

Iondrive Quarterly Activities Report September 2024

Iondrive Limited (ASX: ION) ("Iondrive", "ION" or the "Company") is pleased to present its report for the quarter ended 30th September 2024 (the "Quarter").

Highlights

- Iondrive significantly progressed the Pre-Feasibility Study ("PFS") for its unique and environmentally sustainable Lithium-ion battery recycling technology with notable milestones being:
 - Trials at the University of Adelaide demonstrated high critical metal recoveries from pCAM (precursor Cathode Active Material), and minimal solvent losses, at a 1,000x scale-up to the previous trials, underlining the scalability of Iondrive's technology.
 - Metal recoveries were independently verified by Independent Metallurgical Operations (IMO) in Perth at a 1,700 scale-up to the previous trials.
 - Subsequent to the end of the Quarter, Iondrive extended the trials to show high metal recoveries from Raw Black Mass (grounded spent batteries, containing a mixture of different Li-ion battery types and impurities). The recoveries were further enhanced by a simple three-stage pretreatment process to remove impurities.
 - The remaining consultants reports are now being finalised, including operating and capital cost estimates, benchmarking of costs against existing hydrometallurgical processes, and an engineering study to optimise the battery recycling process engineering study to develop an economical, commercial-scale process.
 - The findings of these remaining consultants reports are expected to be announced on or around 31 October 2024.
- Iondrive has progressed industry engagement in the EU on multiple fronts:
 - a Collaboration Agreement with Production Engineering of EMobility Components at RWTH Aachen University (PEM). PEM is establishing a consortium with participants from the entire battery recycling value chain, including automotive OEMs, to validate performance of battery cells made from recycled metals.
 - Subsequent to the end of the Quarter, Iondrive executed a similar agreement with TNO, a large Research & Technology Organisation located in the Netherlands, renowned for its expertise and research in sustainable technologies, and supporting the energy transition.
- Iondrive finished the Quarter with a cash balance of \$2.6 million and receivables of \$0.5 million, including its R&D Tax Incentive claim.

Iondrive Technologies

Background

Iondrive's patented technology uses of Deep-eutectic solvents ("DES"), developed from research at the University of Adelaide's Materials Research Engineering Centre.

Most battery recycling processes involve pre-treating waste batteries to create a substance known as black mass. Black mass is a powdered mixture of various critical metals, including lithium, cobalt, nickel, and manganese, extracted from spent batteries. This material is then typically exported to Asia for further processing and refining.

Common methods for processing black mass, such as pyrometallurgy and hydrometallurgy, are energy-intensive. Pyrometallurgy uses high-temperature smelting, while hydrometallurgy relies on mineral acid leaching. Both processes dominate in Asia, where most battery recycling takes place.

Iondrive's DES process offers several advantages over traditional methods. DES is less toxic, reusable, and more environmentally friendly than the strong acids used in conventional processes. It produces fewer harmful emissions and less hazardous waste, lowering the overall environmental footprint. The components of DES are inexpensive and readily available, reducing material costs.

DES can selectively dissolve specific metal oxides in black mass from Li-ion batteries. This reduces the need for multiple refining stages and improves recovery efficiency and purity. The process also lowers operating costs by reducing energy consumption and downstream processing. The simplicity and effectiveness of DES make it easier to scale for industrial applications and ideal for the growing need to recycle battery metals such as nickel, manganese, cobalt, and lithium. This is critical as the demand for battery recycling rises with the expansion of electric vehicle fleets.

Iondrive has provisional patents lodged covering the use of particular DES solvents in the recovery of metals from battery recycling.

A leading battery market consultant, RhoMotion, was engaged to study the global battery recycling market. The RhoMotion study confirmed that Iondrive's DES process provides an attractive environmental value proposition in the rapidly growing battery recycling market.¹

Pre-Feasibility Study

Iondrive continued to make significant progress on the PFS for its DES battery recycling technology during the quarter, with completion remaining on track during October 2024. The PFS is a critical step in de-risking the commercialisation pathway and ensuring the scalability of the technology, which provides a unique environmental value proposition compared to incumbent recycling methods.

The PFS will open important opportunities for Iondrive. It will position the company to explore potential partnerships with industry players who may provide funding for the commercialisation of its DES technology. The PFS will also support access to non-dilutive funding, including European and Australian grants, aimed at sustainable recycling technologies. By completing the PFS, Iondrive will strengthen its ability to pursue these opportunities, advancing the development of its Pilot Plant in FY2025 and furthering the commercialisation of its battery recycling technology.

¹ <https://wcsecure.weblink.com.au/pdf/ION/02744673.pdf>

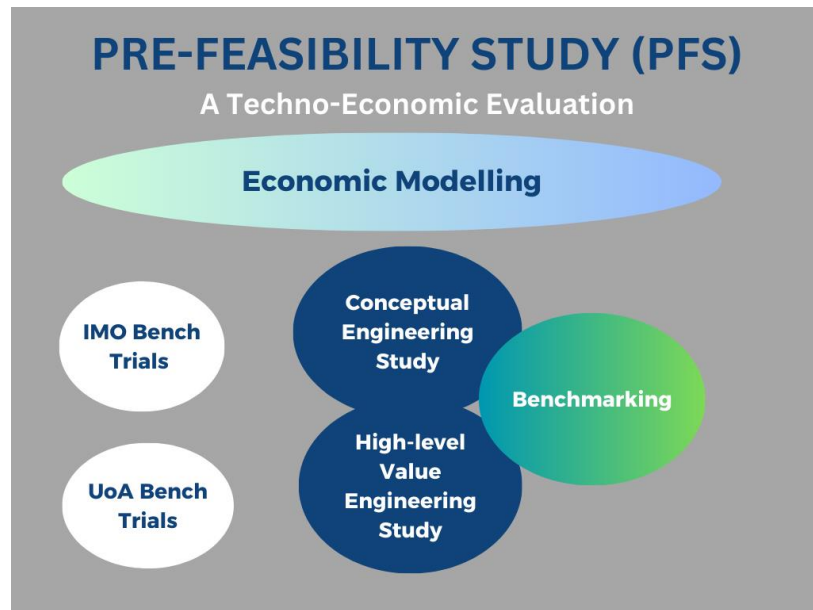


Diagram 1: Overview of ION's PFS Activities

Phase 1 Large-scale Bench Trials (University of Adelaide) - Complete

During the Quarter, Iondrive successfully completed large-scale bench trials including independent verification of the metal recoveries by Independent Metallurgical Operations (IMO) in Perth.

The large-scale bench trials, conducted at the University of Adelaide, involved a 1,000x scaleup at 120g of black mass from initial small-scale trials at 120mg. These trials investigated the DES process in larger volumes to verify the scalability of the chemistry and establish an accurate mass balance to quantify solvent losses. The trials showed that Iondrive's DES Battery Recycling Technology achieves very high recovery of critical minerals from Li-ion batteries. Moreover, the detailed mass balance showed that the process incurs minimal solvent losses, which is crucial for the economic viability of the process, as solvent costs are one of the key cost drivers.

The IMO trials independently confirmed the results of the initial large-scale trials performed at the University, indicating that the process chemistry scales effectively, maintaining high recovery rates for critical minerals such as manganese, cobalt, and nickel.

In summary, the large-scale trials confirmed:

- **High Metal Recoveries:** Both the University and IMO tests confirmed metal recoveries remained high demonstrating the process's efficiency in extracting critical minerals.
- **Minimal Solvent Losses:** The University's initial tests confirmed solvent losses were minimal, which is critical to the economic viability of the process. Further work is being undertaken in this regard.
- **Scalability:** The DES process chemistry scales effectively with larger volumes.
- **Selectivity:** selectivity of metal separation was lower than in small-scale trials, however the reasons for this are well understood and will be the focus of ongoing optimisation work.

The above large-scale bench trials were extended to a new study using raw black mass (grounded spent batteries, containing a mixture of different Li-ion battery types and impurities). The results of this work, announced subsequent to the Quarter, demonstrate high selective recovery rates for all four critical minerals, and importantly shows that recoveries can be increased by a simple three-stage pretreatment process – with recoveries in excess of the initial large scale bench trials.

Key Engineering and Benchmarking Studies Supporting PFS

Substantial progress on key studies, that form the core of Iondrive's PFS, are nearing completion. These studies include the Conceptual Engineering Study with Wood Group, which is designing and costing a 10,000 tpa black mass processing plant. This study covers process flow diagrams, equipment sizing, and capital/operational cost benchmarking, providing essential insights for scaling up Iondrive's technology. The High-Level Value Engineering Study, conducted with Koch Modular Process Systems, focuses on enhancing the efficiency and cost-effectiveness of the DES solvent recovery process, ensuring the process is economically viable at commercial scale. Additionally, the Benchmarking Study with RWTH Aachen University's PEM department compares Iondrive's DES process to conventional hydrometallurgical methods, identifying cost drivers and areas for optimisation. Together, these studies provide critical data on the technical and economic feasibility of Iondrive's technology and will form the foundation of the PFS. Their completion is expected to mark a significant step toward de-risking the project and validating the economic potential of the DES battery recycling process.

Advancing Discussions with Potential Collaboration Partners

The global battery recycling market study undertaken by RhoMotion noted that the environmental advantages of Iondrive's recycling technology and its focus on Li-ion batteries would be particularly attractive in the EU, the US and Australia. Discussions with potential collaboration partners in these target markets are generating tangible interest in Iondrive's unique DES recycling process.

In particular, the EU's Batteries Regulation, part of the European Green Deal², creates strong market dynamics for the adoption of new environmentally sustainable recycling technology. The regulation aims to improve the environmental performance of batteries throughout their lifecycle, including production, use, and recycling. Key elements of the regulation include targets for recycling efficiency, material recovery, and recycled content, which will be gradually introduced from 2025 onwards, creating a real sense of urgency and call to action. The regulation mandates that all collected waste batteries must be recycled (ban on landfilling), with high levels of recovery for critical raw materials such as cobalt, lithium, and nickel. In addition, the Critical Raw Materials Act³ (CRMA) supports these efforts by setting benchmarks for recycling at least 25% of the EU's annual consumption of critical raw materials by 2030. The CRMA serves as a major driver for advancing recycling initiatives and securing funding to achieve these goals. By adopting stricter targets for recycling, the regulations seek to minimise environmental impacts and reduce dependency on raw material imports.

During the Quarter, ION announced a Collaboration Agreement with PEM and PEM Motion. This collaboration aims to leverage the extensive experience of PEM and PEM Motion to establish a consortium and access necessary funding to address challenges in complying with the new Batteries Regulation in the EU. The consortium is intended to comprise strategic partners from the entire battery recycling value chain, including automotive OEMs, to validate at scale the performance of battery cells made from recycled metals. Whilst the collaboration agreement is non-binding, this is considered a significant step as it formalises a strategic industry partnership in the major target market of Europe and underscores the unique value proposition of Iondrive's sustainable battery recycling process. PEM and Iondrive are currently preparing a detailed project plan and investment case for the establishment of a pilot plant based on Iondrive's recycling technology.

In the target market of the EU, discussions have also been progressing with TNO (Netherlands Organisation for Applied Scientific Research), culminating in the announcement of non-binding MOU subsequent to the Quarter. This partnership aims to leverage TNO's expertise and global network to accelerate the validation and deployment of Iondrive's proprietary process. The collaboration aims to establish a scalable supply chain for critical battery materials and enhance the capacity to meet

² https://environment.ec.europa.eu/news/new-law-more-sustainable-circular-and-safe-batteries-enters-force-2023-08-17_en

³ https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/critical-raw-materials-act_en

growing industry demand for sustainable solutions in the Netherlands and Northwestern Europe.

The Battery Recycling Value Chain

Iondrive's PFS activities and Pilot Plant planning are focussed on three sections of the battery recycling value chain, as highlighted below.

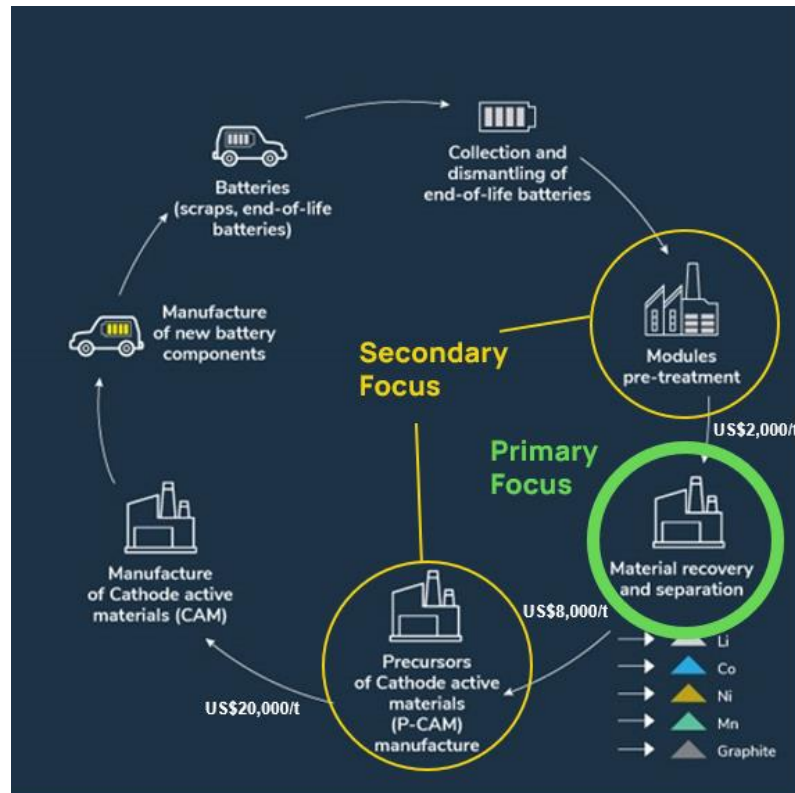


Diagram 2: ION's focus in the Battery Recycling Value Chain

Exploration

Iondrive's exploration activities in South Korea remain focussed on activities under the Earn-in and Joint Venture Agreement with KoBold Metals Company ("KoBold"), on Iondrive's Samgeun, Seobyeok, Danyang, Seosan, and Cheongpyeong Lithium exploration projects⁴.

Under the terms of the Agreement, KoBold may earn a 75% interest in the five exploration projects through a two stage earn-in arrangement of AUD\$7 million over five years. ION's wholly owned subsidiary, Korea Metals Resources ("KMR"), has been engaged as Field Operator by KoBold during the earn-in period for a minimum of 18 months. Revenue for services provided to KMR as Field Operator help minimise KMR's cost base in South Korea.

Exploration for the quarter was focussed at Samgwen and Danyang Projects, comprising stream sediment sampling and heavy mineral analysis to help focus future exploration into prospective catchments for Li-bearing pegmatite dikes. Assay results are pending and exploration for the following quarter will include follow-up rock chip sampling and geologic mapping in the most prospective catchments identified from the most recent round of fieldwork.

⁴ See ASX announcement from 22nd November 2023 entitled "\$7M earn-in and Joint Venture Agreement Executed with KoBold Metals Company".

Other Exploration Assets

ION is in discussions with a number of interested parties regarding potential joint venture and/or cash sale of its other exploration assets, including REE and Au-Ag-Cu projects.

During the Quarter, Iondrive's South Korean subsidiary, Korea Metal Resources, entered into an agreement to sell its Deokon tenements for 200 million KRW (\$220,000), subject to due diligence. A non-refundable 15% deposit was received upon execution and a further 10% was received in October. The remainder is receivable upon completion, expected in November 2024.

Corporate

Placement

Following shareholder approval on 18 July 2024, the Company issued 103,650,902 Ordinary Shares at a price of \$0.009 per Ordinary Share, providing total gross proceeds of \$933,000. This was the second and final tranche of the total \$2,000,000 placement announced on 3 June 2024. Cornerstone participation came from Iondrive's two largest shareholders: Strata Investment Holdings Plc and Ilwella Pty Ltd, with additional participation from the Board and Management totalling \$260,000. The funds are being used primarily to finalise the Battery Recycling PFS. The placement was managed by Prenzler Group.

Annual General Meeting

The Board of Iondrive have convened the Company's 2024 Annual General Meeting to be held at the offices of Mills Oakley Lawyers, Level 7, 151 Clarence Street, Sydney on Friday, 22 November 2024 at 3:00pm (Sydney time).

Quarterly Cashflows

For the Quarter, the Company reported total net cash outflows of \$200,000, represented by:

- net cash outflows from Operating activities of \$1,068,000, which included \$617,000 outflows associated with research & development activities (largely costs associated with the battery recycling PFS). Outflows associated with exploration activities are contained through the \$153,000 in cost reimbursements received from KoBold;
- net cash inflows from Investing activities of \$42,000 related to the disposal of surplus exploration equipment and a nonrefundable deposit received for the potential sale of the Deokon tenements; and
- cash inflows from Financing activities of \$860,000, reflecting the net proceeds from second tranche of the Placement.

These cashflow movements in the Quarter resulted in a reported consolidated cash balance of \$2,595,000 as at 30 September 2024. In addition, the Company has approximately \$500,000 of receivables, including a \$406,000 Research & Development Tax Incentive claim which has now been received subsequent to the end of the Quarter.

Cash flows for the Quarter include related party payments of \$79,000, comprising Non-Executive Directors fees.

Exploration Tenure

The following tenements were 100% owned by the Company as at 30 September 2024:

Tenement Info				Register Info		
Project Name	Korean	English	Block ID	No.	Type	Date of Granting
Hampyeong	나주	Naju	136	200970	Exploration	1/11/2018
Aphae	무안	Muan	99	201136	Exploration	26/03/2019
Deokon *	전주	Jeonju	70	201041	Exploration	31/07/2018
	전주	Jeonju	80	201040	Exploration	31/07/2018
	전주	Jeonju	60	201218	Exploration	17/12/2019
Dokcheon	영암	Yeongam	116	201143	Exploration	4/12/2019
	영암	Yeongam	114	201465	Exploration	19/01/2024
Janghwal	해남	Haenam	139	201302	Exploration	20/08/2021
Samgeun	현동	Hyeondong	46	201473	Exploration	5/07/2024
Goseong	충무	Chungmu	131	201439	Exploration	18/05/2023
	충무	Chungmu	136	201414	Exploration	22/11/2022
	충무	Chungmu	142	201440	Exploration	19/05/2023
	삼천포	Samcheonpo	1	201469	Exploration	19/04/2024

* The Company has executed a sale agreement subject to due diligence. The due diligence period expires in November.

Authorised for release by the Board of Iondrive Limited.

Further Information

Ebbe Dommissie

CEO

08 8368 8888

info@iondrive.com.au

Aiden Bradley

Investor and Media Relations

+61 (0) 414 348 666

aiden@nwrcommunications.com.au

Iondrive Limited: Company Profile

Iondrive is an emerging leader in battery recycling technology, listed on the Australian Securities Exchange (ASX ticker "ION"). The company's primary focus is on developing and commercialising innovative solutions for lithium battery recycling. Iondrive's Hydrometallurgical Battery Recycling project employs a patented, environmentally safe solvent to gently separate critical components from used batteries, providing a safer and more efficient alternative to traditional methods.

In addition to its battery recycling initiatives, Iondrive holds exclusive worldwide licenses from the University of Adelaide for next-generation battery technologies, including an enhanced performance non-flammable lithium-ion based battery and a low-cost, high cycle life water-based battery.

While the main emphasis is on battery technology, Iondrive also maintains a portfolio of exploration projects in South Korea, focusing on lithium. Backed by a first-class technical team, Iondrive is dedicated to advancing sustainable battery technologies and contributing to the circular economy in both Europe and Australia.

Appendix 5B

Mining exploration entity or oil and gas exploration entity quarterly cash flow report

Name of entity

IONDRIVE LIMITED

ABN

30 107 424 519

Quarter ended ("current quarter")

30 SEPTEMBER 2024

Consolidated statement of cash flows		Current quarter \$A'000	Year to date (3 months) \$A'000
1.	Cash flows from operating activities		
1.1	Receipts from customers	153	153
1.2	Payments for		
	(a) exploration & evaluation	(132)	(132)
	(b) research & development (battery technologies)	(617)	(617)
	(c) production		
	(d) staff costs	(144)	(144)
	(e) administration and corporate costs	(327)	(327)
1.3	Dividends received (see note 3)		
1.4	Interest received	8	8
1.5	Interest and other costs of finance paid		
1.6	Income taxes paid		
1.7	Research and development refunds		
1.8	Other (short term lease payments)	(9)	(9)
1.9	Net cash from / (used in) operating activities	(1,068)	(1,068)
2.	Cash flows from investing activities		
2.1	Payments to acquire or for:		
	(a) entities		
	(b) tenements		
	(c) property, plant and equipment	(2)	(2)
	(d) exploration & evaluation		
	(e) investments		
	(f) cash held by acquired entity		

Consolidated statement of cash flows		Current quarter \$A'000	Year to date (3 months) \$A'000
2.2	Proceeds from the disposal of:		
	(a) entities		
	(b) tenements	36	36
	(c) property, plant and equipment	8	8
	(d) investments		
	(e) other non-current assets		
2.3	Cash flows from loans to other entities		
2.4	Dividends received (see note 3)		
2.5	Other (provide details if material)		
2.6	Net cash from / (used in) investing activities	42	42

3.	Cash flows from financing activities		
3.1	Proceeds from issues of equity securities (excluding convertible debt securities)	933	933
3.2	Proceeds from issue of convertible debt securities		
3.3	Proceeds from exercise of options		
3.4	Transaction costs related to issues of equity securities or convertible debt securities	(65)	(65)
3.5	Proceeds from borrowings		
3.6	Repayment of borrowings		
3.7	Transaction costs related to loans and borrowings		
3.8	Dividends paid		
3.9	Other (repayment of lease liability)	(8)	(8)
3.10	Net cash from / (used in) financing activities	860	860

4.	Net increase / (decrease) in cash and cash equivalents for the period		
4.1	Cash and cash equivalents at beginning of period	2,759	2,759
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(1,068)	(1,068)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	42	42
4.4	Net cash from / (used in) financing activities (item 3.10 above)	860	860

Mining exploration entity or oil and gas exploration entity quarterly cash flow report

Consolidated statement of cash flows		Current quarter \$A'000	Year to date (3 months) \$A'000
4.5	Effect of movement in exchange rates on cash held	2	2
4.6	Cash and cash equivalents at end of period	2,595	2,595

5.	Reconciliation of cash and cash equivalents at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	Current quarter \$A'000	Previous quarter \$A'000
5.1	Bank balances	267	394
5.2	Call deposits	2,328	2,365
5.3	Bank overdrafts		
5.4	Other (provide details)		
5.5	Cash and cash equivalents at end of quarter (should equal item 4.6 above)	2,595	2,759

6.	Payments to related parties of the entity and their associates	Current quarter \$A'000
6.1	Aggregate amount of payments to related parties and their associates included in item 1	79
6.2	Aggregate amount of payments to related parties and their associates included in item 2	
<i>Note: if any amounts are shown in items 6.1 or 6.2, your quarterly activity report must include a description of, and an explanation for, such payments.</i>		

The above amount at item 6.1 relates to Directors fees, including the executive salary of the Company's Managing Director.

Mining exploration entity or oil and gas exploration entity quarterly cash flow report

7. Financing facilities <i>Note: the term "facility" includes all forms of financing arrangements available to the entity. Add notes as necessary for an understanding of the sources of finance available to the entity.</i>	Total facility amount at quarter end \$A'000	Amount drawn at quarter end \$A'000
7.1 Loan facilities		
7.2 Credit standby arrangements		
7.3 Other (please specify)		
7.4 Total financing facilities		
7.5 Unused financing facilities available at quarter end		
7.6 Include in the box below a description of each facility above, including the lender, interest rate, maturity date and whether it is secured or unsecured. If any additional financing facilities have been entered into or are proposed to be entered into after quarter end, include a note providing details of those facilities as well.		

8. Estimated cash available for future operating activities	\$A'000
8.1 Net cash from / (used in) operating activities (item 1.9)	(1,068)
8.2 (Payments for exploration & evaluation classified as investing activities) (item 2.1(d))	-
8.3 Total relevant outgoings (item 8.1 + item 8.2)	(1,068)
8.4 Cash and cash equivalents at quarter end (item 4.6)	2,595
8.5 Unused finance facilities available at quarter end (item 7.5)	-
8.6 Total available funding (item 8.4 + item 8.5)	2,595
8.7 Estimated quarters of funding available (item 8.6 divided by item 8.3)	2.4
<i>Note: if the entity has reported positive relevant outgoings (ie a net cash inflow) in item 8.3, answer item 8.7 as "N/A". Otherwise, a figure for the estimated quarters of funding available must be included in item 8.7.</i>	
8.8 If item 8.7 is less than 2 quarters, please provide answers to the following questions:	
8.8.1 Does the entity expect that it will continue to have the current level of net operating cash flows for the time being and, if not, why not?	
Answer:	
8.8.2 Has the entity taken any steps, or does it propose to take any steps, to raise further cash to fund its operations and, if so, what are those steps and how likely does it believe that they will be successful?	
Answer:	

Mining exploration entity or oil and gas exploration entity quarterly cash flow report

8.8.3 Does the entity expect to be able to continue its operations and to meet its business objectives and, if so, on what basis?

Answer:

Note: where item 8.7 is less than 2 quarters, all of questions 8.8.1, 8.8.2 and 8.8.3 above must be answered.

Compliance statement

- 1 This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.
- 2 This statement gives a true and fair view of the matters disclosed.

Date:25 October 2024.....

Authorised by:The Board of Directors.....
(Name of body or officer authorising release – see note 4)

Notes

1. This quarterly cash flow report and the accompanying activity report provide a basis for informing the market about the entity's activities for the past quarter, how they have been financed and the effect this has had on its cash position. An entity that wishes to disclose additional information over and above the minimum required under the Listing Rules is encouraged to do so.
2. If this quarterly cash flow report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, *AASB 6: Exploration for and Evaluation of Mineral Resources* and *AASB 107: Statement of Cash Flows* apply to this report. If this quarterly cash flow report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standards apply to this report.
3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.
4. If this report has been authorised for release to the market by your board of directors, you can insert here: "By the board". If it has been authorised for release to the market by a committee of your board of directors, you can insert here: "By the [name of board committee – eg Audit and Risk Committee]". If it has been authorised for release to the market by a disclosure committee, you can insert here: "By the Disclosure Committee".
5. If this report has been authorised for release to the market by your board of directors and you wish to hold yourself out as complying with recommendation 4.2 of the ASX Corporate Governance Council's *Corporate Governance Principles and Recommendations*, the board should have received a declaration from its CEO and CFO that, in their opinion, the financial records of the entity have been properly maintained, that this report complies with the appropriate accounting standards and gives a true and fair view of the cash flows of the entity, and that their opinion has been formed on the basis of a sound system of risk management and internal control which is operating effectively.