# Annual Technical Report 2018



Managing Director's Letter

### **David Crook**

2018 is the year that Pioneer transitioned into a mining company with the Sinclair Mine declared open during September of this year. The stage 1 pit will deliver the caesium mineral, pollucite, which will be sold under an offtake agreement to the Cabot Corporation's Specialty Fluids division. Mining will also deliver a substantial stockpile of potassium feldspar, which is currently being marketed to potential end users in the ceramics industry.

The Sinclair Mine development is the result of a strategy that saw the Company acquire and test lithium-caesium-tantalum (LCT) pegmatite systems in Ontario, Canada and in Western Australia. This led to Australia's first significant caesium discovery, made by the Company at its namesake Pioneer Dome Project, in September 2016.

The Company maintained an active exploration schedule throughout the 2017–18 year, with approximately 14 kilometres of drilling completed. Key projects were advanced and will continue to form the basis of exploration programmes going forward.

- Sinclair Pegmatite and Surrounding Cluster: The Sinclair Mine occurs in one of 13 pegmatite targets identified within a 20km long corridor along the eastern flank of the Pioneer Dome. The geological conditions required for the formation of pollucite occur rarely, with only two other commercial deposits known, in Canada and Zimbabwe. As these deposits are larger and reported to be poddy, the Company considers that the Sinclair Pegmatite is prospective for further caesium discoveries.
- Golden Ridge Nickel Sulphides: A discovery of nickel sulphides at Leo's Dam, approximately 1.6km NE of the Company's suspended Blair Nickel Mine, confirms that the Project is very prospective. Drill hole GRRC38 returned 22m at 1.02% Ni and 475ppm Cu from 202m. Further drilling between Leo's Dam and the Blair Mine is a priority for the forthcoming year.
- Golden Ridge Cobalt: Drilling, which tested 4 prospects on a 'proof of concept' basis, confirmed the presence of widespread lateritic cobalt mineralisation including: GRRC27: 22m at 0.18% Co and 0.53% Ni from 38m and GRRC30: 16m at 0.17% Co and 0.42% Ni from 42m.

- Mavis Lake Lithium: Diamond drilling tested a 200m section of the 700m long Fairservice Pegmatite, with encouraging intersections of spodumene mineralisation returned, including MF18-53: 55.25m at 1.04% Li<sub>2</sub>O from 82.75m, and MF18-58: 28.95m at 1.14% Li<sub>2</sub>O from 116.80m. Further drilling is required to delineate a resource.
- Kangan Gold: The Company announced a significant farm-out joint venture with Novo Resources Corp. Future exploration programmes will be managed by one of Canada's most innovative and well-funded gold explorers and the key proponent of the Pilbara Conglomerate-Gold genesis model, driven by Dr Quinton Hennigh.
- Acra Gold: Pioneer's farm-out joint venture partner, Northern Star Minerals Limited, continues to advance this project, located 60km NE of Kalgoorlie, WA.

We have had the pleasure of welcoming a group of new staff and consultants that have joined the Company during the Sinclair Mine set-up. I acknowledge the effort and thank all concerned, past and present, who have contributed to the Company's operations during the year. The contribution made by each of the Pioneer team is greatly appreciated.

Finally, I join with our Chairman to thank investors who have supported our Company during past years, and to welcome new shareholders. We look forward to conveying results of our exploration programmes as they progress in the year ahead.

On behalf of the Directors of Pioneer Resources Limited, I am pleased to present the Annual Technical Summary for 2018.

Yours faithfully

anson

**David Crook** *Managing Director* 



### Chairman's Letter

### Craig McGown

In September this year, some 2 years after drilling at your Company's namesake 100% owned Pioneer Dome Project intersected the Sinclair Zone Caesium Deposit, Pioneer became a mining company. At the time of writing, stockpiling potassium feldspar for future sale is progressing well. By November this year the deeper-lying caesium mineral, pollucite, the economic driver for the mine, will be extracted and sold under contract to Cabot Specialty Fluids Ltd. The first containers of crushed pollucite are scheduled to leave Australia in January 2019.

The opening of the Sinclair Mine is the culmination of two years' drilling, resource modelling and establishing agreements with stakeholders. Your Company thanks representatives of the exclusive native title holders, the Ngadju People, the Department of Mines Industry Regulation and Safety and other government departments, and the Norseman Shire Council, all groups that have the facilitated access agreements and approvals that were needed for this venture.

It is now 3 years since the Company embarked on its "critical" metals strategy, driven by the awareness that supply of new technology commodities, such as lithium, nickel and cobalt, are key requirements for use in the burgeoning energy and transportation markets, providing exciting new opportunities for your Company.

This strategy initially involved targeting lithium-caesium-tantalum (LCT) pegmatites, in Canada and Western Australia, and while the caesium results are now well understood, the Pioneer Dome Project remains very prospective for further caesium discoveries, as well as lithium and other minerals associated with LCT Pegmatites.

This year's drilling at the Mavis Lake Spodumene Project in Canada demonstrated that the system is well mineralised with 'best to date' drilling intersections returned. An amendment to the Mavis Lake JV documentation saw the Company complete its 51% project equity earn-in, coupled to the relinquishment of its Raleigh Project interest.

Drilling at the Golden Ridge Project returned very significant mineralisation on two fronts, being a new nickel sulphide discovery at the Leo's Dam Prospect approximately 2km from the Company's suspended Blair Nickel Mine, and strongly mineralised cobalt horizons at the 4 prospects selected for drilling.

Having recognised that Pioneer's West Pilbara tenements are prospective for "conglomerate-hosted gold" in a geological setting considered analogous with South Africa's Witwatersrand field, the Company attracted the attention of Novo Resources Limited. This has resulted in an earn-in joint venture, with exploration activities funded and managed by this very innovative and well-funded explorer with its significant focus on the Pilbara "conglomerates" region. Your Company's other gold project, the Acra joint venture, continues to be managed and funded by one of Australia's premier gold producers, Northern Star Resources Limited.

For the new shareholders in our company, welcome and to our existing shareholders, I also thank you for your continuing support.

I would also like thank my Board, Company Secretary and our employees for their positive input and contribution into the successful operation of your Company and acknowledge the significant and tireless contribution made by our Managing Director, David Crook.

The Pioneer Resources team and Board remain focused on delivering shareholder value through our targeted mining and exploration activities, and I look forward to sharing news of our progress with you in the year ahead.

Yours sincerely

**Craig McGown** 

Non-Executive Chairman
Pioneer Resources Ltd



#### **COMPETENT PERSONS STATEMENT**

The information in this report that relates to Exploration Results is based on information supplied to and compiled by Mr David Crook. Mr Crook is a full time employee of Pioneer Resources Limited. Mr Crook and is a member of The Australasian Institute of Mining and Metallurgy and the Australian Institute of Geoscientists and has sufficient experience which is relevant to the exploration processes undertaken to qualify as a Competent Person as defined in the 2012 Editions of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'.

Mr Crook gives consent to the inclusion of the matters presented in the announcement in the form and context in which they appear.

#### References

- Golden Ridge: 27/1/2015, 24/1/2018, 25/1/2018
- Pioneer Dome: 22/3/2007, 20/6/2017, 21/2/2018, 19/4/2018, 20/6/2018, 25/7/2018, 26/7/2018, 30/7/2018, 30/8/2018
- Mavis Lake: 6/4/2018, 31/8/2018
- Kangan: 18/9/2018
- And quarterly reports for the period ending: 30 September 2017, 31 December 2017, 31 March 2018 and 30 June 2018.

# Pioneer Dome Project including Sinclair Zone Caesium Deposit

Pioneer 100%, Lithium, Caesium, Potassium Feldspar, Tantalum, Nickel Sulphide

With the commencement of mining operations in September 2018, Pioneer becomes Australia's first caesium miner, and one of only three in the world

The Company's namesake Pioneer Dome Project is a highly prospective, multi-commodity project located approximately 130km south of Kalgoorlie and 200km north of the port of Esperance.

### The Sinclair Pegmatite

The host "Sinclair Pegmatite" is a complex lithium-caesium-tantalum (LCT) pegmatite characterised by a suite of monomineralic phases of pollucite (caesium), petalite and lepidolite (lithium), feldspar (potassium) and silica (silicon) in the pegmatite core zone.

### **Pollucite**

The caesium mineral pollucite is a high value, high demand commodity and global supply is very constrained. The primary use of caesium is in the manufacture of Caesium Formate brine, a heavy fluid used in high temperature/high pressure oil and gas drilling.

### **Other Pegmatite Minerals**

While operations at the Sinclair Mine are based on the extraction of pollucite only, the Company will also extract and stockpile petalite, lepidolite, potassium feldspar and silica while markets are established.

### US\$4.8m Development Funding Received from Cabot Corporation

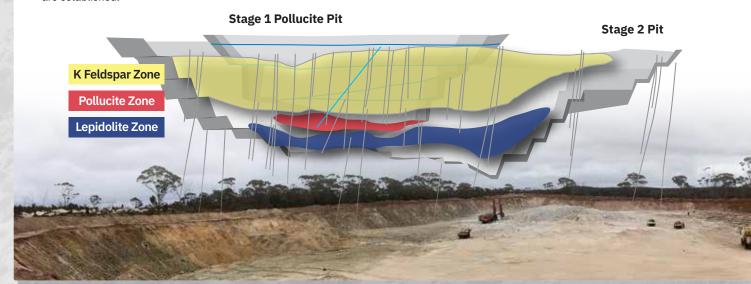
In August, the Company received US\$4.8 million in funding, pursuant to its Offtake and Loan Facility Agreement with Cabot Specialty Fluids Ltd. These funds are expected to cover the full cost of extraction and crushing of pollucite from the Sinclair Mine. Cabot has undertaken to purchase 100% of the pollucite extracted from the Sinclair Mine at the mine gate for 2 years.

#### **Potential to Extend Sinclair Mine Life**

Drilling has shown that much of the overburden that will be extracted to provide access to the Sinclair Zone Caesium Deposit is potassium feldspar, which represents a potential secondary revenue stream for the mine, and it will be stockpiled on-site while the Company advances off-take discussions with endusers.

### **Potassium feldspar**

Potassium feldspar is used in the manufacture of ceramics and glassware, especially in glazes for hard-wearing tableware and floor tiles, and as a key component of advanced high-tolerance insulators and electro-ceramics.



### Kangan Gold Project

Pioneer 100%, Novo earning 70% (Gold)

### Drilling Completed and Initial Pollucite Resource

97 drill holes were completed for a total of 8,540m. Highlight caesium (pollucite) intersections\* included:

PDD162: 11.15m at 17.43% Cs<sub>2</sub>O from 38.20m
PDD166: 5.70m at 29.61% Cs<sub>2</sub>O from 37.70m
PDD167: 2.68m at 27.11% Cs<sub>2</sub>O from 40.82m and 7.18m at 16.04% Cs<sub>2</sub>O from 47.88m
PDD170: 7.45m at 16.58% Cs<sub>2</sub>O from 43.6m
PDD174: 4.30m at 20.89% Cs<sub>2</sub>O from 43.5m

Lithium (petalite and lepidolite) intersections which forms a periphery to the caesium mineralisation, included:

 $\begin{array}{lll} \text{PDD161:} & 25.02 \text{ m at } 2.14\% \text{ Li}_2\text{O} \text{ from } 41.98\text{m (Lepidolite)} \\ \text{PDD164:} & 16.10 \text{ m at } 2.64\% \text{ Li}_2\text{O} \text{ from } 39.9\text{m (Mixed)} \\ \text{PDD175:} & 23.10 \text{ m at } 1.94\% \text{ Li}_2\text{O} \text{ from } 41.9\text{m (Lepidolite)} \\ \text{PDD176:} & 19.00 \text{ m at } 1.62\% \text{ Li}_2\text{O} \text{ from } 38.0\text{m (Petalite)} \\ \text{PDRC190:} & 11\text{m at } 3.15\% \text{ Li}_2\text{O} \text{ from } 52\text{m (Mixed)} \\ \text{PDRC199:} & 22\text{m at } 1.98\% \text{ Li}_2\text{O} \text{ from } 37\text{m (Petalite)} \\ \text{PDRC207:} & 15\text{m at } 2.47\% \text{ Li}_2\text{O} \text{ from } 36\text{m (Petalite)} \\ \text{PDRC211:} & 21\text{m at } 1.83\% \text{ Li}_2\text{O} \text{ from } 39\text{m (Petalite)} \\ \text{PDRC212:} & 15\text{m at } 2.59\% \text{ Li}_3\text{O} \text{ from } 39\text{m (Petalite)} \\ \end{array}$ 

### **Outlook**

The Company's focus is to complete the Sinclair Mining operations in an efficient and timely manner to ensure the best return. Concurrently, the Company is stockpiling potassium feldspar, lithium minerals and silica onsite and progressing offtake discussions with third parties.

Drilling pegmatite targets for caesium and lithium will be undertaken progressively on an ongoing basis.

### Mineral Resource Summary by Category: Sinclair Caesium Deposit (at 30 June 2018)

Classification	Tonnes (t)	Cs <sub>2</sub> O (%)
Measured	10,500	17.1
Total	10,500	17.1

Note: Appropriate rounding applied



The Kangan Gold Project is located 80 km south of Port Hedland in the emerging western Pilbara gold precinct of WA.

Wide-spread gold anomalism, including recovery of gold nuggets, is recorded in work by previous explorers and prospectors within the Project.

In September Pioneer entered into a significant Farmin Agreement with Novo Resources Corp. under which Novo has the right to earn a 70% interest in the gold rights for the Project.

Under the Agreement the Companies plan to fast track exploration, which will be managed by Novo, one of Canada's most innovative and well-funded gold exploration companies, - and the key proponent of the Pilbara Conglomerate-Gold genesis model, driven by Dr Quinton Hennigh, Novo's CEO.

Pioneer retains the lithium rights to the Project.





## Mavis Lake & Raleigh Lithium Projects

Pioneer 51% with option to earn up to 80%, International Lithium Corp. 49%

# Golden Ridge Cobalt and Nickel Project

Pioneer 100%

The Mavis Lake and Raleigh Lithium Projects are situated 19 and 80 kilometres respectively east from the town of Dryden, NW Ontario, Canada.

The Company completed 9 diamond core holes for 1,591 metres at the Mavis Lake Project and all nine holes intersected between one and three mineralised pegmatite lenses on step-out drill spacings of between 20m and 40m. The drilling intersected the Fairservice Pegmatite 6 generally between 100 and 140m vertically below surface along a strike length of 200m.

Drilling intersections\* included:

- MF18-51: 23.30m at 1.09% Li<sub>2</sub>0 from 76.80m
- MF18-52: 10.55m at 1.18% Li<sub>2</sub>O from 150.54m
- MF18-53: 55.25m at 1.04% Li<sub>2</sub>0 from 82.75m
- MF18-54: 18.20m at 1.27% Li<sub>2</sub>O from 94.80m
- MF18-55: 12.35m at 1.41% Li<sub>2</sub>O from 135.10m
- MF18-58: 28.95m at 1.14% Li<sub>2</sub>O from 116.80m

Pioneer and International Lithium Corp. advised of an agreement which fast-tracked Pioneer's earn-in into the Mavis Lake Project, with the Company now holding a 51% Project equity.

Under the Agreement Pioneer withdrew from the Raleigh Lithium Project joint venture, also with ILC.



The Golden Ridge Project covers an area of 115 km² of the Blair Dome, located 30 kilometres south east of Kalgoorlie, WA. The Project includes the suspended Blair Nickel Sulphide Mine, which closed in 2008 during a time of depressed nickel prices having produced 1.26mt of nickel ore at 2.62% Ni.

Recent work has confirmed that the Project is prospective for further nickel sulphide discoveries and that substantial areas are prospective for lateritic cobalt.

Cobalt-specific drilling at Golden Ridge comprised 30 reverse circulation drill holes totalling 2,836 metres. Four targets were tested, being: Rocket, Leo's Dam, Anomaly 13 and Anomaly 14 Prospects. All prospects are located within granted mining leases and an exploration licence along the eastern flank of the Blair Dome. Highlight results\* included:

GRRC24: 11m at 0.21% Co and 0.53% Ni from 35m

(Anomaly 14)

GRRC27: 22m at 0.18% Co and 0.53% Ni from 38m

(Leo's Dam)

GRRC30: 16m at 0.17% Co and 0.42% Ni from 42m

(Anomaly 13)

GRRC33: 19m at 0.22% Co and 0.23% Ni from 34m

(Leo's Dam)

GRRC34: 31m at 0.15% Co and 0.37% Ni from 43m

(Rocket)

GRRC37: 6m at 0.57% Co and 0.52% Ni from 22m

(Rocket)

Following the identification of strong nickel sulphide indicator geochemistry in GRRC28 at Leo's Dam, GRRC38 was drilled to 246m. This resulted in a new nickel sulphide discovery:

GRRC38: 22m at 1.02% Ni and 475ppm Cu from

202m (Leo's Dam)

#### Outlook

Data reviews have been updated following this programme and a substantial drilling programme planned focussed on both nickel sulphides and cobalt. This is scheduled for the March quarter of 2019.

### Mineral Resource Summary by Category: Blair Nickel Mine (at 30 June 2018)

Class	Class (t)	Ni (%)	Ni Metal (t)
Indicated	75,560	4.37	3,300
Inferred	147,150	2.18	3,210
Total	222,710	2.92	6,510

Note: Appropriate rounding applied

<sup>\*</sup> All reported widths are drill hole intersection widths and have not been converted to true width. True width is unknown at this time.





### Corporate

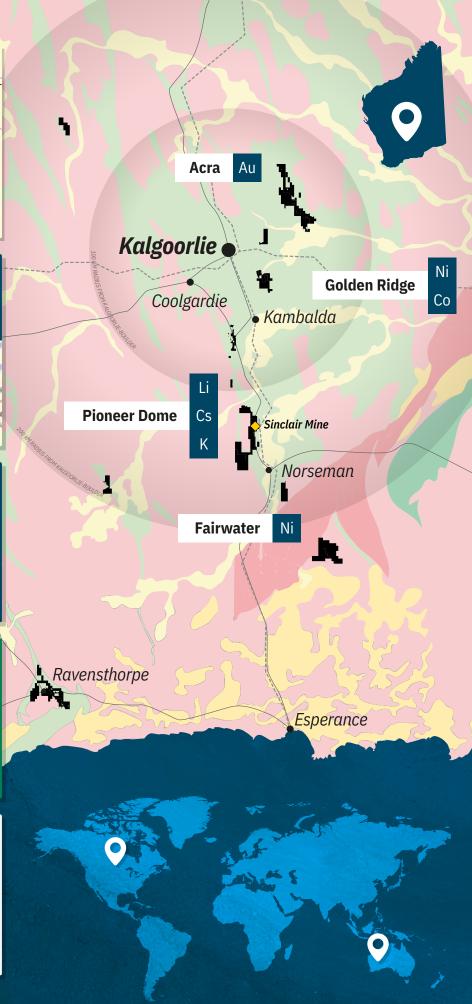
Non-Executive Chairman: Craig McGown Managing Director: David Crook Non-Executive Director: Wayne Spilsbury Non-Executive Director: Allan Trench Company Secretary/CFO: Timothy Spencer

### **Financial**

ASX code: **PIO**Market capitalisation (at \$0.02): **A\$30m**12 month trading range: **\$0.014–\$0.044**Cash (30 Sep 2018): **A\$9.1 million**Current shares on issue: **1,504 million**Options (Unlisted): **6.7 million** 

### **Contacts**

- (08) 9322 6974
- 0427 916 974
- ★ Ground Floor, 72 Kings Park Road Perth WA 6005
- PO Box 1787, West Perth WA 6872
- ✓ pioneer@pioresources.com.au



www.pioresources.com.au