

28 APRIL 2023

CORPORATE ANNOUNCEMENT

## MARCH 2023 QUARTERLY REPORT

### HIGHLIGHTS

#### 1. Lake Hope, WA (IPT 80%)

- Impact to acquire an 80% interest in the Lake Hope Project, an advanced High Purity Alumina (HPA) project located near Hyden, in the Tier One jurisdiction of Western Australia.
- Lake Hope, a dry playa lake, contains a unique fine-grained (<16 microns), very pure, high-grade aluminous clays in the top few metres of the lake bed.
- An Exploration Target for contained alumina ( $Al_2O_3$ ) in the top 0.5 m to 1.5 m or so has been calculated from initial drill results of between 2.6 million to 4.7 million tonnes at a grade of between 24.3%  $Al_2O_3$  and 26.7%  $Al_2O_3$  for a contained 0.63 Mt to 1.25 Mt of  $Al_2O_3$ .
- Exploration Target Disclaimer - Investors should be aware that the potential size and grade of the alumina deposit at Lake Hope are conceptual in nature. Insufficient work has been undertaken to estimate a JORC 2012-compliant Mineral Resource Estimate, and it is uncertain if further exploration will result in the estimation of a Mineral Resource. For further details on the calculation of the Exploration Target please refer to the ASX Announcement dated March 21<sup>st</sup> 2023.
- The unique geological properties of Lake Hope will allow for a shallow, very low-cost, free-digging operation only a few metres deep and with offsite metallurgical processing at an established industrial site.
- The proposed operation would have a small environmental footprint and low carbon emissions.
- Impact aims to bring Lake Hope into production to deliver high-margin end-products into a rapidly expanding global market with a forecast average price for 4N HPA (99.99%  $Al_2O_3$ ) and related products of about US\$20,000 per tonne.

#### COMPANY DETAILS

Market Cap: A\$28m (0.012 p/s)

Issued Capital: 2,481,370,556

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#### DIRECTORS

Mr Peter Unsworth  
Chairman

Dr Michael Jones  
Managing Director

Mr Paul Ingram  
Non-Executive Director

Dr Frank Bierlein  
Non-Executive Director

Mr Bernard Crawford  
Company Secretary

## **2. Broken Hill, WA (IPT 100%)**

- Field work, ground geophysical surveys and geophysical interpretation are underway as part of the inaugural BHP Xplor Programme to accelerate exploration at Broken Hill
- IGO Joint Venture (EL7390 and EL8234). Drill assays awaited.

## **3. Arkun-Beau, WA (IPT 100%)**

- Interpretation in progress of results of extensive soil geochemistry surveys.
- Further soil geochemistry surveys underway.
- Airborne EM data re-processed by Intrepid Geophysics. Interpretation in progress.
- Ground DGPR survey completed at Beau. Interpretation in progress.

## **4. Narryer JV, WA**

- Soil geochemistry and rock chip results received and being interpreted.

## **5. Corporate**

- Cash at March 31<sup>st</sup> 2023 was \$1.14 Million

## OVERVIEW

During the Quarter, Impact announced a major change in focus, transitioning immediately from early-stage explorer to advanced developer of the Lake Hope High Purity Alumina Project (ASX Release March 21<sup>st</sup>, 2023).

The Lake Hope Project, in which Impact is earning an 80% interest, offers the company the opportunity to be a low-cost entrant into the HPA chemical market, a high margin business forecast to grow strongly over the next decade. A Pre-Feasibility Study (PFS) on the project is now underway (ASX Release April 6<sup>th</sup>, 2023). How could you not realise that this needed to be filled in??

In addition, significant fieldwork was completed at Broken Hill under the auspices of the BHP Xplor programme, a prestigious and innovative global business model to help fund junior explorers, and which Impact is proud to be one of the inaugural cohorts (ASX Release January 17<sup>th</sup>, 2023).

In the background, work continued on Impact's extensive portfolio of projects in the emerging mineral province of southwest Western Australia, a Tier One jurisdiction and where Impact has a strategic focus. The province is home to the world-class deposits such as the recent Julimar PGE-Ni-Cu discovery (ASX: CHN) and the Greenbushes lithium-tantalum mine. Impact's projects in the province are both 100% owned, (Arkun-Beau, Dinninup, Mineral Hill and Martup) and in joint venture (Jumbo, Narryer, Dalgaranga and Doonia) (Figure 1).



Figure 1. Location of Impact's projects in Western Australia.

## PROJECT REPORTS

### 1. LAKE HOPE, WA (IPT earning 80%)

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During the Quarter, Impact announced that it had signed a binding term sheet with Playa One Pty Ltd, an unrelated private company, to earn an 80% interest in the advanced Lake Hope High Purity Alumina (HPA) Project in Western Australia.

The Project offers Impact the opportunity to be a low-cost entrant into the HPA chemical market, a high-margin business forecast to grow strongly over the next decade.

The Project contains globally unique high-grade aluminium clay minerals in the top few metres of a playa lake, which has unique physical and chemical properties that allow for low-cost mining and offsite metallurgical processing via a novel and cost-disruptive acid leaching process. Preliminary economic studies indicate that the production of HPA and related products from Lake Hope will be cost-competitive with current producers and other developers in Australia and globally.

The project is a transformational acquisition for Impact and the entire company is looking forward with great enthusiasm to the challenge of developing the project and ensuring that Impact Minerals is the next "playa" in HPA.

#### Key Terms of the Binding Term Sheet

Impact may earn an interest in Playa One Pty Ltd in stages according to the following terms:

1. Impact to make a \$25,000 cash payment for a six-week option to complete due diligence.
2. If satisfied with due diligence, Impact will exercise the option and earn the right to sole fund a Pre-Feasibility Study (PFS) by paying \$175,000 cash, issuing 50 million fully paid ordinary shares (escrowed for 12 months), and issuing 30 million unlisted options exercisable at 1.125c, vesting 12 months from the date of issue and expiring on 1 December 2025, to the shareholders of Playa One. Upon completion of a PFS, Impact can enter an incorporated joint venture with the Playa One shareholders (through an entity representing them, Playa Two Pty Ltd). If so, it will acquire an immediate 80% interest in Playa One by issuing up to 120 million fully paid ordinary shares capped at a maximum value of \$8 million (based on the 5-day VWAP before the election) to the Playa One Shareholders.
3. Upon completion of a Definitive Feasibility Study to be sole-funded by Impact, Impact will issue up to 100 million fully paid ordinary shares capped at a maximum value of \$10 million (based on the 5-day VWAP before the ASX announcement of the completion of the DFS) to the Playa One Shareholders.
4. Playa One shareholders will be free-carried to a Decision to Mine. Impact will maintain all Playa One tenements in good standing during this time.
5. If a Decision to Mine is made, the Playa One Shareholders may contribute to mine development costs or be diluted. If their interest falls below 7.5%, it will convert to a 2% net smelter royalty.

## Project Details

The Lake Hope Project covers numerous prospective salt lakes between Hyden and Norseman in southern Western Australia, a Tier One jurisdiction (Figures 1 and 2). It comprises one granted exploration licence (E63/2086), covering the Lake Hope Project already discovered, together with five further exploration licence applications (ELA63/2317, 2318 and 2319, and ELA74/673 and 764) which are poorly explored. The tenements cover about 238 km<sup>2</sup> and are all 100% owned by Playa One.

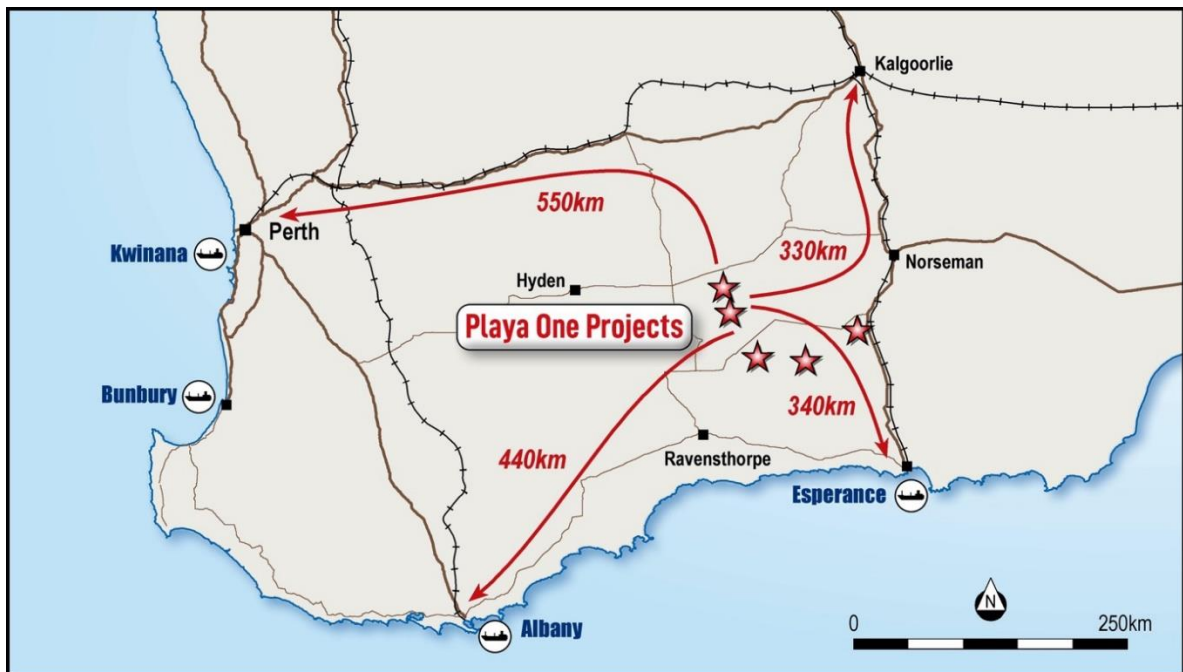


Figure 2. Location of Playa One tenements with options for trucking and off-site processing.

## Geology

The salt lakes of Western Australia are well known for their unique and complex hydrogeochemistry, which has led to the formation of a wide variety of economic minerals and brines within the playa systems. These include the world-class Yeelirrie uranium deposit (>100 Mlb U<sub>3</sub>O<sub>8</sub>), significant resources of potash brines, gypsum and lime-sand.

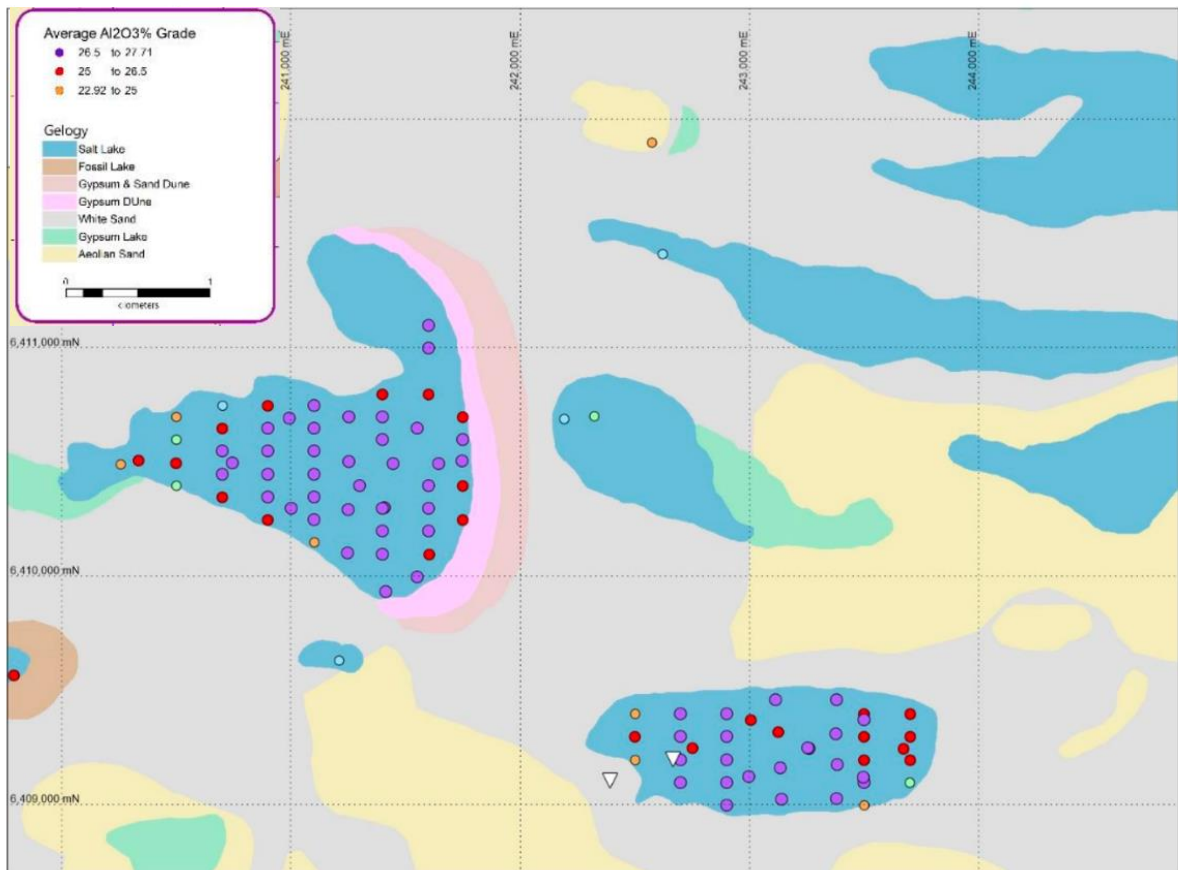
The Lake Hope area was identified by Playa One as having unique climatic and geological characteristics that have resulted in the formation of what is probably a globally unique aluminium-rich material within the surficial clay layers of two small salt lakes, or “pans”, in the Lake Hope playa system. These pans are called West Lake and East Lake (Figure 3).

The lake clays, which are only up to a few metres thick, have unique chemical and physical properties and consist almost entirely of aluminium-bearing minerals that are plasticine-like in consistency and can be easily sampled with hand-held augers and push tubes (Figure 4).

In addition, particle size distribution analysis demonstrates that virtually all the minerals are less than 16 microns, and from 60% to 80% of them occur at grain sizes of less than 5 microns (Figure 5).

These unique characteristics have produced a near-perfect mineral: a very high-value end-product whose parent ore is:

- very soft and shallow, allowing for extremely cheap free-digging with limited infrastructure requirements, no pre-stripping, no selective mining, a tiny environmental footprint, and limited rehabilitation requirements.
- naturally fine-grained with no need for crushing and grinding, allowing for transport to an off-site processing facility that can be built on existing industrial sites (Figure 2). In essence, this is Direct Shipping Ore (DSO).
- comprised of a few minerals that require only simple washing before acid leaching, thus allowing for low-cost straightforward metallurgical processing.



**Figure 3.** Geology of the Lake Hope Project showing drill hole locations and average aluminium grade on East Lake and West Lake.



Figure 4. Lake Hope showing the push tube sampling method (!) and an example of the lake clay from the push tube.

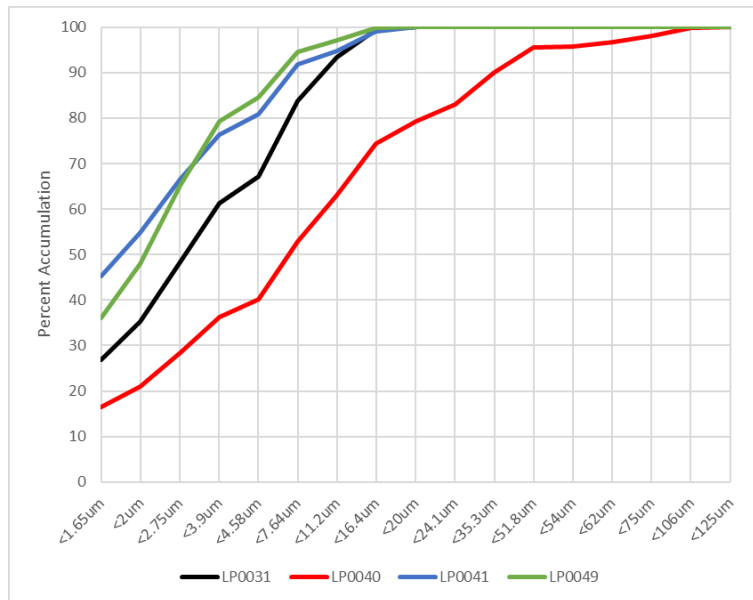


Figure 5. Particle size distribution analysis for four samples.

## Drilling and Assay Results

A total of 99 holes have been drilled by hand-held auger and push tube methods across the two lakes, with all samples submitted for assay at Intertek Laboratories in Perth (ASX Release March 21st 2023 for further details).

The drilling has defined a uniform and coherent layer of aluminium-bearing clay in both lakes that is up to 1.65 m thick in places but still open at depth in most areas.

The assays mainly returned very high grades of aluminium oxide (alumina -  $Al_2O_3$ ) of between 24.5% and 27.8%  $Al_2O_3$  and, significantly, with low amounts of potential contaminants such as CaO (0.05% to 0.08%),  $Fe_2O_3$  (2.4-3.2%),  $Na_2O$  (2-4%) and  $P_2O_5$  (0.05-0.07%).

High-grade assays with greater than 27%  $Al_2O_3$  are presented in Table 1, with a complete set of assays and drill hole collar information are in the ASX announcement of march 21<sup>st</sup>, 2023. The distribution of aluminium in the lakes is shown in Figure 6.

A maiden Mineral Resource Estimate is currently being prepared in accordance with the JORC 2012 Code, with further infill drilling recently completed.

HOLE_ID	MGA_E	MGA_N	METHOD	Interval	Al2O3	K2O	Na2O	CaO	Fe2O3	MgO	MnO	SiO2	Cr2O3	P2O5	LOI
LHP002	243134	6409163	PUSH	0.6	27.09	6.78	3.5	0.23	2.93	0.86	BDL	18.45	0.01	0.08	30.06
LHP004	243115	6409462	PUSH	0.6	27.53	7.1	3.46	0.08	2.86	0.81	BDL	17.13	0.008	0.08	29.25
LHP006	243380	6409461	PUSH	0.6	27.47	7.09	3.55	0.1	2.84	0.83	BDL	17.09	0.008	0.07	25.27
LHP007	243378	6409314	PUSH	0.6	27.23	5.54	3.47	0.13	2.99	0.78	BDL	17.98	0.009	0.07	31.15
LHP014	241247	6410105	PUSH	0.5	27.47	5.99	3.35	0.06	2.94	0.8	BDL	22.98	0.011	0.061	26.88
LHP015	241249	6410294	PUSH	0.5	27.71	5.99	3.48	0.06	2.88	0.84	BDL	22.38	0.01	0.059	29.27
LHP016	241253	6410504	PUSH	0.5	27.48	5.87	3.49	0.05	2.98	0.81	BDL	23.39	0.012	0.059	28.37
LHP019	241407	6410302	PUSH	0.5	27.29	7.44	3.35	0.06	2.71	0.74	BDL	15.84	0.008	0.068	33.4
LHP031	240900	6410450	PUSH	0.62	27.11	5.95	3.39	0.05	3.07	0.8	BDL	23.14	0.011	0.05	30.08
LHP038	241100	6410450	PUSH	0.6	27.42	5.91	3.24	0.05	3.25	0.79	BDL	23.16	0.011	0.058	30.75
LHP039	241100	6410550	PUSH	0.88	27.63	6.09	3.44	0.05	3.14	0.79	BDL	21.54	0.011	0.061	30.41
LHP040	241100	6410650	PUSH	0.85	27.16	5.91	3.46	0.05	3.2	0.78	BDL	23.1	0.013	0.061	30.85
LHP042	241300	6410400	PUSH	0.82	27.48	6.03	3.49	0.05	3.19	0.81	BDL	21.98	0.011	0.063	30.62
LHP045	241400	6410600	PUSH	0.82	27.66	5.9	3.56	0.05	3.29	0.83	BDL	22.37	0.012	0.062	29.55
LHP046	241400	6410700	PUSH	0.88	27.07	5.85	3.99	0.05	3.08	0.82	BDL	22.27	0.011	0.058	30.69
LHP049	241550	6410650	PUSH	0.88	26.98	5.78	3.73	0.06	3.14	0.83	BDL	23.34	0.012	0.06	30.19
LHP065	242700	6409300	AUGER	0.85	27.34	7.03	3.23	0.1	3.11	0.76	BDL	17.76	0.009	0.076	32.4
LHP068	242900	6409100	PUSH	0.78	27.02	7.16	3.37	0.16	3.13	0.8	BDL	17.11	0.009	0.072	32.7
LHP070	242900	6409300	AUGER	1	27.2	7.05	3.45	0.09	3.2	0.79	BDL	17.98	0.009	0.079	32.31
LHP083	242666	6409208	PUSH	0.4	27.04	6.96	3.26	0.16	3.02	0.78	BDL	18.69	0.009	0.074	31.24
LHP099	241400	6410300	AUGER	1.3	27.1	6.08	3.56	0.06	3.05	0.75	BDL	22.79	0.011	0.061	30.28

**Table 1.** Drill hole results with assays greater than 27%  $Al_2O_3$



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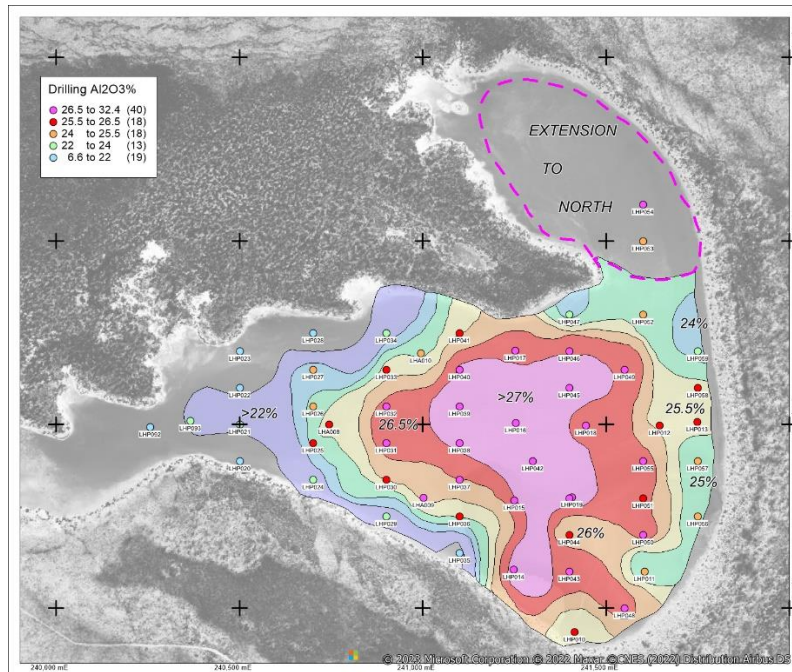
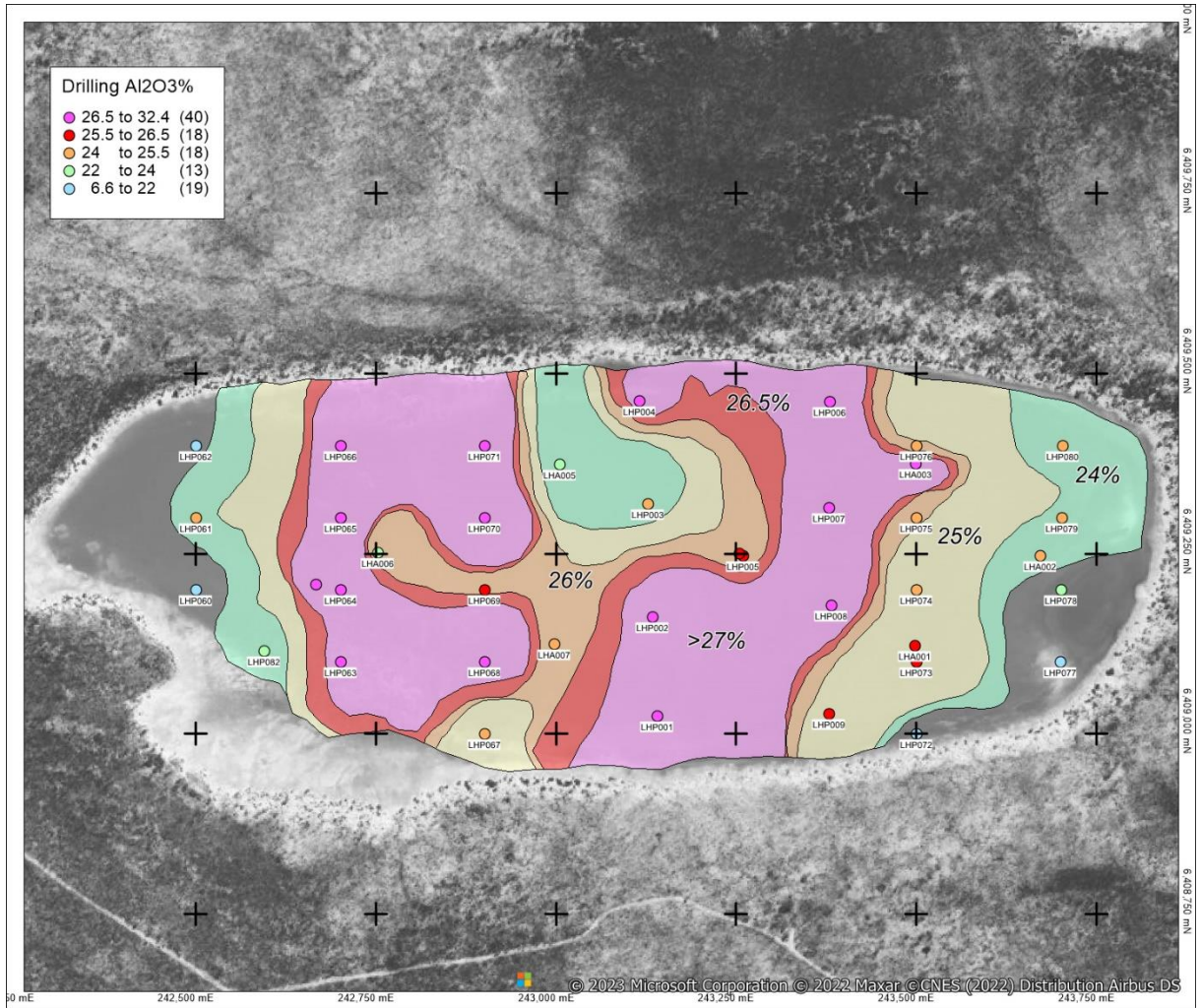


Figure 6. Drill results showing the average Al<sub>2</sub>O<sub>3</sub> grade for West Lake (top) and East Lake (bottom) at the same scale.

## Estimates Of Tonnes and Grade

An Exploration Target for alumina has been calculated for the mineralisation discovered thus far, highlighting Lake Hope's significant exploration potential.

### West Lake

1.65 million to 3.3 million tonnes at a grade of between 24.5% Al<sub>2</sub>O<sub>3</sub> and 27% Al<sub>2</sub>O<sub>3</sub>, containing between 403kt Al<sub>2</sub>O<sub>3</sub> and 895kt Al<sub>2</sub>O<sub>3</sub>.

### East Lake

0.93 million to 1.39 million tonnes at a grade of between 24% Al<sub>2</sub>O<sub>3</sub> and 26% Al<sub>2</sub>O<sub>3</sub>, containing between 223Kt Al<sub>2</sub>O<sub>3</sub> and 362Kt Al<sub>2</sub>O<sub>3</sub>.

### Total

2.59 million to 4.74 million tonnes at a grade of between 24.3% Al<sub>2</sub>O<sub>3</sub> and 26.7% Al<sub>2</sub>O<sub>3</sub> containing between 0.63Mt and 1.25Mt of Al<sub>2</sub>O<sub>3</sub>.

Table 2 shows key statistics and the Exploration Target

Lake	Surface Area m <sup>2</sup>	Thickness	Tonnage Range		Al <sub>2</sub> O <sub>3</sub> Grade		Contained Alumina	
			Min	Max	Min	Max	Min	Max
West	1,300,000 m <sup>2</sup>	0.4 to 1 m	1,650,000 t	3,310,000 t	24.5 %	27.0 %	403,000 t	895,000 t
East	685,000 m <sup>2</sup>	0.4 to 2 m	930,000 t	1,390,000 t	24.0 %	26.0 %	289,000 t	360,000 t
Combined			2,590,000 t	4,740,000 t	24.3 %	26.7 %	629,000 t	1,250,000 t

**Table 2.** Lake Hope Exploration Target, 2023. Columns may not sum correctly due to rounding.

### EXPLORATION TARGET DISCLAIMER

*Investors should be aware that the potential size and grade of the alumina deposit at Lake Hope are conceptual in nature. Insufficient work has been undertaken to estimate a JORC 2012-compliant Mineral Resource Estimate, and it is uncertain if further exploration will result in the estimation of a Mineral Resource.*

*For further details on the calculation of the Exploration Target please refer to the ASX Announcement dated March 21<sup>st</sup> 2023.*

Further work is currently underway to convert the Exploration Target into a Mineral Resource Estimate. This work includes additional drilling to establish the true thickness of the aluminous mud, an increase in the drill density from 200 m by 100 m to at least 100 m x 100 m, further measurements of the bulk density and accurate topographic control via DGPS survey.

### Metallurgy

Playa One has developed a novel, relatively low-cost hydro-metallurgical process to convert mineralisation of a type as found on Lake Hope into HPA with the potential to produce a purity exceeding 99.99% (4N HPA), generally taken as the industry standard purity for product comparison.

Initial bench-scale metallurgical test work on representative material, process design, flow sheet design, and process engineering studies have been completed, leading to significant breakthroughs in mineral processing technology, including proprietary technologies.

Figure 7 illustrates the basic process steps in a simplified schematic flow sheet.

Impact's review of this novel process indicates that together with the unique physical and chemical characteristics of the Lake Hope clays, using the Play One metallurgical process may offer a breakthrough in HPA production with potentially significant cost advantages compared to the processing of kaolin, which is commonly proposed as a source of ore for HPA and is the subject of several on-going studies by other companies.

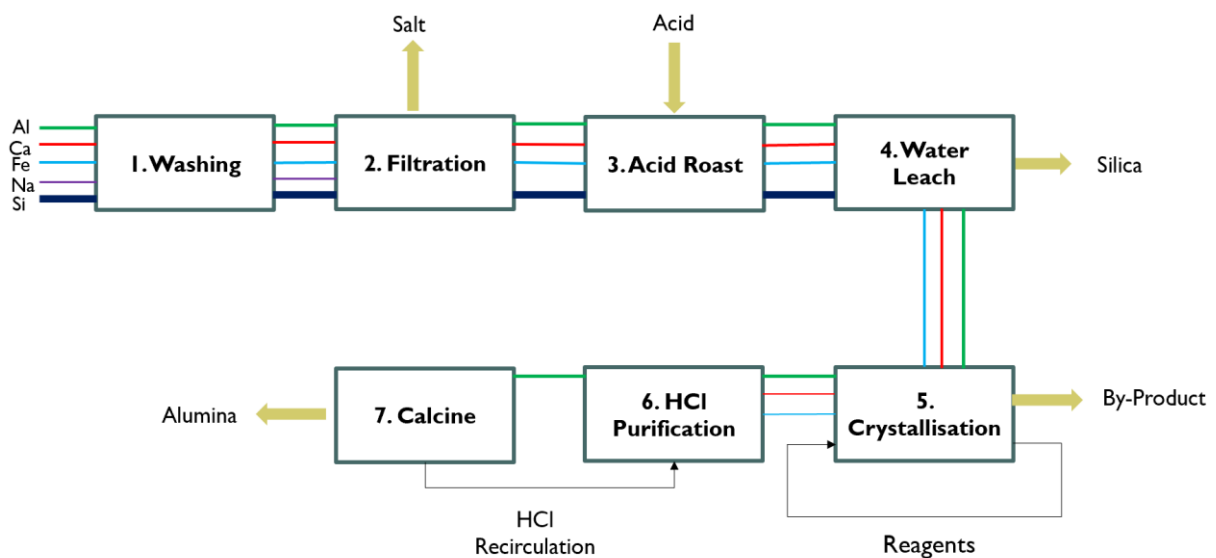


Figure 7. Schematic flow sheet.

These advantages include the following:

- the naturally occurring micron-sized particles and relatively homogeneous ore require no comminution, grinding, classification, or wet-dry screening.
- a simple wash and filtration circuit for upfront processing.
- a low-temperature sulphuric acid leach, a generally readily available and cheaper acid than others.
- Eliminating the front-end energy-intensive calcination required in the kaolin process, thus significantly reducing energy costs, the flow sheet complexity and CO<sub>2</sub> emissions.
- Relatively benign waste products.

Optimisation of the processing flow sheet will be a key focus of the Pre-Feasibility Study (PFS) to be commenced immediately by Impact.

The expected relatively low cost of mining also allows for significant optionality for the location of the metallurgical plant, which is likely to be located in one of four main population centres (Figure 2).

### Production of 4N HPA

Playa One's sulphate metallurgical process has successfully produced >99.99% Al<sub>2</sub>O<sub>3</sub> (nominally 4N HPA) with purities of 99.994% to 99.996% in initial assays. These assays have been done on the product from the bench scale test work, with further details in the JORC Table at the end of the report. As well as the Al<sub>2</sub>O<sub>3</sub> assay (with all other major elements being below detection), total contaminants are about 41 ppm, representing 99.996% alumina (Al<sub>2</sub>O<sub>3</sub>) with the primary contaminants being Fe (2.08ppm), K (7.94ppm), Mg (7.23ppm) and Na (6.61ppm). This compares favourably with the purity of other HPA products published in the public domain (Table 3).

	Playa One	KRR	FYI
Element	Sulphuric	HPA7	5N
As	0.69	NR	NR
Ag	NR	NR	0.1
B	NR	NR	NR
Ba	0.2	0.516	0.5
Ce	BDL	NR	0.34
Ca	2.57	<0.06	NR
Cr	0.7	2.76	5
Co	0.15	0.046	0.1
Cs	0.02	<0.01	0.03
Fe	2.08	6.2	BDL
Gd	BDL	NR	0.01
Ga	2.01	0.809	NR
K	7.94	17.4	NR
La	BDL	NR	0.2
Mg	7.23	0.603	NR
Mn	2.74	0.138	1
Mo	0.33	0.052	NR
Na	6.61	8.59	0
Nb	0.01	3.01	NR
Nd	NR	NR	0.15
Ni	0.11	0.377	BDL
P	3.45	1.74	NR
Pb	0.76	<0.01	NR
Pr	BDL	NR	0.04
Rb	0.26	<0.01	0.1
Sc	BDL	NR	0.1
Si	3.05	15.8	4.67
Sm	BDL	NR	0.02
Sn	BDL	NR	0.8
Sr	0.2	0.053	0.2
Ti	0.08	0.695	NR
U	BDL	NR	0.01
V	0.01	<0.02	0.3
W	BDL	NR	0.1
Zn	0.15	0.488	NR
Zr	BDL	NR	NR
<b>TOTAL</b>	<b>41.35</b>	<b>59.28</b>	<b>13.67</b>

**Table 3.** Minor element results for Lake Hope HPA compared with results from King River Resources Ltd (ASX:KRR 25<sup>th</sup> March 2021, 30<sup>th</sup> April 2021) and FYI Resources Ltd (ASX:FYI 13<sup>th</sup> March 2019).

*Assay methods vary between individual data sources, and direct comparisons should be cautiously viewed.*

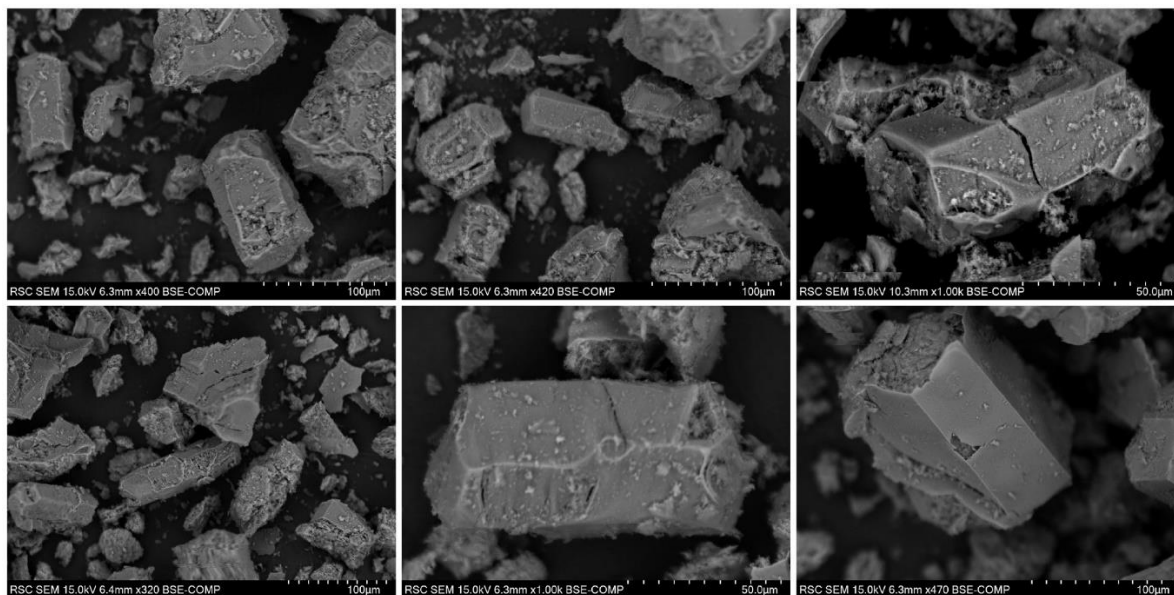
*Some elements were omitted for brevity and are reported as "Others\_ppm".*

*Total ppm is the sum of all elements reporting above the detection limit.*

*BDL = below the detection limit. NR = Not Reported.*

Samples of an example precursor product and final calcined HPA produced using the metallurgical process were analysed using SEM and EDS microscopy by RSC Mineral Consultants, Perth, Western Australia. Precursor salts (before calcination) were imaged as agglomerations of micron-sized particles of alumina. The final calcined HPA product was imaged as corundum crystals and fused aggregates up to 200 microns in size (Figure 8). X-Ray diffraction studies have confirmed that the final product is alpha-HPA, the desired form of alumina.

It should be noted that the precipitation of the crystals occurred with little or no control over temperature and pressure. In addition, work has yet to be done on refining the final HPA product, for example, jet milling or developing intermediate saleable products that the end-users require. This critical capability needs to be built out by Impact, and this will be another area of focus in the PFS using material produced from the bench-scale test work.



**Figure 8.** Backscattered scanning electron micrographs of final calcined alumina showing corundum crystals and nanoparticles (Sample HY11558).

### Preliminary Economic Considerations

Playa One has completed a high-level review of the mining and chemical processing costs associated with a preferred development concept of the lake clay-sulphate process.

Impact has reviewed this concept in detail and has concluded that it represents a possible compelling path forward to production with the potential to be cost-competitive with existing and proposed HPA operations within Australia and internationally.

Impact is completing the work required to produce a Scoping Study to confirm Playa One's review. This will include the maiden Mineral Resource Estimate.

A logistics option study identified Kwinana, Albany, Esperance and Kalgoorlie as possible locations for a processing plant. They are all roughly equidistant from Lake Hope and easily accessible via road, rail, and ports for reagent supply and product export (Figure 1).

The unique geological properties of Lake Hope mean that trucking and mining costs are likely to comprise a small percentage of the overall operating cost estimate, with the clay to be trucked via conventional road trains to the processing facility.

## About High Purity Alumina and the market for its products

High Purity Alumina is aluminium oxide (“alumina” -  $\text{Al}_2\text{O}_3$ ) with a generally accepted purity that exceeds 99.99%, or “4N” (four nines).

HPA has superior physical and chemical properties, such as high brightness, superior hardness, and superior corrosion resistance. It has traditionally found applications in:

- LED bulbs are a growth market for HPA as they substantially replace incandescent lighting systems because they are sustainable, durable, and safe.
- Protective coatings (in powdered form) as an inert, incombustible and non-conductive ceramic filler in electronics applications.
- Anode-cathode coatings and separators in lithium-ion batteries.
- Phosphor substrate material in plasma displays.
- Semiconductor substrates.
- A precursor for sapphire glass, optical lenses and specialty ceramics used in high-technology imaging and bio-medical devices.
- Defence and protective uses as a hard, chemically resistant and inert barrier.

In addition to the HPA, the final calcined ceramic form of the mineral, various precursor aluminium salts, including sulphates, nitrates, chlorides, and silicates (clays), also have important end-market uses. These uses, which include critical parts of the lithium-ion battery manufacturing process, are summarised in Table 4.

### Aluminium Chemicals Overview

<b>Aluminium Oxide</b>	$\alpha\text{-Al}_2\text{O}_3$
<ul style="list-style-type: none"> <li>• Calcined alumina: HPA. Typical product target 99.99% purity</li> <li>• LEDs, sapphire, LIB, Catalysts, Abrasives</li> </ul>	
<b>Aluminium Nitrate</b>	$\text{Al}_2(\text{NO}_3)_2 \cdot 9\text{H}_2\text{O}$
<ul style="list-style-type: none"> <li>• Precursor chemical; Requires 4N to 5N purity</li> <li>• Cathode cementation, stabilisation, electrolyte chemical, etc</li> </ul>	
<b>Hydroxides</b>	$\text{Al}_x[\text{OH}]_y$ variations
<ul style="list-style-type: none"> <li>• Precursor chemical to alumina; Requires 5N or better</li> <li>• Catalysts, electrolytes, precursor feedstock for HPA</li> </ul>	
<b>Chlorides</b>	$\text{Al}_2\text{Cl}_6 \cdot 12\text{H}_2\text{O}$
<ul style="list-style-type: none"> <li>• Precursor chemical – not traded in bulk; Requires 5N to produce 4N HPA</li> <li>• LIB electrolytes, specialty chemicals</li> </ul>	
<b>Sulphates</b>	$\text{Al}_2[\text{SO}_4]_3$
<ul style="list-style-type: none"> <li>• Industrial chemical flocculant, and by-product</li> <li>• Mining by-product used for HPA in China (3N usually)</li> </ul>	
<b>Silicates</b>	$[\text{K,Al}]_2\text{Si}_2[\text{OH}]_5$
<ul style="list-style-type: none"> <li>• Sourced from granites, sediments</li> <li>• Chemically stable, require 2 calcination; Hydrochloric acid route only</li> </ul>	

**Table 4.** End uses of HPA and precursor chemicals

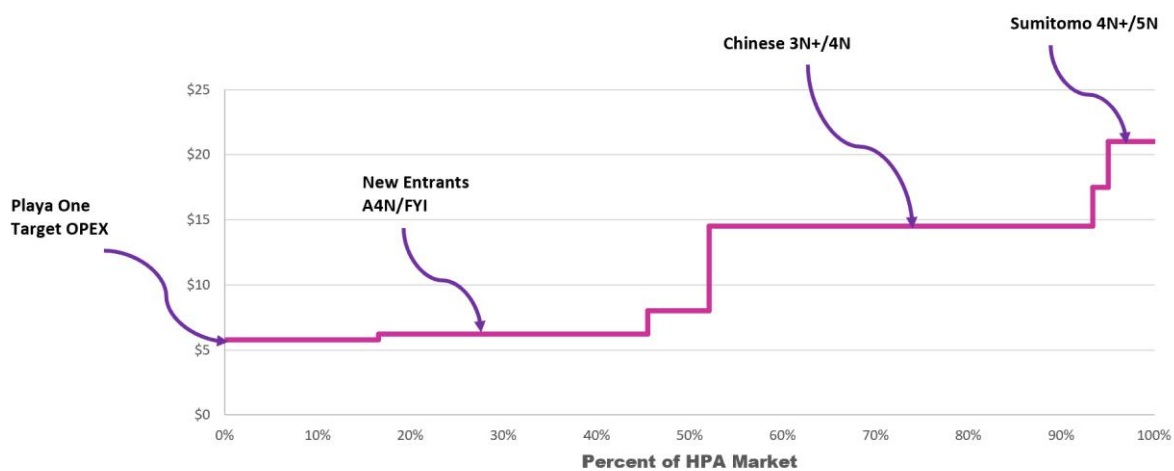
Growing awareness of ultra-high purity (UHP) intermediate aluminium salts and hydroxides as a revenue opportunity has been shown in ASX releases by Alpha HPA Ltd.

## Market Forecast for HPA: demand and price

The consensus amongst analysts and the industry is for 4N HPA and related products to command prices between US\$15,000 and US\$32,000 per tonne, with a median conservative price assumption of US\$20,000 per tonne. These figures are borne out by ongoing sales of small quantities of HPA and precursor products reported by Alpha HPA Limited (ASX: A4N Release 24<sup>th</sup> February 2023).

Although data are scarce, in-house analysis of industry performance indicates a notional cost curve with the bulk of incumbent producers at US\$11,000 to US\$15,000 per tonne for 4N HPA. New entrants, such as Alpha HPA Limited, who produce HPA from a chemical feedstock, and the kaolin developers are forecasting production at a disruptive cost of US\$6,000 to \$7,000 per tonne (Figure 9: ASX: A4N Release 7th February 2023 and 17<sup>th</sup> March 2020).

A preliminary review of the economic factors affecting the development of Lake Hope indicates the Project may be cost-competitive with these new hydrometallurgical processes.



**Figure 9.** An indicative cost curve for global HPA production. Note the disruptive nature of the cost of production for new entrants using hydrometallurgical techniques versus the incumbent processes dominated by the Bayer process.

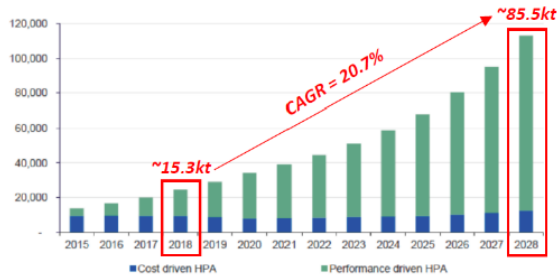
Overall annual demand for HPA is predicted to increase from 45,000 to 50,000 tonnes in 2021-22 to about 250,000 tonnes by 2030 (Figure 10).

An increase in LED demand will mainly drive this growth together with lithium-ion battery uses, both underpinned by global decarbonisation and electrification initiatives.

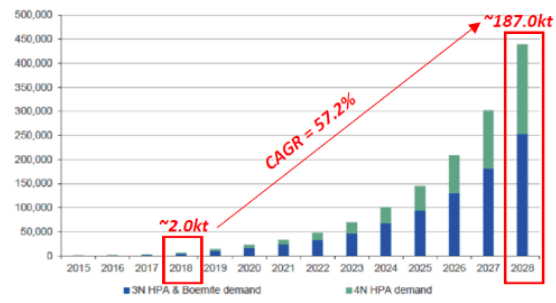
LED growth has experienced between 13% and 18% Compound Annual Growth Rate (CAGR) over the past ten years, and this is predicted to continue, driven by increased installation capacity of LED's and increased demand for environmentally friendly lighting in domestic and commercial properties.

The fastest-growing end-use demand sector in recent years has been in lithium battery separators, which grew at a CAGR of 26%, reaching 5,000 tonnes in 2018 (latest data available). Continued significant growth is predicted in this market, given the uptake of lithium battery technology.

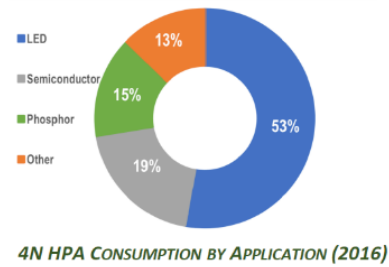
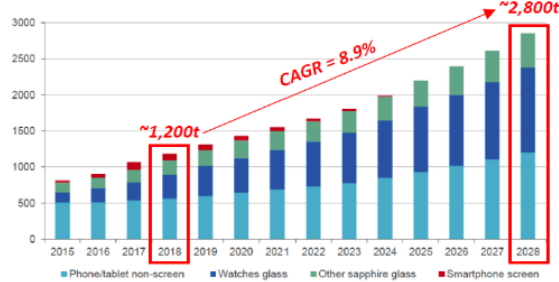
**4N HPA DEMAND: LED SECTOR  
2015-2028 (TONNES)**



**3N & 4N+ HPA DEMAND: LITHIUM BATTERY SECTOR  
2015-2028 (TONNES)**



**4N+ HPA DEMAND: SCRATCH RESISTANT GLASS APPS.  
2015-2028 (TONNES)**



**Figure 10.** Forecast growth in HPA demand to 2030 (Commodity Research Unit report 2020).

Demand for sapphire glass, although accounting for a relatively small share of the overall market, is also growing at 8% to 10% CAGR. Sapphire glass has precise input tolerances, and a small number of market participants dominates production.

In addition, as noted above, other uses for Ultra High Purity precursors are also likely to be realised in the coming years.

In Asia-Pacific, government funding has fuelled the manufacturing capacity investments for electronic companies, which in turn is expected to fuel the demand for HPA over the next decade.

**Summary and Next Steps**

The unique nature of Lake Hope, which allows for very low cost, low environmental footprint quarrying, combined with straightforward metallurgical processing, presents a clear path to producing high purity alumina products that command high margins in a global market forecast to expand over the next decade dramatically.

As such, the Lake Hope Project presents a compelling opportunity for Impact Minerals and its shareholders. The company will move towards production as quickly as practicable over the next few years.



A detailed work programme, budget and timeframe are currently being prepared. However, Impact is now working towards the following goals over the next three to six months:

- Calculation of a maiden Mineral Resource Estimate.
- Completion of a Scoping Study.
- Baseline environmental studies.
- Baseline heritage surveys and continued discussions with the Ngadju First Nations Group, in particular, the application for the Mining Lease. Investors should note that an agreement with the Ngadju Group will be required to gain access for mining.
- Lodgement of an application for a Mining Lease.
- Commencement of a Pre-Feasibility Study.

The Lake Hope Project will become the main focus of Impact's activities going forward. The PFS and DFS are estimated to cost about \$2.5 million over the next two years. This relatively low cost for feasibility studies compared to other more conventional projects will allow exploration to continue at Impact's other projects, in particular the Arkun project in the emerging mineral province of southwest Western Australia. In addition, work will also continue at Broken Hill under the BHP Xplor programme (ASX Release January 17<sup>th</sup> 2023). Statutory commitments are also expected to be maintained on the company's other projects.

## **2. BROKEN HILL, NSW (IPT 100%): IGO earning 75%)**

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During the Quarter Impact announced that it had been selected as one of the inaugural participants in the BHP Xplor programme, principally to fund exploration at the Company's Broken Hill Project.

BHP Xplor, an accelerator program introduced by BHP in August 2022, is designed to help provide participants with the opportunity to accelerate their growth and the potential to establish a long-term partnership with BHP and its global network of partners.

Impact will receive up to US\$500,000 in cash payments from BHP between January and June 2023 and gain access to a network of internal and external experts to help guide development in the company's technical, business and operational aspects.

The BHP Xplor funding will be used to identify new target areas for copper and other energy metals around the Broken Hill area, where Impact has been quietly adding to its ground position for several years.

Impact believes that there is significant untapped exploration potential at Broken Hill for copper mineralisation and has been working with world-renowned geologist Prof. Tony Crawford on a new model for copper associated with mafic intrusions that are part of the Broken Hill Group rocks.

This is a different exploration model to that being pursued by Impact's joint venture partner IGO Limited on EL7390 and EL8234, which are excluded from the program and comprise a tiny portion of Impact's tenements in the area (ASX release 9th November 2021).

Under the Xplor program agreement between BHP and Impact, BHP does not acquire an equity interest in Impact or any project. However, Impact commits to certain exclusivity and pre-emption regimes concerning investments in Impact or its projects and data sharing provisions about the six-month program (ASX Release which clarified the original release).

The Xplor funding has been directed at developing a new, detailed three-dimensional model of the geology of the region based on new insights gained by Impact during its work there over the past ten years, together with an interpretation of magnetic and gravity data.

During the Quarter extensive field checking and rock chip sampling of mafic intrusions throughout the Broken Hill stratigraphy was completed. The samples have been submitted for extensive major and trace element whole rock geochemistry to help establish the provenance and metal-carrying potential of the mafic rocks. In addition, work commenced on geophysical processing and interpretation of regional magnetic and gravity data. A case study of the utility of ground SAM geophysical data was completed over known copper-silver-lead-mineralisation. The results of all this work are expected in the June Quarter.

#### **IGO Joint Venture (IGO earning a 75% interest in EL7390 and EL8234)**

During the Quarter, a ground EM survey was completed by IGO over the Little Darling Creek project. No significant conductors were identified. Assays from the diamond drill hole completed by IGO at the Yellowstone prospect which lies at the southern end of the Moorkai Trend, a nine-kilometre-long ultramafic to mafic dyke and chonolith complex are still awaited by Impact from IGO (ASX Release 16<sup>th</sup> November 2022).

### **3. ARKUN-BEAU-JUMBO Ni-Cu-PGM, WA (IPT 100% and 80%)**

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Ongoing exploration of the Akrun-Beau-Jumbo Project is proceeding well, despite the lengthy process involved in the advancement of ongoing Land Access Agreements. The upcoming Quarter will see a significant increase in news flow, which will include:

1. The results of the HELITEM electromagnetic survey, which have been independently processed and reviewed by geophysical consultants to identify areas of interest. The data has also been reprocessed by Intrepid Geophysics using their proprietary 2.5D processing methodology.
2. Soil sampling results from the first round of soil sampling that will help identify areas for further exploration related to nickel-copper-PGM mineralisation, LCT pegmatites, and Rare Earth Elements. Results are under review (Figure 11).

The following are the completed and ongoing tasks during this Quarter:

1. A deep ground penetrating survey has been carried out at Beau and Arkun project to aid in the search for pegmatites. Impact has engaged Ultramag Geophysics to use Deep Ground Penetrating Radar (DGPR) and they have now collected 41 line km of data. DGPR is a novel geophysical technique that provides high-resolution imaging up to 100m from the surface. Ultramag has previously used this method to successfully map lithium pegmatites. The interpretation of the data is underway.
2. A significant second round of soil sampling is currently underway after access to additional paddocks was successfully negotiated. This round will add further coverage to the flown HELITEM surveys areas and extend previous soil sampling grids (Figure 11).
3. Impact has partnered with SensOre (ASX: S3N) to compile prospectivity mapping for Nickel and Lithium. SensOre applies integrated AI/ML algorithms to large scale data to fingerprint and “predict” mineral deposit locations.

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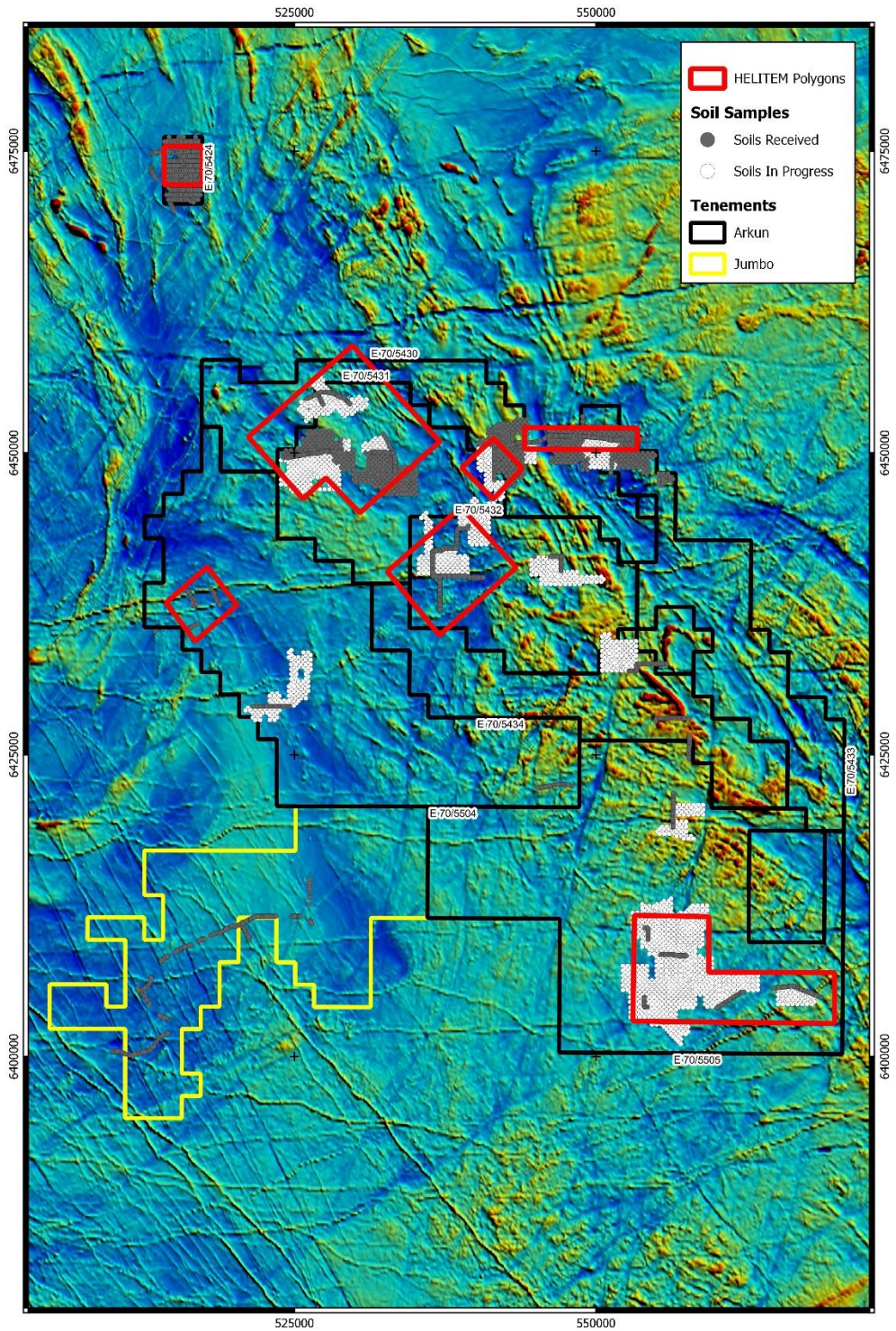


Figure 11. Location of HELITEM survey areas, soil geochemistry surveys that have been received and currently underway.

## 4. NARRYER WA (Impact 80%)

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During the Quarter, assays from reconnaissance soil geochemistry samples and grab samples were received and are now being interpreted.

## 5. OTHER PROJECTS

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Only minor work has been undertaken on Impact's other projects.

Work progressed on analysing the previous exploration results at the Dinninup, Mineral Hill, Dalgaranga and Narryer projects.

At Doona, soil geochemistry and drill assay results continue to be interpreted.

## 6. CORPORATE

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### Financial Commentary

The Quarterly Cashflow Report (Appendix 5B) for the current period provides an overview of the Company's financial activities.

Cash exploration expenditure for the period was 943k. Corporate and administration expenditures amounted to \$76k. The total amount paid to directors of the entity and their associates in the period (item 6.1 of Appendix 5B) was \$96k, including salary, directors' fees and superannuation.

Cash at March 31<sup>st</sup> was \$1.14 million.



**Dr Michael G Jones**  
**Managing Director**

### Competent Person's Statement

*The review of exploration activities and results contained in this report, with the exception of the Lake Hope Project, is based on information compiled by Dr Mike Jones, a Member of the Australian Institute of Geoscientists. He is a director of the company and works for Impact Minerals Limited. He has sufficient experience which is relevant to the style of mineralisation and types of deposits under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code). Mike Jones has consented to the inclusion in the report of the matters based on his information in the form and context in which it appears*

*The review of exploration activities and results in relation to the Lake Hope Project, the Exploration Target and the metallurgical test work contained in this report is based on information compiled by Roland Gotthard, a Member of the Australian Institute of Mining and Metallurgists. He is an employee of Impact Minerals Limited. He has sufficient experience which is relevant to the style of mineralisation and types of deposits under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code). Mr Gotthard has consented to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

### Tenement Information in accordance with Listing Rule 5.3.3

Project / Tenement	Location	Status	IPT Interest at start of quarter	IPT Interest at end of quarter
<b>Commonwealth</b>	<b>New South Wales</b>			
EL5874		Granted	100%	100%
EL8212		Granted	100%	100%
EL8252		Granted	100%	100%
EL8504		Granted	100%	100%
EL8505		Granted	100%	100%
<b>Broken Hill</b>	<b>New South Wales</b>			
EL7390		Granted	100%	100%
EL8234		Granted	100%	100%
EL8636		Granted	100%	100%
EL8674		Granted	100%	100%
EL8609		Granted	100%	100%
EL9036		Granted	100%	100%
EL9037		Granted	100%	100%
EL9115		Granted	100%	100%
EL9294		Granted	100%	100%
EL9384		Granted	100%	100%
EL9481		Granted	-	100%
<b>Blackridge</b>	<b>Queensland</b>			
EPM26806		Granted	100%	100%
EPM27571		Granted	100%	100%
EPM27410		Granted	100%	100%
<b>Lake Hope</b>	<b>Western Australia</b>			
E74/763		Application	Earning in	-
E74/764		Application	Earning in	-
E63/2317		Application	Earning in	-
E63/2318		Application	Earning in	-
E63/2319		Application	Earning in	-
E63/2086		Granted	Earning in	-
E63/2257		Application	Earning in	-
<b>Arkun</b>	<b>Western Australia</b>			
E70/5424		Granted	100%	100%
E70/5430		Granted	100%	100%
E70/5431		Granted	100%	100%
E70/5432		Granted	100%	100%

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Project / Tenement	Location	Status	IPT Interest at start of quarter	IPT Interest at end of quarter
E70/5433		Granted	100%	100%
E70/5434		Granted	100%	100%
E70/5490		Granted	100%	100%
E70/5504		Granted	100%	100%
E70/5505		Granted	100%	100%
E70/5816		Granted	100%	100%
<b>Doonia</b>	<b>Western Australia</b>			
E15/1790		Granted	80%	80%
<b>Jumbo</b>	<b>Western Australia</b>			
E70/5852		Granted	80%	80%
<b>Dalgaranga</b>	<b>Western Australia</b>			
E59/2620		Granted	80%	80%
<b>Narryer</b>	<b>Western Australia</b>			
E52/3967		Granted	80%	80%
E52/3985		Granted	80%	80%
<b>Dinninup</b>	<b>Western Australia</b>			
E70/5842		Granted	100%	100%
E70/6111		Granted	-	100%
E70/6112		Granted	-	100%
E70/6113		Granted	-	100%
E7016178		Granted	-	100%
<b>Martup</b>	<b>Western Australia</b>			
E70/5761		Granted	100%	100%
<b>Mineral Hill</b>	<b>Western Australia</b>			
E70/5780		Granted	100%	100%
<b>Gascoyne</b>	<b>Western Australia</b>			
E52/4113		Application	-	-
E52/4114		Application	-	-

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<https://investors.impactminerals.com.au/welcome>