydroxide specifications are highly technical. It is therefore likely that there will be less volatility expected for contracts than for spot prices. Furthermore, new plants will take time to start-up, delays and operational issues will take place, and the product will take time to be approved by customers.

## Lithium hydroxide contracts to be long term



Existing producers new plants or expansions plans will be **looking for multi-year deals** and cathode manufacturers will also be looking at **security of supply** with long term agreements.



**Creating partnerships** between suppliers and buyers will be vital because lithium hydroxide specification are highly technical. It is a partnership rather a simple buyer/seller relationship as customers appreciate the technical complexity of hydroxide. Collaboration is important between both parties.



Big price wave in our forecast are very unlikely as opposed to spot prices, **less volatility is expected** for contracts.

- 4) **Lithium hydroxide will be impacted by diversifying feedstock.** Lithium feedstock exported to or produced in China is diversifying and some sources will have lower quality than others. Feedstock converted to chemicals will not always qualify as having battery grade properties and therefore will be redirected to technical applications. An alternative is to be processed further to reach suitable battery grade specifications and therefore hydroxide will become more expensive to produce. This should maintain battery grade lithium hydroxide prices at a premium.
- 5) **Erosion in the short term but difficulty to keep up with demand in the long term.** The ramp up in Chinese and Australian conversion capacity will lead to some downward pressure on prices during the next couple of years. However, as soon as demand starts gaining momentum and the technology is mastered, supply will struggle to keep up with demand. Furthermore, conversion plants in China, despite very ambitious announcements, have suffered many delays this year and have at times experienced issues in producing anticipated grades. Bottlenecks remain a significant risk to processing capacities with more plants start up and struggle to operate during the starting phase. A wave of new capacity is projected arrive from 2023 onwards, but the output will quickly be absorbed by the market.
- 6) **New supply ramp up will take time.** Delays in plants ramp ups and optimistic forecasts are not just for lithium extraction but also for its conversion into chemicals. China has been converting Australian spodumene into lithium chemical compounds for years and with the rise in demand converters announced significant plant expansion plans. Market analysis strongly suggests that the battery industry is reliant on Chinese converters to deliver large volume of high-quality battery grade products in the near and long term. The increase in Australian spodumene supply has been rapid but has not been matched with sufficient conversion capacity in China. Furthermore 2018 saw some converters experiencing difficulties with lower feedstock quality coming from new sources, leading to a deficiency in meeting quality expectations.

The amount of capital spent on Chinese conversion plants has been significantly lower than elsewhere globally, and production capacity issues have been compounded by large segments of old production facilities leading to additional technical issues and longer maintenance down time. Additional capacity is more regularly aggregated to the existing processing structures as opposed to building a greenfield operation, thereby providing a “bolt-on” solution that is not purpose built.

Bottlenecks (both actual and projected) experienced by South American brine producers are both technical and political. In Chile, a number of environmental approvals need to be obtained in order to increase production. There are ongoing issues with water rights in the country that could also limit production quotas. Developing and building new ponds and processing plants, as well as getting the end product to correct and consistent quality can take many years. Recent expansion plans have been delayed and at least one producer has reported lower lithium production this year than last. Furthermore, Chilean producers are impacted by higher royalties when compared to last year which is impacting their margins. There are concerns about government involvement in lithium production as producers do not own but lease from a governmental agency. In Argentina, the economic and political outlook is uncertain and there is an ongoing currency crisis. A new export tax has pushed costs up for lithium producers, further reducing their margins whilst noting that there have been some lower production volumes reported than expected this year.

Overall, brine production is very slow to ramp up and there will be challenges for brine producers to increase production volumes in line with those projections that were announced. There are a number of new brine projects in South America but a lot of them are likely to be delayed because of a lack of financing and a lack of relevant technical knowledge. The ramp up to achieve brine chemistry required by the market will be extensive. There has also been a number of projects to bring more Chinese brine on stream but the amount of impurities contained in the brine, mostly magnesia, limits the quality of the end product.

- 7) **Moving from a handful of suppliers to more choices for buyers.** More producers will come on stream over the next decade and therefore buyers will have more buying options and the market will be more competitive. However, the number of players able to offer consistent lithium hydroxide battery grade will still be limited with hard rock sourced production maintaining advantages.
- 8) **Europe will likely feature a premium compared to Asia.** In Europe, battery grade lithium hydroxide demand will be coming from companies such as Umicore, BASF or Johnson Matthey who will be producing nickel rich cathodes, and therefore requiring the highest level of purity. The European region will be less competitive than Asia with less suppliers present in the market. With a European based lithium chemical production providing security of supply to European battery players, long term contracts could potentially be favoured and high prices.

More recently there have been strong contract prices for battery grade lithium hydroxide with limited volatility when compared to pricing for lithium carbonate. It is important to note that the forecast relates to one specialty chemical grade, as lithium is not a commodity. Lithium is spilt into different chemical products with different grades and specifications. The number one priority for a battery and cathode producers buying a specific lithium product is consistency of the product specification. Other lithium compounds might see different trends in the future, especially spot prices where they are expected to be volatile in an emerging and likely tight market.

The pricing forecast is based on contract prices. There have been numerous misconceptions on the lithium price side most notably throughout the last 12 months. Many Price Reporting Agencies ('PRAs') have based their analysis on Chinese lithium spot prices falling throughout the year resulting in numerous observers and stakeholders to think the market was long. It should be noted that spot prices do not represent the market and that the majority of lithium volumes are medium to long term contracts (and Chinese spot volume is a fraction of the global market). However, lithium contract prices are holding up and while it is anticipated that there could be some contract price erosion, it is unlikely that contract prices will align to the volatility of spot prices in China.

Based on the above information Infinity has selected a long-term price of US\$16,284/t for battery grade lithium hydroxide in our economic analysis. The Company considers these forecasts to be reasonable and in line with market expectations.



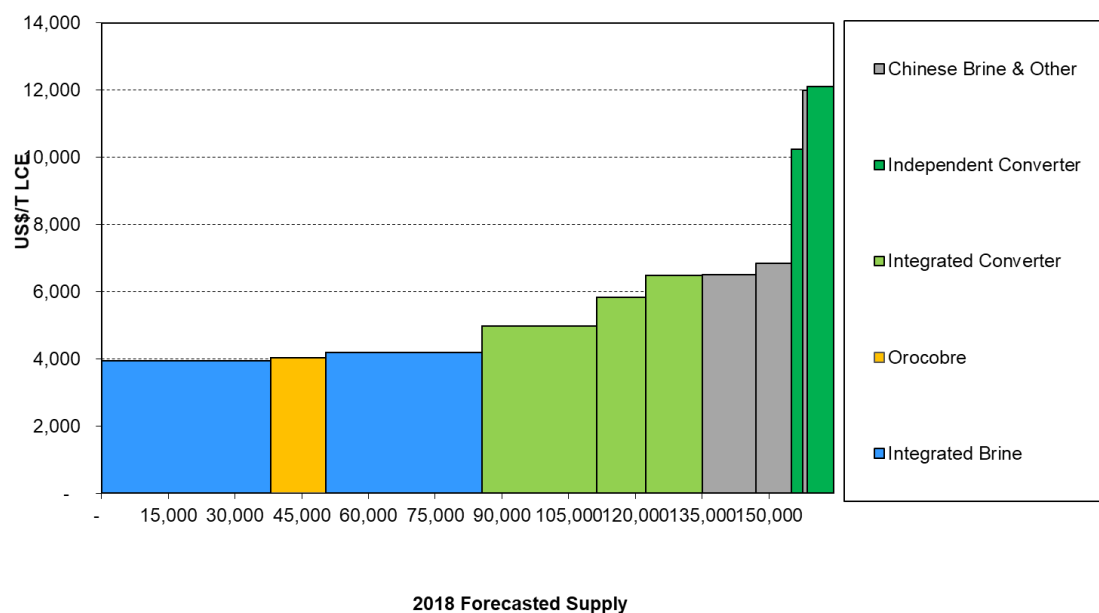
### 3.3.5 Market Cost Curve

#### Lithium Carbonate

The lithium market is comprised of brines (salar) and mineral (hard rock) producers. Brine producers (typically in South America) enjoy a lower unit cost to produce lithium carbonate, either technical or battery grade. Hard rock producers are typically sourced from spodumene mineralogy and ship a concentrate from site to China for third party processing. Brines occupy the lower portion of the cost curve and hard rock minerals the higher end of the cost curve.

Over the last 24 months the cost curve has started to flatten. In Chile, a state development agency called CORFO decided to increase royalties on lithium last year. It is an incremental commission which can go up to 40% depending on the end product's selling price. It means that Chilean producers lost their lowest production cost position and have been replaced by Argentina. However, Argentina has also seen its costs increase following the government implementing a tax on exports including lithium. Overall costs from brines increased and got closer to hard rock costs, however they maintain a cost advantage.

**Carbonate Cost Curve, Pre-Taxes & Royalties (USD/t)**



**FIGURE 13: LITHIUM CARBONATE COST CURVE<sup>(1)</sup>**

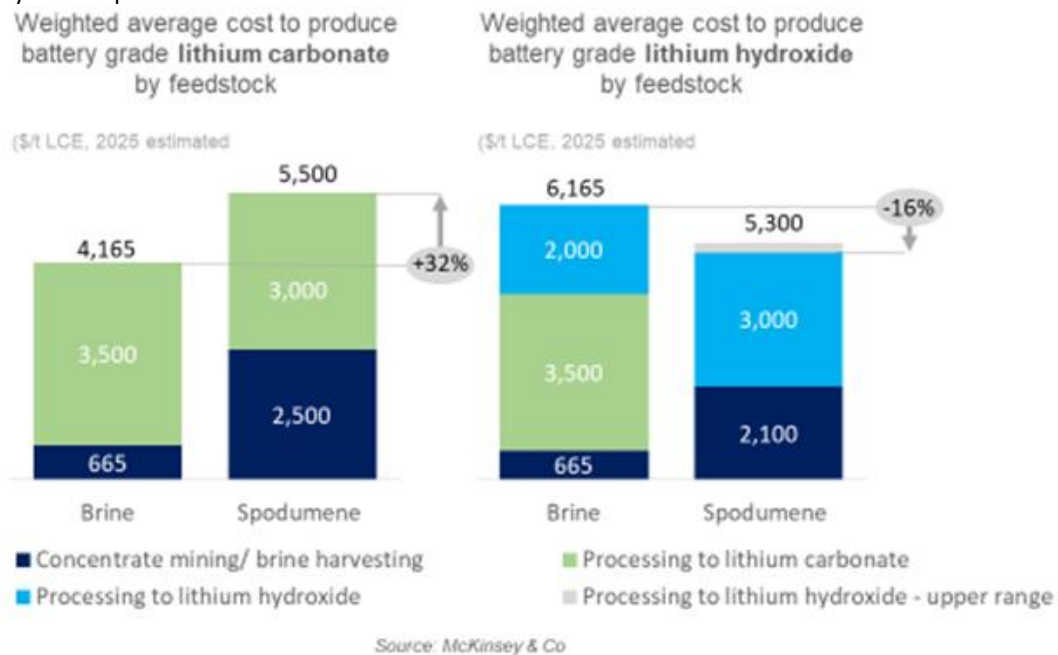
(1) Orocobre November 2018

On the hard rock side, costs will vary significantly between integrated producers, non-integrated players, and those market participants with DSO (Direct Shipment Ore). Non-integrated converters are required to purchase spodumene on the merchant market which is currently approximately three times the production cost of the concentrate. Non-integrated converters have therefore higher feedstock costs and they have significant challenges to generate sufficient margins. DSO can be considered to be uneconomical and non-representative of the market, noting that shipping 99% waste from Australia to Chinese converters presents economically challenging longevity.

The lithium industry continues to progress through growing integration processes by hard rock producers. They are looking further downstream at converting their spodumene into lithium chemicals. Further integration of hard rock mines into spodumene conversion and a reduction of DSO will contribute to lower hard rock average costs, therefore flattening the lithium carbonate cost curve further than present representations.

### Lithium Hydroxide

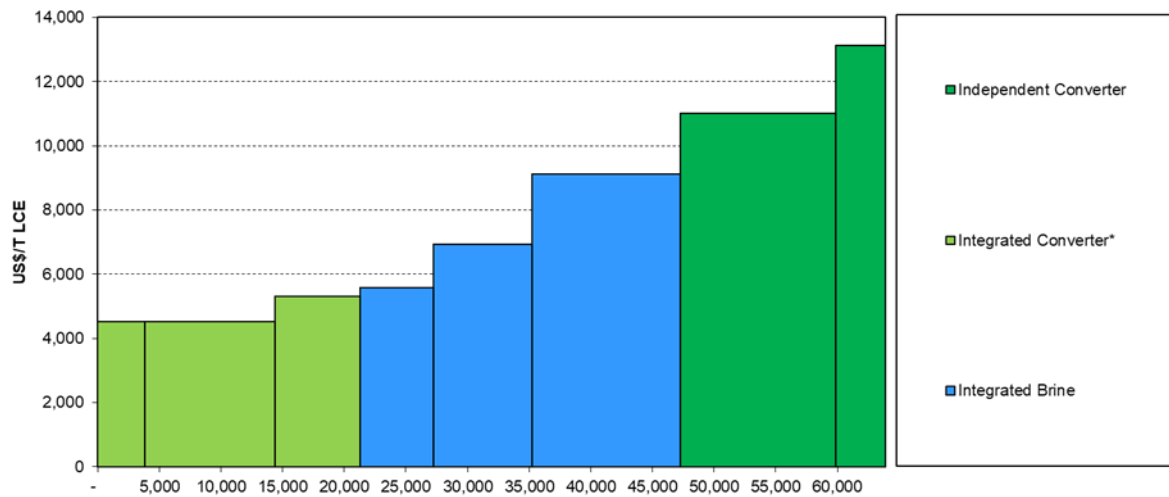
Lithium hydroxide is increasingly produced from hard rock, a straight conversion process when compared to brine processing which first needs to produce carbonate prior to conversion to hydroxide. The gap between the lowest and the highest cost producers have narrowed for lithium carbonate and will reduce further in the future with integrated rock producers progressively moving towards lithium hydroxide. By 2025, McKinsey estimates that lithium hydroxide production from hard rock will be around 16% cheaper than production from brines. Recent announcements of new capacities and expansions projects have validated this theory as numerous rock producers in Australia have expressed their focus on hydroxide. It is foreseeable that in the future cost advantages for brines will be aligned to lithium carbonate production whilst hard rock will be strongly aligned to lithium hydroxide production.



**FIGURE 14: ROCK RESOURCE PROVIDES ADVANTAGEOUS PROCESSING ROUTE**

Through vertical integration of lithium production on site, Infinity will enjoy the benefits of infrastructure and no additional transport or third-party processing. Infinity can reasonably project that the San Jose Project will be in the first quartile of all types of lithium production for total C1 costs.

Hydroxide Cost Curve, Pre-Taxes & Royalties



2018 Forecasted Supply

FIGURE 15: LITHIUM HYDROXIDE COST CURVE<sup>(1)</sup>

(1) Orocobre November 2018

### 3.4 Sensitivity Analysis

The net present value (NPV) sensitivity analysis shown in Table 7 demonstrates the effect of changes to the lithium carbonate price, operating expenditure and capital expenditure on the base case NPV, which has been calculated on a pre-tax basis using the key assumptions as outlined above.

Pricing Scenario 1 Sensitivities: Discounted Lithium Hydroxide Pricing Assumptions

Pre-Tax			NPV US\$m		
	-20%	-10%	Base	+10%	+20%
Price	402.3	559.8	717.2	874.7	1,032.1
OPEX	840.9	779.1	717.2	655.4	593.5
CAPEX	765.0	741.1	717.2	693.3	669.5
Pre-Tax			IRR		
	-20%	-10%	Base	+10%	+20%
Price	30.8%	40.3%	50.9%	62.5%	75.0%
OPEX	61.8%	56.2%	50.9%	45.9%	41.3%
CAPEX	66.2%	57.6%	50.9%	45.6%	41.2%

### Pricing Scenario 2 Sensitivities: Lithium Hydroxide Pricing Assumptions

Pre-Tax		NPV US\$m			
	-20%	-10%	Base	+10%	+20%
Price	642.2	829.7	1,017.1	1,204.5	1,392.0
OPEX	1,140.8	1,078.9	1,017.1	955.3	893.4
CAPEX	1,064.9	1,041.0	1,017.1	993.2	969.4
Pre-Tax		IRR			
	-20%	-10%	Base	+10%	+20%
Price	45.7%	59.1%	73.8%	89.8%	107.0%
OPEX	87.0%	80.2%	73.8%	67.7%	62.0%
CAPEX	97.4%	84.1%	73.8%	65.6%	59.0%

TABLE 7: SENSITIVITY ANALYSIS

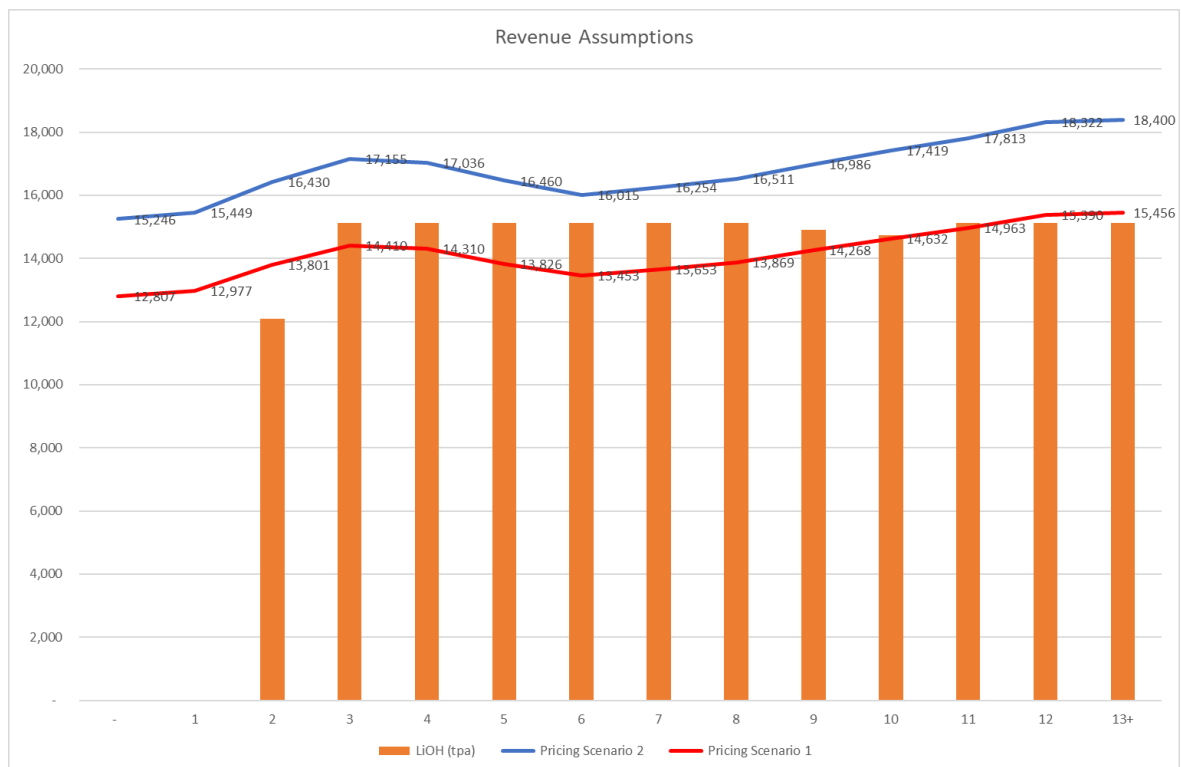


FIGURE 16: PRICING ASSUMPTIONS CHART

The sensitivity to the inclusion of Infinity pricing is shown for illustration purposes only but highlights the potential cashflow generation of San Jose Project. The pricing assumptions are materially in line with assumptions recently used in the derivation of project economics for other lithium hydroxide studies.

## 4 OPERATION

### 4.1 Site Layout

Figure 17 shows the proposed site layout including the open pit, process plant, site infrastructure, tailings dams and waste dumps. The area is currently designated rural for planning purposes and has some agricultural applications.

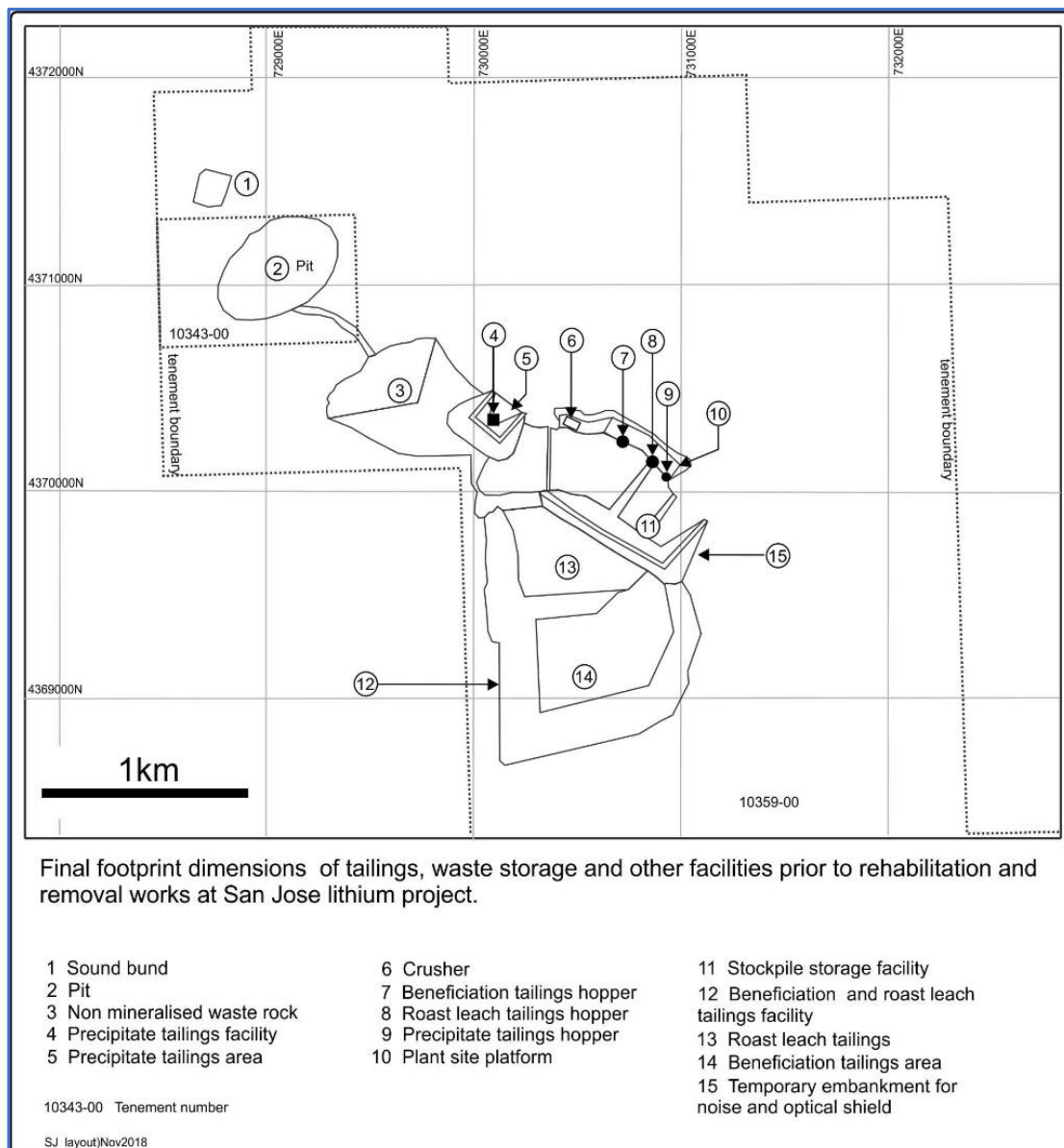


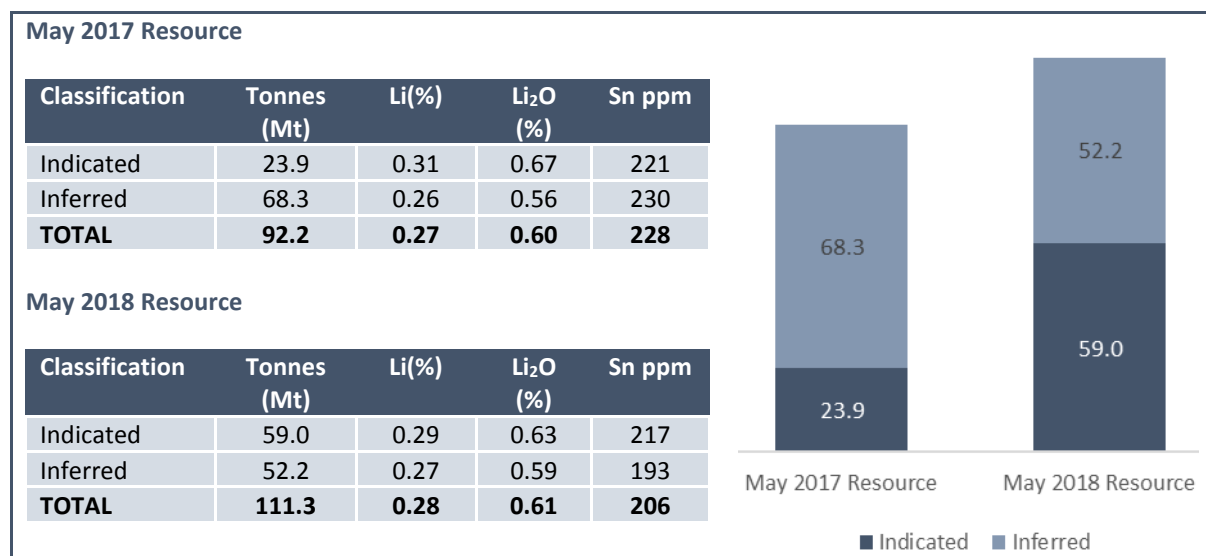
FIGURE 17: SITE LAYOUT PLAN

The proposed mine location is shown under Section 9, Geology. The proposed plant layout area is positioned in a broad, flat agricultural area which is bordered by the highway and gas pipeline to the north.

## 4.2 Mining

Snowden has previously prepared a mining schedule and open pit optimisation for San Jose (October 2017). An updated JORC Resource has been estimated subsequently (May 2018) which largely modified resource classification within the proposed pit extent. The new drilling which supported an overall increase in resource size was outside the pit perimeter. This new drilling was successful in its objective to increase resource confidence in a relatively homogeneous body of mineralisation. There has been no effective change in the mineralisation within the existing pit shell in terms of tonnes and grade although there has been a significant increase in the confidence (resource category) within the open pit. The 2017 scoping study had an estimated 45% Indicated and 55% Inferred mineralisation over life of mine. This has changed to 91% and 9% respectively. Cube Consulting have also completed mining optimisations based on improved geotechnical results and varied pit boundary. This is not directly comparable to the previous Scoping Study (lithium carbonate) and has not been included in this documentation. It has a smaller surface footprint and lower overall material movement but does not correspond with the currently submitted MLA area of disturbance and as a result, Infinity have elected to retain the previous, lower wall angle, more conservative open pit footprint but with increased resource category confidence at this stage.

Snowden's schedule is derived from the May 2017, and as amended December 2017 and May 2018 Mineral Resource estimate (Table 8) and subsequent preliminary pit design. The waste dump and tails dam were designed by Knight Piesold using the Snowden mining schedule.



**TABLE 8: SAN JOSE MINERAL RESOURCE AS AT MAY 2017, REPORTED ABOVE 0.1% LI CUT-OFF**

Detailed discussion of JORC resources is provided in ASX announcements dated 23rd May 2018. The Company is not aware of any new information or data that materially affects the information included in this ASX release, and Infinity confirms that, to the best of its knowledge, all material assumptions and technical parameters underpinning the resource estimates in this release continue to apply and have not materially changed.

### 4.2.1 Schedule Generation

Infinity advised Snowdens that its commercial objective is to maximise the grade of ore being processed early in the life of the mine and that this consideration outweighs the marginal value and opportunity cost implied by a conventional Lerchs-Grossman analysis of the Mineral Resource.



Snowdens analysed the Lerchs-Grossman optimisation block model to maximise feed grade at an advised maximum throughput of 1.25Mtpa, bringing higher grade material forward into the life of mine. The resultant schedule allowed for use of a stockpile to smooth the ore feed grade profile and a waste dump. A tailings dam wall provides a further repository for material identified as waste.

The schedule has been generated annually, by bench, which Snowden considers to be appropriate for a Scoping Study level of accuracy. The effective cut-off implied by the economics of the project and the above approach is approximately 2,000ppm Li.

#### 4.2.2 Mining schedule

The resultant schedule contemplates a four stage pit, constrained by:

- a maximum mining rate of 2Mtpa;
- a maximum vertical advance of 60 vertical metres per annum; and
- 1.25Mtpa maximum process rate.

Analysis indicates that the Project is not sensitive to vertical advance, but increases in the mining rate allows for higher grade material to be exposed more rapidly, which is beneficial to the Project. The stockpile allows deferral of processing of lower grade material and reaches a maximum size of 2Mtpa, being exhausted by processing of marginal material after Year 17 of the mine life.

Mining is expected to use conventional drilling and blasting, truck and shovel open pit mining. All material is to be drilled and blasted and loaded by an excavator in backhoe configuration onto articulated dump trucks. The trucks will haul high grade ore via an appropriately constructed haul road to a process facility. Lower grade ore will be hauled to an ore stockpile and stored for processing once all the higher grade ore has been depleted. Waste rock will be directly hauled by the same trucks to an appropriately constructed waste dump.

#### 4.2.3 Mining sequence and production rates

The operation has an overall life of 24.1 years with the plant commissioning in Year 2. The operating life is broken down into three periods.

The first period is pre-plant commissioning period (Year 0 -1). This indicates that a total waste production of 1.47 Mt will be produced prior to plant operations commencing. A portion of this material will be used to construct the starter embankments for the different tailings storage facilities.

The second period is from Year 2 to Year 16. During this period mining in the pit is ongoing and mine waste is being produced. The third period is from Year 17 to Year 24.1. During this period mining has ceased and the plant is operating using material won from stockpiles. Rehabilitation and reclamation will begin in the open pit area after year 16.

#### 4.2.4 Geotechnical Investigations

Peter O'Bryan and Associates have completed a site inspection and report on the geotechnical properties of rocks at San Jose and the mining implications. Previously Snowden completed a scoping level geotechnical review to provide preliminary inter-ramp angles (IRA) for use in initial Whittle optimisation and to generate recommended pit slope designs for pre-mining calculation of ore reserve. A preliminary and conservative slope overall slope angle of 38 degrees was used. The updated report and information available has resulted in this overall wall angle being able to be increased to 45 degrees. In this current optimisation, the earlier more conservative wall angles have been retained. It is expected that should the JV choose to pursue a lithium

hydroxide process flow sheet, a revised Mining Licence Application would be required and a revised open pit with a smaller overall total movement, reduced surface area of disturbance and improved economics due to lower stripping ratio could be produced.

A brief review of the seismicity of the site area was made based on “A review of the seismic hazard zonation in National Building Codes in the context of Eurocode 8”, EUR 23563 EN-2008. This indicated the area was either Zone 0 “negligible but not zero seismicity” or Zone 1 “very weak but not negligible seismicity”. A nominal ground acceleration of about 0.04g for a 1 in 500 year recurrence interval is appropriate for the site.

#### 4.2.5 Hydrological Investigations

This field work was undertaken by Valoriza Minería and water balance figures calculated by Wave and IMO. Water suitable for process can be sourced from underground sources proximal to the project or from potable, piped sources. Studies do not indicate any effect on the regional or town water sources in depletion or impact on quality. Recirculation and capture of water during evaporation and crystallisation phases and the use of dry stacked tailings is important in reducing the annual net water consumption. The annual water balance is estimated at circa 143,000 cubic metres input.

Water testing was done using drillholes and old mine workings. There are no observed aquifers or large volume water ingress issues noted in the study which would affect mining operations but there are multiple, deeper aquifers which could be considered for water supply.

#### 4.2.6 Waste and tails storage

A nominal waste placement density of 1.8 t/m<sup>3</sup> has been assumed. The rate of waste production varies over time with four primary phases as follows:

- Phase 1-Year 1 – Pre-commissioning waste 1.47 Mt.
- Phase 2-Years 2 to 8 – Production rate of > 2 Mtpa – 87% of waste produced by end of Year 8.
- Phase 3-Years 9 to 16 – Production rate of < 1 Mtpa – 13% of total waste produced in this phase.
- Phase 4-Year 17 onwards – No waste from mining is produced.

This production schedule will affect whether embankment construction can be achieved with overhaul of mine waste from the pit or will require borrowing waste material from the waste dump.

Ore from the pit will be sent either to the plant or placed in the designated stockpile area. The stockpile tonnage increases over time with a peak tonnage of 9.9 Mt in Year 16. After the pit shutdown in Year 17 ore for the plant will be sourced from stockpile area. The placed density in the stockpile area is assumed to be 1.8 t/m<sup>3</sup>.

The development of the waste dump will be controlled as part of the pit mining and waste placement activity. The plant will generate three different tailings streams as follows:

- Beneficiation tailings (Dry) – this will be a gravity separation/flotation process.
- Roasted leach tailings (Dry) – the concentrate from the beneficiation process will be roasted and then leached.
- Precipitate tailings (Wet) – in the process a small amount of precipitated material will be generated.

The location of each facility was based on the outcome of a multi-location scenario produced by Knight Piesold and shown in Figure 18. This stored the precipitate tailings in the Valhondo Valley as part of the waste dump with the roast leach and beneficiation tailings stored in Zone B (the valley to the east).

Placed Dry tailings: The plant process will result in all of the tailings being produced as a filtered product. Depending on the type and extent of filtering it is anticipated that the tailings materials will have residual moisture content in the range of 10 to 20%.

The placed dry density for each of the tailings products will depend on the impact of the processing and the grind size of the tailings.

The location of the precipitate tailings was based on the following criteria:

- Minimising the overall project footprint.
- Proximity to the plant site area to minimise haulage distances .

The precipitate tailings are likely to be the lowest strength and density material and thus are designed to be fully buttressed by the waste dump. The volume of tailings is relatively small and the facility could be located in either the roast leach facility or to the east of the other facilities if these locations provide additional advantages to the overall management system.

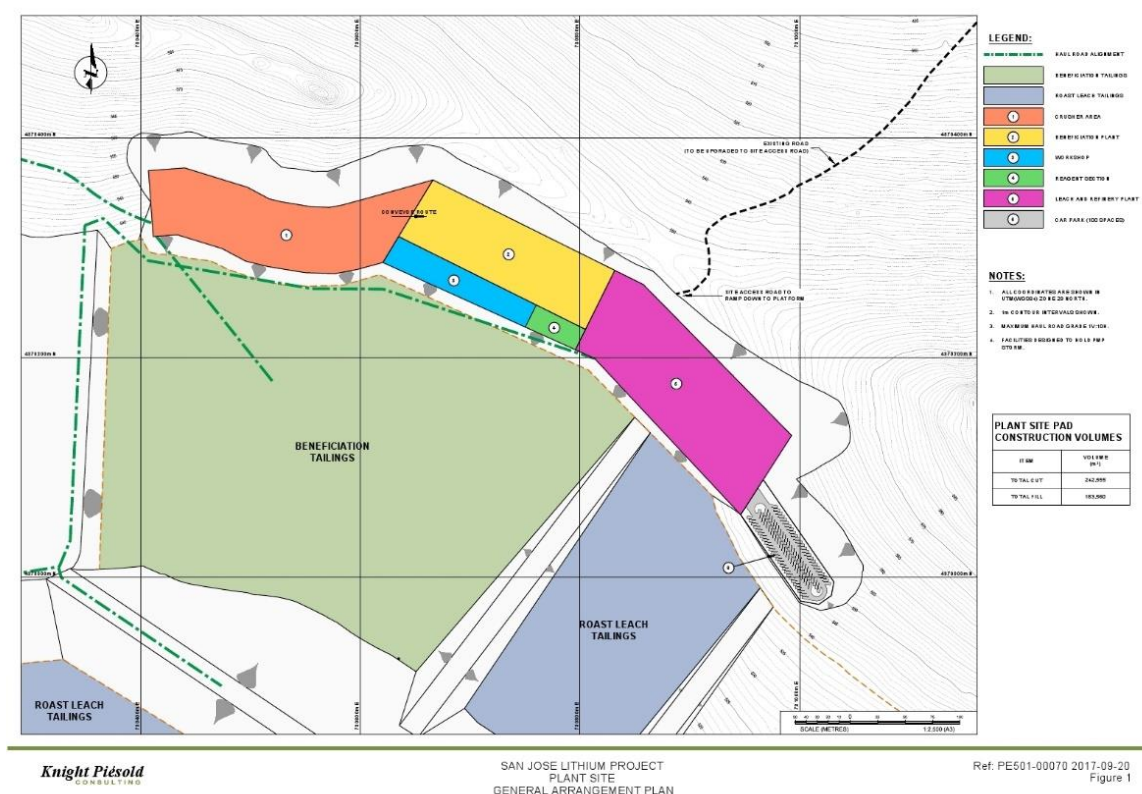


FIGURE 18: WASTE DUMP AND TAILINGS LOCATION PLAN

For the Scoping Study it is assumed that both the waste and tailings will be placed using a truck fleet. As an alternative tailings disposal method, conveyors with radial stackers could be used.

The fleet required for the waste placement is part of the fleet required under pit design. The waste will be placed in the waste dump or trucked to one of the tailings facility embankments. An overhaul allowance has been provided for the additional distance.

### 4.3 Processing

#### 4.3.1 Basis of Design

The basis of the design was a flow sheet and supporting capital cost estimates to achieve a production rate of circa 15,000tpa of battery grade lithium hydroxide (within an annual expected range of 12,900-15,200tpa). There is not sufficient information available currently to include discussion on the potential for by-product revenue generation, notably tin and boron credits. Ongoing optimisation work will focus on items such as this.

Infinity engaged Wave International (Australia) to conduct a Trade-off Study comparing lithium carbonate and lithium hydroxide production at San Jose (ASX release 8th June 2018) which confirmed the amenability of San Jose hard rock mineralisation to be processed directly to lithium hydroxide without passing through a lithium carbonate stage first. On the basis of this information Infinity commissioned a Scoping Study for the production of battery grade lithium hydroxide at San Jose. The process flow sheet based on the previous lithium carbonate Scoping Study is the same for the mining, beneficiation, roasting and leach stages. As a result there is a large amount of technical information and test work which has been successfully utilised in the completion of this Scoping Study.

Wave International has conducted internal investigation and work (desktop level) to build upon previously completed work conducted by AGQ (Spain), IMO (Australia), and ANZAPLAN (Germany). This has been complemented by the historic data available from the 1987-1991 Tolsa feasibility study. Infinity has compiled the Scoping Study report based on feedback from these various consultants and reports. Ongoing work continues as the Project advances and further work is required in several aspects to reduce the current low-confidence level of a Scoping Study (+/- 35% accuracy) in relation to several aspects of the process flow sheet including but not limited to the final upgrade and mass-retention of flotation (beneficiation) and overall plant recovery (50%). The highest loss in total recovery is located in the beneficiation process with otherwise very high recoveries in the hydrometallurgical processing. Infinity has chosen recovery and upgrade results within the ranges of those obtained by current and historical tests and these are considered acceptable for this level of study.

Consultants have provided a review of historical information, process flow sheet recommendations, high level mass and energy balances, identification of major equipment, capital and operating cost estimates. Infinity has selected the appropriate reports and inputs to compile this study document.

The process plant facility has been designed to output circa 15,000 tonnes per annum of LiOH product based on a run of mine (ROM) feed grade of 0.73%-0.90% lithium oxide ( $\text{Li}_2\text{O}$ ). The feed rate of ROM to the plant has been back calculated based on the estimated stage recoveries through the process in order to deliver the required LC product output. The mine plan incorporates this requirement in scheduling.

An assumption has been made on the grade and recovery of lithium to the final beneficiation concentrate. Whilst the beneficiation test work continues, the assumptions of grade and recovery are realistic based on the mineralogy and test work results in the opinion of Infinity are appropriate for a Scoping Study level.

With regards to the hydrometallurgical plant, current and previous test work has indicated that +90% extraction of lithium is possible via the sulphation roast and water leach stages. Assumptions have been made for subsequent stages of purification and final precipitation based on the previous feasibility study undertaken by Tolsa, public domain data from peer lithium developers are detailed in the Process Design Criteria.

The key values for the basis of design are summarised in Table 9.

Summary	Parameter (average Year 1-10)	
	Average ROM feed to beneficiation plant (dry)	1.258Mtpa
	Average ROM feed grade to beneficiation plant (Li <sub>2</sub> O)	0.86%
	Average post beneficiation concentrate (dry)	0.502Mtpa
	Average concentrate grade pre process plant (Li <sub>2</sub> O)	1.40%
	Recovery beneficiation	65%
	Recovery hydromet	77%
	Overall lithium recovery	50%
	Annual production (battery grade LiOH)	14,575

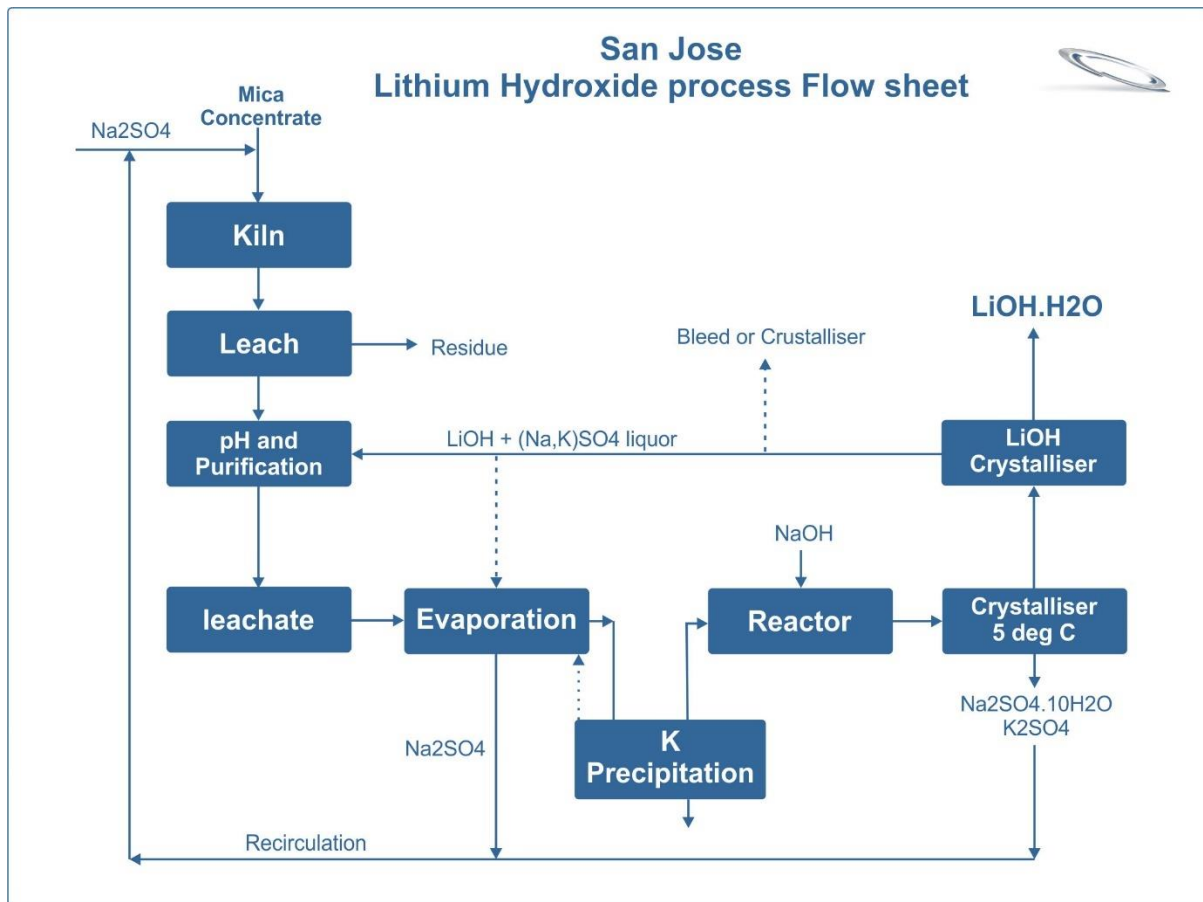
**TABLE 9: KEY VALUES FOR THE BASIS OF DESIGN**

#### 4.3.2 Process Flow Sheet

A sulphate roast flowsheet using water leach with crystallisation and precipitation has been selected. This flow sheet has been designed to take advantage of the 'front end' work completed previously which covers the mining to leached solution stages. This front-end process of getting lithium into a sulphate solution has been chosen by other European lithium-tin development companies with similar mineralogy. The production of lithium hydroxide through the addition of a hydroxide reagent to a lithium sulphate liquor is a well-accepted commercial chemical process. Wave International have leveraged off this supporting information and commercial knowledge to produce a process flow sheet for San Jose.

Wave International has built on the significant work by Tolsa and IMO which has confirmed the viability of the sulphate roast (potassium sulphate) which has achieved lithium extractions in excess of +90% to leach. The sulphate roast and water leach route is preferred due to its effectiveness, simplicity and low operating cost. Additional benefits include benign tailings and waste storage material which is preferential for environmental impact as compared with the alternative, strong sulphuric acid-digest option.

The simplified flow sheet selected as the basis of this Scoping Study is shown in Figure 19.



**FIGURE 19: PROPOSED PROCESS FLOW SHEET**

The process plant treats approximately 1.25 million tonnes per annum of ore to produce circa 13-15,000tpa of battery grade (>99.9% purity) lithium hydroxide.

The plant process areas which are described in this document encompass:

- Comminution - Crushing and Milling;
- Pre-concentration/ Beneficiation;
- Sulphation Roasting and Water Leach;
- Thickening and Filtration;
- Potassium Sulphate Crystallisation;
- Precipitation (aluminium compounds, calcium, magnesium);
- Lithium Hydroxide Reactor;
- Potassium Sulphate Crystallisation;
- Precipitation (salt, aluminium compound);
- Precipitation (lithium hydroxide);
- Lithium Hydroxide (re-dissolution);
- Battery Grade Lithium Hydroxide Precipitation;
- Product Drying and Handling; and
- Water and Utilities.



## Comminution

ROM ore containing 0.86%  $\text{Li}_2\text{O}$  (average) is stored on the ROM stockpile. A frontend loader transfers the ore to the ROM ore bin from which the ore is fed to the primary crusher via an apron feeder.

The discharge from the primary crusher is conveyed to a crushed coarse ore stockpile. This stockpile provides a break between the crushing and milling sections and provides for the crusher to be operated intermittently (e.g. on day shift) if required.

The coarse ore stockpile provides feed to the SAG Mill which operates in closed circuit with cyclones. The required grind size is quite coarse with a product (p80) size 212 microns.

## Pre-Concentration/ Beneficiation

Mineralisation at the San Jose Lithium Project is hosted in lithium-bearing zinnwaldite mica and as cassiterite (tin) typically within quartz veins. The ROM grade for the first 10 years mine life is approximately 0.9%  $\text{Li}_2\text{O}$ .

Beneficiation of mined ore is proposed to be conducted using flotation to upgrade to 1.4%  $\text{Li}_2\text{O}$  with retention of 40% of mass. The residual 60% reject will be stored in mine dumps. Historical test work in feasibility studies showed a range of recoveries and mass retentions above and below this figure. Test work will continue in the optimisation stages prior to commencement of a feasibility study.

The beneficiation circuit consists of a surge tank followed by a conditioning tank where the pulp density is adjusted and flotation reagents added. The flotation circuit will most likely consist of a rougher bank of flotation cells followed by cleaner flotation cells to upgrade the concentrate from the rougher bank.

The flotation tails will be thickened and filtered using plate and frame type filters to produce a filter cake of approximately 15% moisture that will be transported to the tailings management facility ('TMF') by trucks.

The flotation concentrate will also be thickened and filtered before being transferred to the concentrate agglomerator. Water recovered from both the tails and concentrate thickeners will be recycled back to the milling and/or flotation circuits.

Tolsa commissioned significant test work programs in the 1990's by Base Metals Synergy Associates ('BMSA') and later by Leeds Associates Ltd ('Leeds'). Initial metallurgical work involved gravimetric concentration, selective flocculation and other flotation test work. This was then further refined by Spanish group, Penarroya Espana who continued flotation test work and in addition tested high intensity magnetic separation.

In the ensuing years, significant improvements have been made in the field of beneficiation; particularly with respect to froth flotation. Further test work is planned evaluating modern flotation regimes.

## Hydrometallurgy process route selection.

During the Tolsa study, two process routes were seriously investigated:

- sulphuric acid digest; and
- sulphate roast.

BMSA and Leeds also undertook hydrometallurgical test work following literature searches. Whilst a number of processing routes were determined, the two most promising were the leaching in sulphuric acid at elevated

temperatures and sulphation baking of a concentrate/sulphate (gypsum, sodium sulphate and/or potassium sulphate) mixture at up to ~900C followed by water leaching.

At the time, the first process (leaching in sulphuric acid) was selected based on simplicity and knowledge of the process. Subsequent evaluation, however, has recommended the second process (sulphation roasting) as the preferred alternative based on:

- 1) simplicity;
- 2) reduced operating costs; and
- 3) the ability to recycle reagents.

### Roasting

The main objective of the sulphation roast process is to convert the refractory lithium host minerals (mica) into a soluble sulphate compound that can be water leached. Filtered concentrate from the beneficiation is first mixed with the potassium sulphate and then agglomerated to form small agglomerates. These agglomerates are first dried and then fed to a direct fired rotary kiln which is heated to 840-900°C for 20 minutes using natural gas. Off gases from the kiln are used in the drier and then scrubbed whilst the hot solid product is first cooled before being discharged into a repulping tank for transfer to the water leach circuit.

### Water Leaching

Neutral, potable water is used to leach the lithium with +90% recovery of lithium into water being achieved in recent and historical test work. The main objective of the water leach circuit is to dissolve the lithium sulphates present in the roasted cake coming from the kiln thus allowing for the removal of solid impurities, mainly silica, which are insoluble.

There are a number of leach tanks in series which are agitated and open to the atmosphere as there are no noxious fumes expected to be generated. The circuit design allows for gravitational flow of the slurry from one reactor to the next and finally to a filter feed.

The leached slurry is filtered using an automated filter press. The filtrate is sent to the purification circuit, whilst the solid phase (leach tailings) will be thickened and trucked to the TMF.

### Thickening and Filtration

The leached slurry solids are separated from the pregnant liquor solution ('PLS') by the leach slurry thickener. The leach slurry thickener underflow is pumped into the leach thickener underflow tank for storage prior to the leach pressure filter. Upon filtering, the cake discharge is deposited into the dry tails stack. The wash water used in the leach pressure filter is collected in the wash water storage tank and is then recycled back to the slurring tank. The leach pressure filter filtrate and the overflow of the leach slurry thickener is transferred to the leachate storage tank.

The PLS in the leachate storage tank is pumped to the purification area for impurity removal.

### Potassium Sulphate Crystallisation

Inflow from the leachate storage tank is pumped into an evaporator package which removes sufficient water to crystallise  $K_2SO_4$ . The slurry is transferred into the sulphate crystal tank and then into the  $K_2SO_4$  Filter. The  $K_2SO_4$  crystals are collected onto a conveyor and recycled back to the  $K_2SO_4$  hopper prior to the mixing stage. The filtrate passes onto the liquor storage tank prior to alunite precipitation.

### **Precipitation (aluminium compounds, calcium, magnesium)**

Inflow from the  $K_2SO_4$  crystallisation stage is stored in the liquor storage tank. The solution is mixed with a metered amount of aluminium sulphate and transferred into a series of alunite crystallisation tanks, a small quantity of alkali may be added to maintain optimum precipitation pH.

The filtrate after alunite precipitation is pumped to the first of four precipitation tanks in which are configured in series for impurity removal. In the first precipitation tank, potassium hydroxide is added to precipitate the aluminium and iron in solution as hydroxide. In the second precipitation tank, sodium carbonate is added to precipitate calcium and magnesium as their respective carbonates.

Further impurities are removed through ion exchange and activated alumina. The ion exchange columns are filled with cationic resin to remove any residual multivalent cations to sub-ppm levels. There are three columns configured as lead, lag and regeneration.

### **Lithium Hydroxide Reactor**

PLS from the purified solution storage tank is combined with potassium hydroxide as well as the wash water from the lithium hydroxide product centrifuge into the first of two lithium hydroxide reactors.

### **Potassium Sulphate Crystallisation**

Inflow from the purified leachate storage tank is pumped into an evaporator package which removes sufficient water to crystallise  $K_2SO_4$ . The slurry is transferred into the sulphate crystal tank and then into the  $K_2SO_4$  filter. The  $K_2SO_4$  crystals are collected onto a second  $K_2SO_4$  conveyor and recycled back to the  $K_2SO_4$  hopper prior to the mixing stage. The filtrate passes onto the liquor storage tank prior to alunite precipitation.

### **Glauber's Salt Crystallisation**

Discharge from the second lithium hydroxide reactor is delivered to the  $Na_2SO_4 \cdot 10H_2O$  crystalliser where Glauber's salt is precipitated along with some  $K_2SO_4$ . The crystalliser supernatant is cooled to around  $0^\circ C$ , by a chiller package before being recycled back into the crystalliser. Precipitate in the discharge from the crystalliser is separated out by the  $Na_2SO_4 \cdot 10H_2O$  crystal centrifuge to recover the solid mixture of  $Na_2SO_4 \cdot 10H_2O + K_2SO_4$ .

### **Precipitation (salt, aluminium compound)**

The concentrate contains aqueous lithium hydroxide which is collected in the lithium hydroxide concentrate tank before being pumped to crystallisation in the lithium hydroxide precipitation section.

Inflow from the second  $K_2SO_4$  crystallisation stage is stored in the liquor storage tank. The solution is mixed with a metered amount of aluminium sulphate and transferred into a series of alunite crystallisation tanks, a small quantity of alkali may be added to maintain optimum precipitation pH. The precipitate is filtered and stored.

### **Precipitation (lithium hydroxide)**

The filtrate containing lithium hydroxide in solution in the lithium hydroxide concentrate tank is pumped into the lithium hydroxide crystalliser package to crystal lithium hydroxide monohydrate. The lithium hydroxide crystalliser in the package will precipitate crude lithium hydroxide which is then cooled by the lithium hydroxide solution cooler 1 with water as the cooling medium before it is held in the  $LiOH \cdot H_2O$  slurry tank 1 for centrifugation by the  $LiOH \cdot H_2O$  product centrifuge.

The wash water from the centrifuge is recycled back in the lithium hydroxide section by discharging this into the first lithium hydroxide reactor. The centrate from the centrifuge is added into the LiOH.H<sub>2</sub>O crystallisation mother liquor collection tank (which will be discussed in the BG lithium hydroxide precipitation section) and the filtered solids transferred to the lithium hydroxide re-dissolution section for further purification.

#### **Lithium Hydroxide (re-dissolution)**

Filtered cake from the LiOH.H<sub>2</sub>O product centrifuge containing crude lithium hydroxide precipitate is transferred to the LiOH.H<sub>2</sub>O re-dissolve tank for further dissolution. This is achieved by adding de-ionised ('DI') water and condensate from the lithium hydroxide purification crystalliser package. Redissolution is important in order to recrystallise lithium hydroxide to achieve battery grade due to the lower impurity presence after the re-dissolution.

Discharge from the LiOH.H<sub>2</sub>O re-dissolve tank is pumped into the lithium hydroxide solution polish filter to remove any undissolved solids. The filter cake is disposed into a skip. The filtrate is then further crystallised in the BG lithium hydroxide precipitation section.

#### **Battery Grade Lithium Hydroxide Precipitation**

Filtered re-dissolved lithium hydroxide solution passes through the lithium hydroxide purification crystalliser package for BG lithium hydroxide precipitation. The discharge from this package is cooled by the lithium hydroxide solution cooler 2 which uses water as the cooling medium. The cooled solution containing BG precipitated lithium hydroxide is transferred to the LiOH.H<sub>2</sub>O slurry tank 2 where it is held before being pumped into the LiOH.H<sub>2</sub>O purified product centrifuge.

DI water is used as the wash water for the centrifuge. The wash water out of the centrifuge is pumped for the use as the wash water of the LiOH.H<sub>2</sub>O product centrifuge in the lithium hydroxide precipitation section. Centrifuge centrate is combined with the centrate from the LiOH.H<sub>2</sub>O product centrifuge and held in the LiOH.H<sub>2</sub>O crystallisation mother liquor collection tank. Part of the outflow from this tank is removed from the process as a bleed whilst the other part is recycled back into the purified pregnant liquor tank in the purification area for PLS evaporation.

Filtered cake from the LiOH.H<sub>2</sub>O purified product centrifuge is transferred to the LiOH.H<sub>2</sub>O crystal hopper for drying.

#### **Product Drying and Handling**

The LiOH.H<sub>2</sub>O hermetically sealed room contains the LiOH.H<sub>2</sub>O product vacuum dryer, LiOH.H<sub>2</sub>O product bag house, LiOH.H<sub>2</sub>O product conveyor, LiOH.H<sub>2</sub>O product storage bin and LiOH.H<sub>2</sub>O product bagging station. Such conditions are required for the BG lithium hydroxide due to its instability and ease of conversion to lithium carbonate when in contact with carbon dioxide from the atmosphere.

Precipitated BG lithium hydroxide held in the LiOH.H<sub>2</sub>O crystal hopper is fed into the LiOH.H<sub>2</sub>O product vacuum dryer by the LiOH.H<sub>2</sub>O product dryer feeder. Under vacuum, a temperature of around 70°C is required to dry the lithium hydroxide without removing any of the water of hydration.

## 5 INFRASTRUCTURE

The project is very well located in relation to supporting transport, energy and communications infrastructure. The workforce is expected and encouraged to be drawn from residential areas surrounding in the region. Administration and other office facilities can also largely be based within nearby town sites. There will be no requirement to transport or house the workforce and substantial savings can be made in relation to administration and warehousing facilities in the proximal town of Caceres (population approximately 90,000 and 4km by road).

### 5.1 Water

Water balance requirements will be met by accessing potable water from municipality sources on industrial use basis or from bore fields if required. Studies indicate that total water usage represents the equivalent of 1-2% of the equivalent annual water usage in the nearby town of Caceres. The intense focus on capture, filtration and reuse of water has lowered the overall water balance requirements. There is water available proximal to the project. Access to the water will require all relevant approvals.

### 5.2 Office and Administration

On site administration and office facilities will be constructed as required will be located in the valley (mine office) and at the process plant location. General, non-site specific management, is expected to be located in Caceres. Office and administration costs are included in the capital budget.

### 5.3 Access

The open pit is proposed to be 2km from the proposed plant site. Access to site is via sealed road and the pit will be accessed via entry into the main mine and process area first. It is expected that access to site will be conducted from the south, departing the EX206 Caceres-Torreorgaz road adjacent to the proposed plant site which is within 1km of this road. Multilane highways to Madrid and the regional capital, Merida are located within 3 and 6km respectively of the proposed plant location.

### 5.4 Communications

The site area is well serviced with mobile communications and internet access. There are no proposals for additional communications requirements that cannot be met by third party providers in the regional area. The proximity to Caceres supports this assumption.

### 5.5. Electricity and Gas

The extensive regional and municipal electricity and gas networks will be utilised for supporting the San Jose Lithium Project. This electricity and gas is available at wholesale/industrial tariffs and all within 5km of site. Gas infrastructure is exceptionally well located with the spur from the main regional line running to the town of Caceres passing within 2km of the proposed plant site. Gas infrastructure is shown in Figure 20.



**FIGURE 20: SAN JOSE PROJECT IN RELATION TO REGIONAL GAS INFRASTRUCTURE**



## 6 ENVIRONMENTAL AND SOCIAL AND PERMIT APPROVALS

The San Jose Lithium-Tin Project was awarded in a public tender to Valoriza Minería S.A by the regional Government of Extremadura with the imperative to expedite development. Under the terms of the winning tender, the Joint Venture had to submit a Mining Licence Application which demonstrates the economic value, social and environmental impacts of the proposed development within 12 months of the tenement grant. This project has been identified as one of social benefit to Extremadura by the regional government.

Infinity has conducted technical studies covering resources, mining, processing, engineering and marketing on the San Jose deposit and our partner, Valoriza Minería S.A. Valoriza Minería is a subsidiary of International Spanish construction company Sacyr S.A with extensive civil and mining experience in Spain has managed permitting, environmental and landholder/social aspects.

### 6.1 Environmental

Infinity's partner, Valoriza Minería, has conducted the environmental activity in compliance with the requirements under Spanish law. The JV has completed a one year, base-line environmental survey over the area. Preliminary reports demonstrate that there are no notified impediments to development or areas of ecological significance which preclude development. An Environmental Impact Assessment ('EIA') has been lodged covering all aspects of development, mining and closure in compliance with Spanish Mining Law. No additional information has yet been requested from the JV although it is likely that through the process of public exposure and examination by the authorities, queries will be made and responses provided by the JV.

### 6.2 Social

The proposed development at San Jose will deliver a large (+200) number of full-time jobs in an area of moderate to high unemployment. The project is located proximal to the town of Cáceres (population estimated 90,000). There are several small rural orchards in the vicinity of the proposed plant location and access areas.

### 6.3 Permits

Within the Mining act of Extremadura the Environmental and Mining Departments give development authority at a regional (state) level. There are no federal approvals required. Within the project area, land currently designated 'rustic' (rural) has to be rezoned as 'industrial' to permit mining and manufacturing. This is managed by the local town authority (Cáceres). There is no guarantee the JV will receive all approvals and be granted permits to mine at San Jose.

## 7 LAND ACCESS AND TENURE

The San Jose Lithium Project is located within Investigation Permit P.I 10343-00 (granted) and the deposit extends into surrounding tenement, Investigation Permit 10359-00 (application). P.I 10359-00 covers ground proposed to be partially used for infrastructure. This tenement was initially granted but is currently under departmental review due to an error in the public exposure period as administered by the Regional Government authorities. As such, it has been readvertised with a longer duration period for public commentary. The tenement plan is contained in Appendix B. All proposed mining activity is limited to within P.I 10343-00. Infinity is not aware of any reason why this will not be resolved.

Infinity holds a 50% interest in the holding Company TEL which holds the tenements. This is the JV vehicle for the agreement between Infinity and Valoriza Minería. Infinity has drilled within the deposit tenement and the JV has conducted baseline surveys and hydrogeological studies within both tenements as part of the work to date. Table 10 contains information on the different types of tenements in Spain.

Spanish Tenure type	Australian equivalent	Period (min-max)	Maximum Size (km <sup>2</sup> )	Comment
Exploration Permit	nil	1-2 years	300	No active surface works – mapping, remote sensing etc
Investigation Permit	Exploration Licence	3-9 years	90	Can allow drilling and bulk sampling
Exploitation Concession	Mining Licence	30-90 years	30	Mining and treatment

**TABLE 10: SPANISH TENEMENT TYPES**

The San Jose Lithium-Tin Project is held within two Investigation Permits. The San Jose deposit is located within P.I 10343-00 which was granted in October 2016. Mineral resources are owned by the State. There is a clear pathway for access and development under the terms and conditions of mining licences.

The JV has applied for a mining licence and will work with authorities to obtain a granted Exploitation Concession. A summary of the important related aspects of mining and tax laws are;

- Approvals – all regional government, no federal requirements;
- Government royalties – zero;
- Vendor royalties – zero;
- Corporate tax rate – 25% (reduced from 30% in 2015); and
- Government and EU incentives for employment initiatives.

## 8 IMPLEMENTATION

Infinity has a development strategy and plans to increase its interest to 75% through the completion of a feasibility study on the Project to produce lithium carbonate, then develop the project on a 75/25 basis with our partner, Valoriza Minería. This Scoping Study to produce lithium hydroxide does not enjoy the benefit of a pre-existing (non JORC) historic feasibility study as the lithium carbonate study did. Therefore, it is likely that in order to produce lithium hydroxide a pre-feasibility study may be required on the pathway to development.

On the basis that the existing JV Agreement structure is maintained Infinity would still require a feasibility study to be completed prior to earning 75% interest. A new MLA may also have to be lodged. The vast majority of non-process infrastructure and the majority of process infrastructure are identical between the lithium carbonate and lithium hydroxide proposals.

There is no guarantee that the JV may wish to adopt a development proposal for lithium hydroxide, nor lodge an amended MLA should it be required. At that point, should Valoriza Minería elect to maintain its interest in the development it will become a 25% pro-rata contributing partner. Should Valoriza Minería elect not to take part in the development and operation of the operation, Infinity has an agreement in which it can purchase Valoriza Minería share in the project should it wish for an arranged price, the details of which are set out in more detail in Appendix A.

Infinity proposes to develop the San Jose Lithium Project as in an efficient and proactive manner, aiming to deliver lithium chemicals as soon as possible. A preliminary implementation strategy for the design and construction of the Project has been developed comprising the following stages.

### 8.1 Optimisation Studies

After the Scoping Study, numerous individual optimisation studies will be undertaken aimed at developing a single go forward design case to take into a pre-feasibility study. This phase will also incorporate a test work program to firm up flow sheet design and assumptions if and as required. It is expected that this process will take three to six (3-6) months.

### 8.2 Pre-Feasibility Study

A pre-feasibility study may be undertaken prior to a feasibility study to further develop the major areas of the Project and prepare a cost estimate with a +25/-15% precision. It is expected that this will take between 3 and 6 months to complete and integrate potential input from authorities (permitting), end users (offtake specifications) and value engineering to optimise for possible bank debt consideration. This pathway will require consultation with JV partners.

### 8.3 Permitting

Under the provisions of the MLA (for the Exploitation Permit) which the JV has applied for, permits and approvals are applied for and will be required prior to the commencement of any mining activity. As noted, the JV has not sought to determine if a new MLA would be required, or if it desires to do so. Infinity is therefore not aware if the JV would need to lodge a new MLA or amend the existing one. Under an MLA numerous permits are required to be processed. These permits include; water usage and discharge permits, E.I.A approval, mine operation and closure plan approvals, granting of a mining licence, and industrial land rezoning permits prior to development.

Other related employment and transport permits will also be required. Approvals are managed by the regional and municipal government authorities.

Infinity's JV partner, Valoriza Minería SA is a wholly owned subsidiary of large Spanish-based, international construction company Sacyr, S.A (Ibex 35 traded company). Sacyr is the preferred contractor for mine construction and has an excellent record for permitting and construction in Spain, having extensive experience in accessing and developing civil construction sites in all regions of Spain over an extensive period. This interaction with all levels of government is extremely beneficial to the permitting and development of the San Jose Project.

#### 8.4 Early Works

Limited works can be completed prior to granting of access and development permits. Offsite engineering and design can begin with the intent of making modular components. Purchase of property can also be conducted to expedite final development.

Mining can commence, and ore-streaming initiated prior to final construction completion and commissioning of the process plant.

Infinity has allowed for a year of land access and other activities to occur prior to any construction and work on ground.

#### 8.5 Construction

Construction and civil engineering is expected to be conducted using largely local contractors. Plant and equipment can be readily sourced from within Europe or ex-China. The proposed flotation beneficiation, kiln, filtration, crystallisation and precipitation components proposed are commonly used and available items. The construction process would require an increased workforce and access to adjoining power and gas networks. Infinity's JV partner, Valoriza Minería SA is a wholly owned subsidiary of large Spanish-based, international construction company Sacyr, S.A (Ibex 35 traded company). Sacyr is the preferred contractor for mine construction and has an excellent record for permitting and construction in Spain.

#### 8.6 Commissioning and Start-Up

Process plant commissioning is expected to take between 4-6 months with the majority of lithium hydroxide being of initially technical grade then the majority of output to be battery grade.

#### 8.7 Development Schedule

Infinity is in JV with Spanish company Valoriza Minería on San Jose. The JV Company has lodged a Mining Licence Application (MLA) for the development of an integrated mining and lithium chemical production facility at San Jose. This application currently specifies production of a lithium carbonate product. A substantial amount of lithium carbonate is consumed in the production of lithium hydroxide. This scoping Study demonstrates the ability to produce lithium hydroxide and other lithium chemicals directly from hardrock lithium mineralisation at San Jose. Any development of an integrated mining and lithium chemical production facility at San Jose will require permitting by regional Environmental and Mining authorities. These authorities are currently reviewing the MLA lodged in Q4 2017.

The JV has not considered yet whether it will conduct additional work on the lithium hydroxide flow sheet and development. Infinity and the JV is not aware of whether a variation of this nature at the final product stage of the integrated operation would require a revised MLA submission, and if it did, whether it would lodge such a variation.

On the assumption that the JV elected to proceed with lithium hydroxide a preliminary development schedule has been constructed and is presented in Figure 21. The development timeline proposes production approximately 3.5 years from commencement of advanced studies and commercial production approximately 3 years after obtaining the relevant payments, access and funding.

	Year 0				Year 1				Year 2			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Scoping Study												
Pre Feasibility /Feasibility Study												
Permitting												
Financing												
Construction												
Commissioning												
Production												

**FIGURE 21: PROJECT TIMELINE**

The above schedule is preliminary, and it is reliant upon a positive feasibility study, access to capital and obtaining relevant government permits, none of which are guaranteed.

## 9 GEOLOGY AND RESOURCES

### 9.1 Geology

#### Regional Geology

The San Jose Lithium Project is a zinnwaldite replacement deposit and is hosted by pelitic slates of the Central Iberian Zone, deformed during the Ordovician to form the Caceres sedimentary syncline. The syncline hosts quartz veins that are orthogonal to its axis and interpreted to emanate from an underlying S-type muscovite granite pluton. Lithium mineralisation occurs mainly within the slates but is also present in the quartz carbonate veins. The veins have historically mined for tin and tungsten. Low-grade mineralisation is also contained within quartzite, which is conformable to the slate.

Mineralisation is pervasive around the quartz vein structure and that the structure apparently transects the entire syncline. This implies that the mineralisation extends beyond Investigation Permit no. 10C10343-00 into the adjacent tenement granted to the JV. Mineralised alteration includes greisenisation, albitisation and (or) tourmalinisation. Greisen is a type of phyllic alteration characterised lithium and other mineral-bearing micas and is a common model for economic deposits. Polyphase mineralisation and multiple zones of fluid influx controlling ore distribution render identification of alteration zoning patterns difficult.

The deposit is located within the Central Iberian Zone of the Hercynian Massif. Within this zone there are four distinct geological units; igneous rocks, Precambrian sediments, Palaeozoic and Quaternary deposits. The deposit is hosted by Palaeozoic sediments of the Caceres syncline and mineralisation is interpreted to be directly related to the abundant granite batholiths.

#### Local Geology

The ambygonite-bearing quartz veins were interpreted on section by Infinity and expressed as the footwall of a series of sub-parallel lenses. Snowden applied an average width of 0.5 m to create a solid for estimation purposes. Quartzite units were provided by Infinity as validated solids based on lithological logging of quartz carbonate and quartzite intersections.

Snowden created a 0.1% Li threshold isoshell to constrain mineralisation, which resulted in a mineralisation wireframe that reflects the mineralisation trends.

### 9.2 Resource

Cube Consulting estimated the total Mineral Resource for the San Jose lithium deposit using Ordinary Kriging interpolation methods and reported above a 0.1% Li cut-off grade. Full details of block modelling and estimation are contained in the ASX announcement dated 5 December 2017 and updated 23 May 2018.

Classification	Tonnes (Mt)	Li(%)	Li <sub>2</sub> O (%)	Sn ppm
Indicated	59.0	0.29	0.63	217
Inferred	52.2	0.27	0.59	193
<b>TOTAL</b>	<b>111.3</b>	<b>0.28</b>	<b>0.61</b>	<b>206</b>

**TABLE 11: SAN JOSE MINERAL RESOURCE, REPORTED ABOVE 0.1% LI CUT-OFF**

Lithium (Li) mineralisation is commonly expressed as either lithium oxide (Li<sub>2</sub>O) or lithium carbonate (Li<sub>2</sub>CO<sub>3</sub>) or Lithium Carbonate Equivalent (LCE). Lithium Conversion:

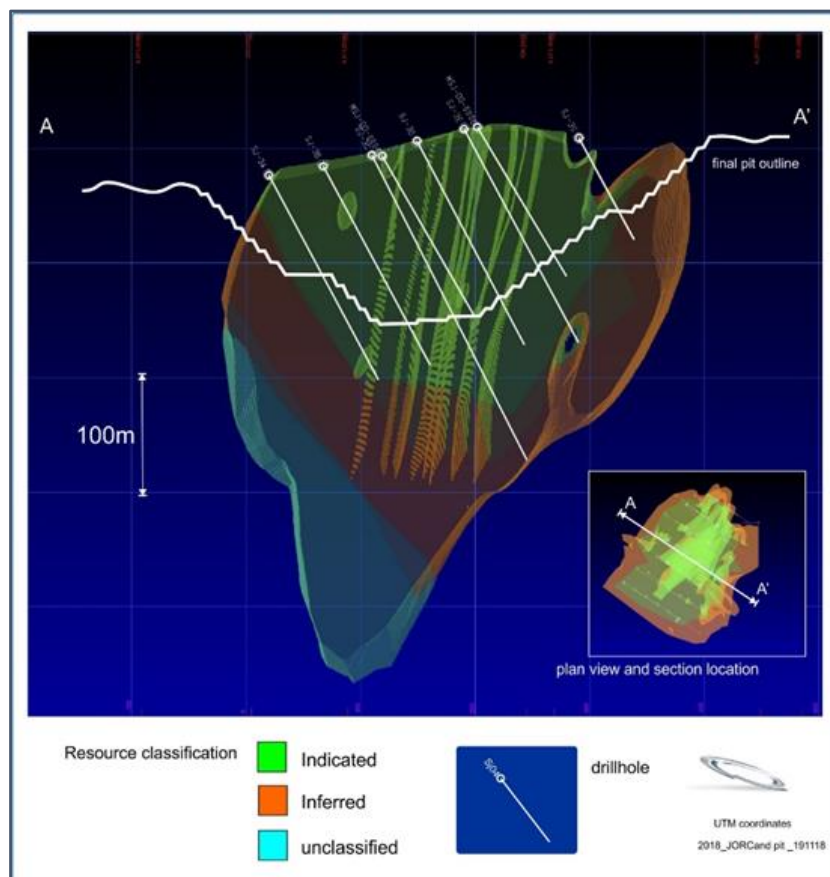


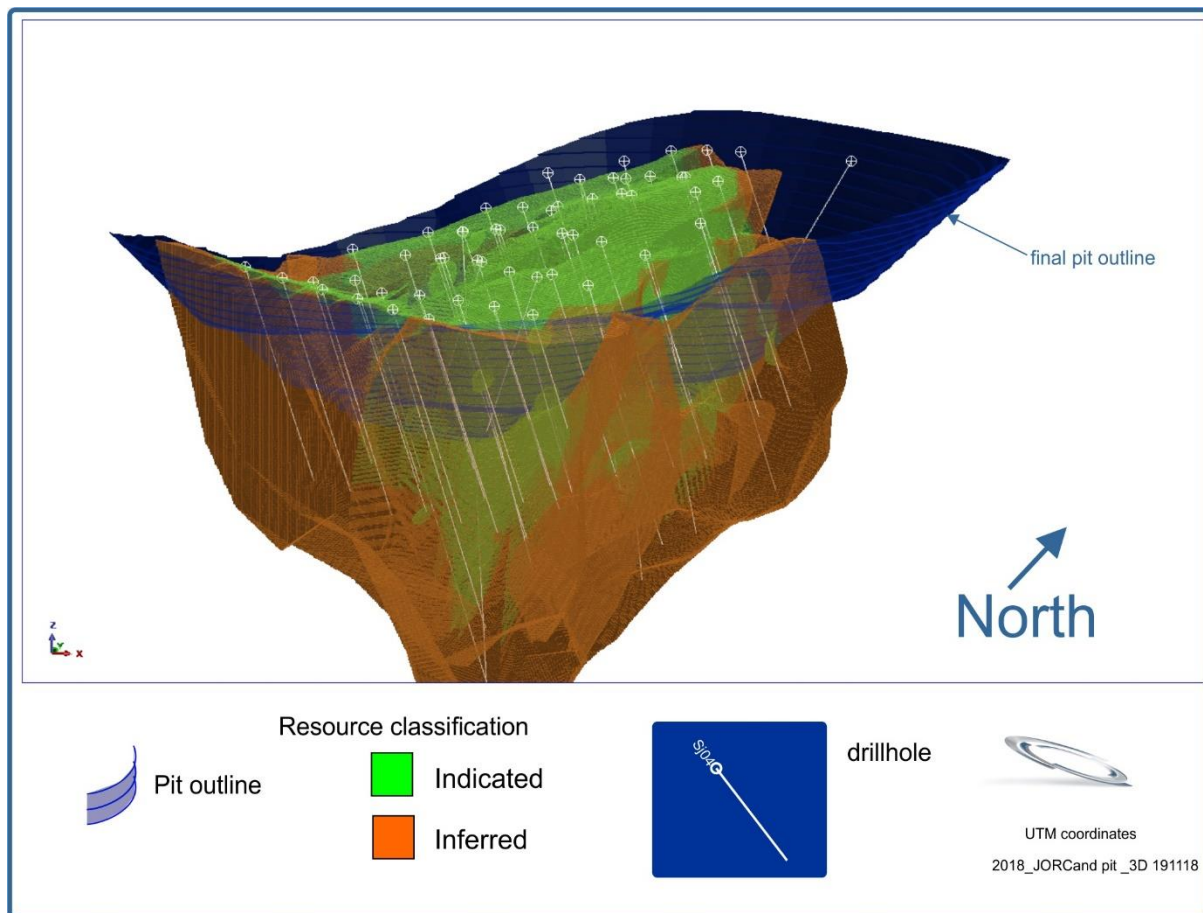
1.0% Li = 2.153% Li<sub>2</sub>O,  
1.0%Li = 5.32% Li<sub>2</sub>CO<sub>3</sub>  
1.0% Li<sub>2</sub>CO<sub>3</sub> = 0.880% LiOH.H<sub>2</sub>O

The Resource was last updated in Q2 2018 (ASX release 23 May 2018). Infinity is not aware of any new information or data that materially affects the information included in this ASX release, and Infinity confirms that, to the best of its knowledge, all material assumptions and technical parameters underpinning the resource estimates in this release continue to apply and have not materially changed.

### 9.2.1 Mineral Resource Category

The majority of Mineral Resources estimated are in the Indicated category (Figure 22). The Indicated category mineralisation is important, as it is required to support a Pre-Feasibility Study or Feasibility Study, potentially leading into Ore Reserve estimation, as defined by the JORC code.





**FIGURE 22: PLAN VIEW OF SAN JOSE SHOWING DRILLING, DISTRIBUTION OF RESOURCES SHOWING INDICATED (LIME GREEN), INFERRED (ORANGE) AGAINST DRILL PATTERN**

Resource classification is largely on the basis of drill density and Infinity has proven through limited repeat and extension drilling to show the orebody is predictable and distribution of mineralisation is highly consistent. Cube Consulting produced an updated Mineral Resource Estimate in May 2018 which resulted in a doubling of mineralisation in the Indicated category. The areas of higher density drilling in the core of the deposit have returned +95% Indicated resources with +90% of mineralisation within the proposed pit being classified as Indicated. The surrounding, less drilled zones are classified as Inferred.

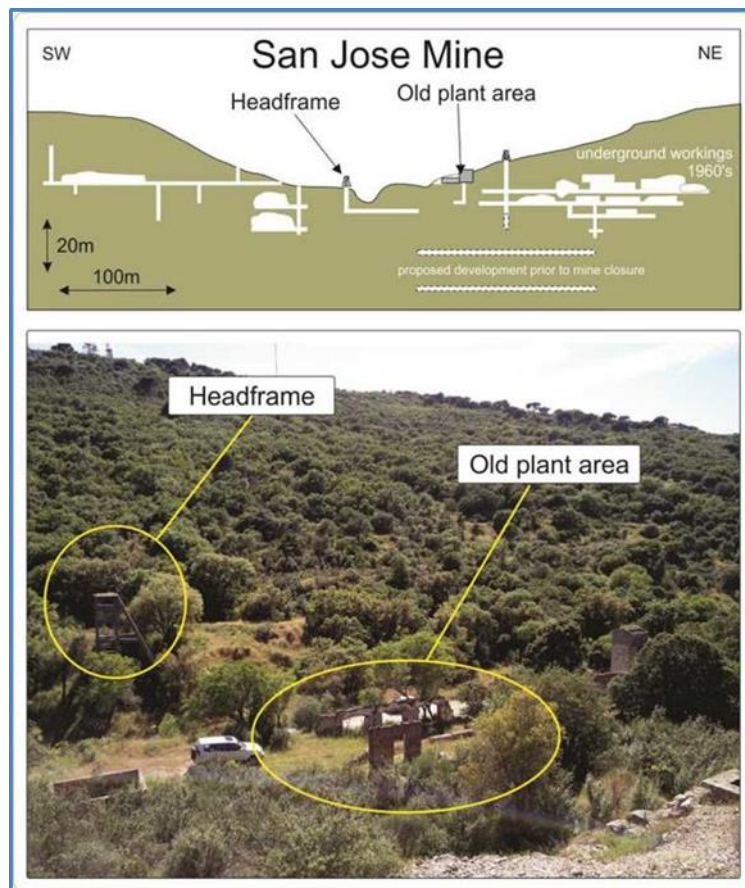
### 9.2.2 Exploration Target

The deposit has not been closed off by drilling and mineralisation remains open along strike and at depth and is host to very wide zones of mineralisation. Lithium mineralisation extends from surface to in excess of 350m vertically and in excess of 500m along strike.

An Exploration Target had previously been estimated for the deposit outside the JORC resource. This has not been updated subsequent to the revised JORC resource release dated May 2018 and will not be quoted.

### 9.2.3 Exploration and Mining History

Tin was historically mined at San Jose until the 1960's. Tin was exploited and mined from narrow quartz veins which strike along the main axis of mineralisation, are sub vertical and cross cut lithium-bearing mica host rock. Historic buildings used to exploit tin are still standing at San Jose although the mining operation was not large by modern standards (Figure 23).



**FIGURE 23: HISTORICAL TIN WORKING AT SAN JOSE WITHIN AREA OF LITHIUM MINERALISATION AND PROPOSED PIT**

Modern Exploration began in the 1980's and was targeting tin and lithium. Extensive drilling for lithium supported a historical feasibility study to produce lithium carbonate on site. The study was completed in 1991. The majority of the San Jose deposit has been drilled on nominal 70mE x 45mN drill spacing, with the drill sections oriented northwest-southeast. 52 drill-holes have been drilled as at 17 April 2017, totalling approximately 10,468m in length. Approximately 80% of drilling is reverse circulation (RC) drilling, with the remainder being diamond drill holes (DDH). A Spanish company, Tolsa, first drilled San Jose for lithium in the early 1990s and Infinity has since completed a confirmatory drilling program between December 2016 and March 2017.

### 9.3 Further Exploration and Works

The deposit at San Jose is open at depth and along strike. No further drilling is planned at San Jose as Infinity believes sufficient drilling has been completed to allow the production of a pre-feasibility study on the current proposed pit extents and a feasibility study on a smaller pit design. To date Infinity has completed 15 of the 53 drill holes at San Jose.

## 10 MODIFYING FACTORS

The modifying factors included in the JORC Code (2012 Edition) have been assessed as part of the Scoping Study, including mining, processing, infrastructure, economic, marketing, legal, environmental, social and government factors. The Company has received advice from appropriate experts when assessing each modifying factor.

### 10.1 Mining and Processing

Please refer to the Section 4 Operation

The Company has engaged Wave International, an Australian process engineering company to develop the process flow sheet, and work with the existing process flow sheet and design test work managed by IMO in Perth during 2017. This was largely focussed on upgrading the historic Tolsa data in the remaining fields on which this study basis assumptions drawn directly from the 1987-1991 Tolsa study. This is required to support proposed production levels, and further, to design and cost plant and related infrastructure appropriate for the proposed level of production. Wave have produced a Scoping Study based on all available information that can be used to optimise flow sheet and capital cost estimates in the feasibility stage.

Estimated results of the Scoping Study indicate that the annualised production results are achievable taking into account the existing mineral resource estimate, mining rates, process reagents and process plant design.

### 10.2 Infrastructure

Please refer to Section 5 Infrastructure.

### 10.3 Marketing

Please refer to Section 3 Supporting Data.

### 10.4 Economic

Please refer to Section 3 Supporting Data.

Key inputs and assumptions are outlined throughout this document to allow analysts and investors to calculate project valuations based on their own revenue assumptions.

The production target referred to in the Scoping Study is based on 91% Indicated Resources and 9% Inferred Resources over the Life of Mine.

### 10.5 Environmental

Please refer to Section 6 Environmental and Social and Permit Approvals.

The Company engaged Valoriza Minería who has a specialist arm within the mining group to manage this aspect of the Study.

Please refer to Section 7 Land Access and Tenure. The Company maintains a Stakeholder Engagement Register to record all communications with the varied list of Project stakeholders.

The Company retains the services of Steinepreis Paganin for expert legal advice in Australia and Alarcon & Fontanilla in Spain. There are no past, ongoing or pending legal matters that the Company is aware of in relation to the JV or the public tender. An objection has been lodged by a national environmental group in relation to Department procedures in awarding the grant of the tenure. This group has objected to numerous proposed mining activities throughout Spain. Infinity is aware that the Department is conducting a review following the procedure and the award of the rights and granting of the tenement 10343-00 in accordance with the Act.

The Company has maintained a highly consultative approach with the regulatory authorities to which proposed approval applications will be made, these include the relevant Extremadura government authorities which awarded the tender.

#### 10.6 Development and Funding

Infinity has only recently completed a Scoping Study for the San Jose lithium-tin Project and is not currently funded for the estimated initial development capital cost in the order of US\$288.3m (which includes a 10% contingency) will likely be required, and US\$343.9m (including a 10% contingency) over the life of the Project on an assumed 100% basis.

The Company remains confident that its market capitalisation will converge closer to the Company's future funding requirement as the Project is de-risked and greater certainty of initial development capital cost funding is obtained. This share price appreciation and the resulting increase in market capitalisation reduces the dilution from further equity financings and allows larger funding scenarios, improving the potential ability of the Company to finance the Project into production in the future.

Financing for development of mining companies often involves a broader mix of funding sources rather than just traditional debt and equity, and the potential funding alternatives available to the Company include, but are not limited to: prepaid off-take agreements; equity; joint venture participation; strategic partners/investors at project or company level; senior secured debt/project finance; secondary secured debt; and equipment leasing. It is important to note that no funding arrangements have yet been put in place, as these discussions will usually, and are expected to, commence concurrently with the completion of the feasibility studies.

The composition of the funding arrangements ultimately put in place may also vary, so it is not possible at this stage to provide any further information about the composition of potential funding arrangement.

The Board of Infinity believes there is a reasonable basis to assume that the necessary funding for the Project will be obtained, because of (but not limited to) the following:

- The 25% contributing partner, Valoriza Minería is a subsidiary of a major international construction company with positive cashflow;
- The high demand and increasing price of the commodity;
- The economics of the Scoping Study are highly attractive and for this reason it is reasonable for the Company to anticipate that equity financing will be available to further develop the Project;
- In addition to future equity financing, the Company plans to commence discussions with potential debt providers, and will continue these discussions to progress funding options. It is expected given the economics of the project, the stable jurisdiction and long mine life debt financing will be readily available for a part of the project funding;



- Infinity has demonstrated access to capital from equity capital markets. Funding of lithium projects has highlighted the advantages of the engagement of strategic partnerships and access to non-traditional sources of finance through alignment of offtake terms to strategic participants;
- The Company is confident there is a strong possibility that it will continue to increase the JORC Mineral Resource base at the Project to extend the mine life beyond what is currently assumed in the Scoping Study.

#### **Risk**

Risks and opportunities for the project were identified and classified according to the likelihood and consequence of their occurrence. Risk mitigation strategies outlined by Infinity has commenced planning the actions required to implement the strategies which are presently underway where appropriate.

The major risks identified were, accurately estimating the modifying factors moving from resource to reserve and in particular; beneficiation outcomes, overall Li<sub>2</sub>O recovery in the plant, the plant operating cost, identifying the mineralogy within the deposit (i.e. distribution of different lithium minerals), and other metallurgical characteristics which may have an effect on plant performance. Additional risks involve permitting and reclassification of land for industrial use.

Given the above, including the Project's economic metrics and its low-risk location in Europe, the Company has concluded it has a reasonable basis to expect that the Project's development capital cost could be funded following the completion of a positive Feasibility Study and obtaining the necessary project approvals.



## Appendices A Joint Venture Agreement

- Stage 1: (Completed) Upon Valoriza Minería obtaining the Investigation Permit, Valoriza Minería and Infinity will conduct technical and economic evaluation studies on the San Jose Mine ('SJM') and submit and Exploitation Concession (CdE) to the Extremadura Government within a period of 12 months (or such later date agreed by the Extremadura Government). At this point, Infinity will earn a 50% interest in the Special Purpose Vehicle (SPV) by expending €1.5 million on technical and related studies, exploration and other works required to produce the CdE which will include the submission of the CdE at any point until the end of Stage 1.
- Infinity may withdraw from its expenditure commitments at any time during Stage 1. Infinity forfeits all rights should it withdraw during Stage 1, or should it not meet the expenditure requirements and conditions of Stage 1.
- If Infinity can elect to increase its stake (Stage 2) or may continue in a 50/50 JV with Valoriza Minería to develop the project on standard industry terms.
- Stage 2: If Infinity elects to increase its shareholding in the SPV to 75% it will enter into "Stage 2". During Stage 2, Infinity may increase its shareholding by expending a further minimum €2.5 million on or in relation to the SJM over a period of 2 years and by producing a Feasibility Study ('FS'). This can be extended to 3 years with a payment of €0.1 million if the FS has not been completed.
- Upon completion of Stage 2 and Infinity earning a 75% interest, Infinity and Valoriza Minería will form the JV reflecting the ownership percentages in the SPV and will fund pro-rata and manage the project development on standard industry terms.
- Valoriza Minería may, at its sole discretion by notice in writing to Infinity within 45 days of the date that PLH earns the 75% interest, sell its remaining 25% interest in the SPV to Infinity for a staged payment comprised of a) €0.5 million cash to be paid within 90 days, b) €0.5 million cash at commencement of mining, and c) 2% NSR capped at €3.0 million. Infinity can accelerate this payment by paying €2.5 million cash.
- Infinity may accelerate ownership through either Stage 1 or 2 by advancing payment to the SPV of the minimum funds required for the completion of works. For the stage 2, in addition to the advancing payment required, Infinity shall complete the FS.
- Infinity may withdraw from its expenditure commitments at any time during Stage 2. Infinity forfeits all rights to earn a 75% shareholding of the SPV should it withdraw during Stage 2, or should it not meet the expenditure requirements of Stage 2. In that event, Infinity will retain its 50% shareholding in the SPV and the parties will form the JV.

## Appendices B Tenure Map

