

ASX Announcement

25 July 2024

QUARTERLY REPORT

For the period ended 30 June 2024

ASX Code: MAN**Capital Structure**

Ordinary Shares: 616,759,920
Current Share Price: 2.4c
Market Capitalisation: \$14.8M
Cash: \$14.9M (June 2024)
Debt: Nil

Directors

Lloyd Flint
Chairman/Company Secretary

James Allchurch
Managing Director

Roger Fitzhardinge
Non-Executive Director

Contact Details

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mandrakeresources.com.au**Highlights**

- **Mandrake brines processed by two DLE providers – Rio-Tinto backed ElectraLith and Bill Gates’ Breakthrough Energy Fellows’ Electroflow Technologies**
- **ElectraLith successfully produced 99.9% pure battery-grade Lithium Hydroxide from Mandrake brine**
- **US-based Electroflow achieved outstanding repeatable Lithium recoveries of 92% and conversion to Lithium Hydroxide with no chemical pre-treatment**
- **The production of Lithium Hydroxide from brine revolutionises DLE by skipping the conventional step of producing lithium carbonate using costly, carbon intensive converters**
- **Both DLE providers have indicated that they will be building pilot plant facilities to process Mandrake brines**
- **Over 16 existing drill cores from oil and gas wells previously drilled within the Utah Lithium Project area have been identified**
- **Core porosity and permeability analysis, the gold standard in the determination of reservoir characteristics, has identified exceptional porosity and permeability in the project area, indicating significant potential brine yields (production rates)**
- **Mineral Resource Estimate to be delivered in current quarter**
- **Approx cash position of \$14.9M**

Utah Project – Operations

During the June 2024 quarter, Mandrake Resources Limited (ASX: MAN) (Mandrake or the Company) engaged Direct Lithium Extraction (DLE) providers ElectraLith Pty Ltd (ElectraLith) and Electroflow Technologies Inc. (Electroflow) to process brine from Mandrake’s large-scale 93,755-acre (~379km²) 100%-owned Utah Lithium Project.

Mandrake also identified core samples from 16 historic (several still in production) oil and gas wells within Mandrake’s Utah Lithium Project area.

Direct Lithium Extraction

After extensive research into the various Direct Lithium Extraction (DLE) technologies available to the lithium brine sector, Mandrake selected ElectraLith and Electroflow. In a significant

advantage over its competitors, both ElectraLith and Electroflow produce Lithium Hydroxide directly from brine. The production of Lithium Hydroxide from brine revolutionises DLE by skipping the conventional step of producing lithium carbonate using costly, carbon intensive converters.

Bulk brine samples from Mandrake's Utah Lithium Project were sent to ElectraLith and Electroflow for processing. Results are documented below.

ElectraLith

During the June 2024 quarter, DLE and Refining (DLE-R) provider ElectraLith produced 99.9% pure battery grade Lithium Hydroxide directly from Mandrake's 100%-owned flagship 93,755 acre (~379km²) Utah Lithium Project brines. The result confirms DLE-R's ability to produce Lithium Hydroxide without consuming water or chemicals, validating the potential of the Utah Lithium Project.

ElectraLith's DLE-R technology processed brines in parallel from both Mandrake's Utah Lithium Project and Rio Tinto's globally significant Rincon lithium brine project in Argentina.

Spun out of Monash University and backed by Rio Tinto and IP Gorup Australia, ElectraLith's DLE-R is emerging as one of the cleanest, fastest, most versatile and cost-efficient methods of extracting and refining lithium. It's proprietary electro-membrane technology requires no water or chemicals and can run entirely on renewable power, making it ideal for the water and resource constrained Paradox Basin.



Figure 1. James Allchurch (Mandrake), Dr SJ Oosthuizen (ElectraLith) and Charles MacGill (ElectraLith) at ElectraLith's laboratory at Monash University

Mandrake sent ElectraLith brines from the Lisbon B-912 well - one of the lower lithium concentration bulk samples from sampling activities undertaken in December 2023. The Lisbon B-912 brines contained 65.6mg/L lithium whilst the Big Indian #1 well (bulk sample sent to DLE provider Electroflow documented below) brines contained concentrations of lithium of 147mg/L.

ElectraLith and Mandrake are currently negotiating the terms to facilitate the construction of a prototype DLE-R pilot plant to be located at Mandrake's Utah Lithium Project.

The relationship between ElectraLith and Mandrake is non-exclusive.

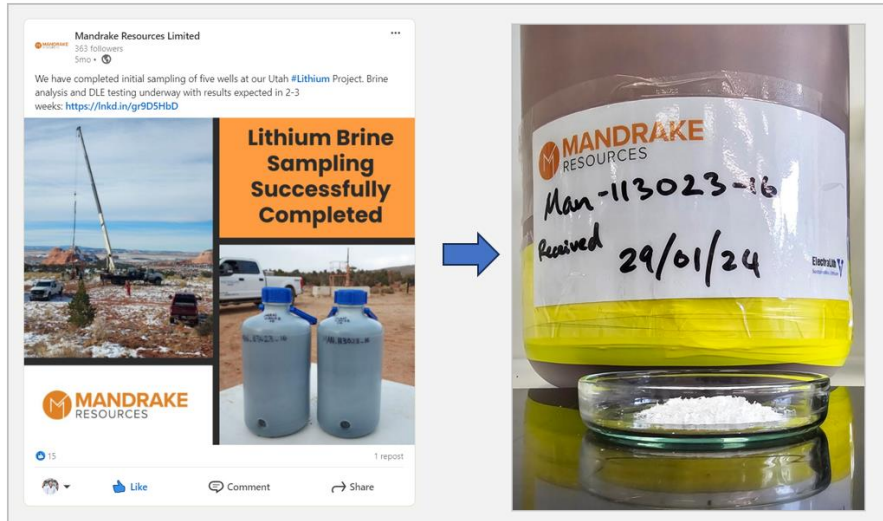


Figure 2: DLE-R - Production of Lithium Hydroxide directly from Utah Lithium Project brine

Electroflow

During the June 2024 quarter, Electroflow achieved repeatable recoveries of 92% Lithium when producing Lithium Hydroxide directly from Mandrake's brines.

Electroflow's proprietary electrochemical process uses lithium-selective electrodes to convert saltwater brines into lithium chemicals for batteries. Their process eliminates the need for excessive chemical reagents for purification and offers high scalability with a modular cell stack design. Electroflow is backed by Bill Gates' Breakthrough Energy Fellows programme.

Similar to ElectraLith, the relationship between Mandrake and Electroflow is non-exclusive.

Electroflow has requested Mandrake supply brines for a pilot plant facility which will exclusively process Mandrake brines and will be operated at Electroflow's cost.

Historic Drill Core Underpins Significant Lithium Discovery

During the June 2024 quarter, Mandrake identified core samples from 16 historic (several still in production) oil and gas wells within Mandrake's Utah Lithium Project area. The core samples reside at the Utah Core and Research Center (UCRC), a department of the Utah Geological Survey (UGS).



Figure 3: Core from the Lisbon D-616 well (8,619' depth) showing exceptional dolomitic vuggy porosity. Note core plug sample (circular hole). Semi-inset: Thin section at 8,619' showing a 100% dolomite reservoir, with secondary porosity enhanced by hydrothermal dolomitization (pore spaces in blue)

Direct analysis of core, through core plug analysis (see Figure 3), is the gold standard in the determination of crucial reservoir characteristics such as porosity and permeability. It provides critical, robust data for the formulation of a JORC-compliant Mineral Resource Estimate (MRE), often allowing for the increase in confidence and quantity of an MRE.

Within the Utah Lithium Project area, 5 core plug analyses (porosity and permeability) are available from the Leadville Formation along with 2 core plug analyses from clastics within the overlying Paradox Formation. This data has been made available to Mandrake and has been fed into the resource modelling datasets. Further, with core available from 16 legacy wells, Mandrake can conduct further core plug analyses for porosity and permeability across particular formations or zones of interest.

Of particular value in having access to the core data is the ability to now be able to calibrate the Company's vast petrophysical database (core logs from previous wells) with actual real-world core data values for porosity and permeability, increasing the accuracy and application of the petrophysics as well as generating a far more robust reservoir model.

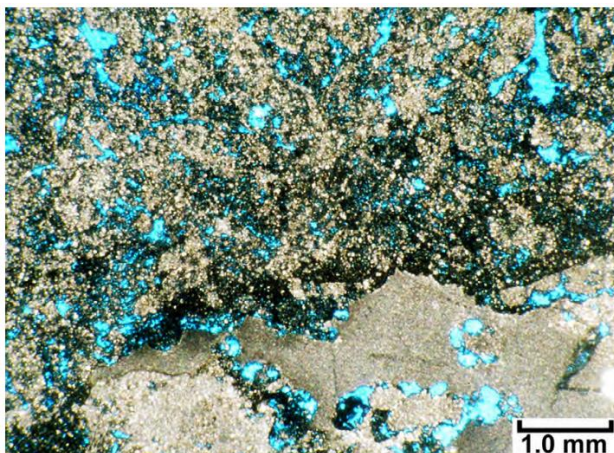


Figure 4: Thin section from a 1" diameter core plug taken at 7886' depth in the Lisbon B-610. The Leadville shows early matrix dolomitization, leaching, then secondary replacement saddle dolomites creating excellent porosity and permeability. The measured effective porosity and permeability from this depth was 13.8% and 114 mD (pore spaces in blue)

All the observed cores from Mandrake's Utah Project area show substantial dolomitization within the Leadville Formation. Of note is the widespread presence of early dolomitization observed in thin section analysis in the Leadville Formation. This first stage of matrix dolomitization occurred near the time of deposition and is observed on a regional scale.

Enhanced secondary dolomitic porosity is also observed in all Leadville cores with available thin section analysis. Secondary porosity is created by later diagenetic events, including leaching, followed by replacement dolomitization. Saddle dolomites and hydrothermal dolomitization increase the pore space within the rock and greatly enhances fluid flow pathways.

The dolomitic facies are known to have increased porosity and permeability, thus greatly improving reservoir deliverability, indicating the ability of the reservoir to yield brine at significant rates.

Mineral Resource Estimate

In March 2024 the Company released an Exploration Target for the Utah Project that ranges from 1.7 to 5.6 million tonnes (Mt) of contained LCE (Lithium Carbonate Equivalent)¹.

The Exploration Target has been prepared and reported in accordance with the 2012 edition of the JORC Code. The potential quantity and grade of the Exploration Target is conceptual in nature. There has been insufficient exploration to estimate a Mineral Resource. It is uncertain if further exploration will result in the estimation of a Mineral Resource.

During the June quarter the porosity and permeability data was received by the independent resource geologist and work on the maiden JORC Mineral Resource Estimate has progressed well. The MRE is planned for release during the current quarter.

Continued exploration of existing projects

Although the primary focus of the Company has been on the Utah Lithium Project, Mandrake continues to assess the Berinka (gold/copper in NT) and Jimperding (PGE/Ni/Cu in WA) projects.

Corporate

As at 30 June 2024, Mandrake had approx. \$14.9M in cash.

Additional ASX disclosure information

ASX Listing Rule 5.3.2: There was no substantive mining production and development activities during the quarter.

ASX Listing Rule 5.3.3 - Schedule of Mineral Tenements as at 30 June 2024

Location	Project	Status	Tenement	Interest - start of quarter	Interest - end of quarter
Utah, USA	Utah Lithium	Recorded	MANPBLM-1 to MANPBLM-3036	100%	100%
Utah, USA	Utah Lithium	OBA	MANOBA	100%	100%

¹ Refer to ASX Announcement 13 March 2024 - Substantial Lithium Exploration Target defined at Utah Project

Utah, USA	Utah Uranium	Recorded	MANLBLM-1 to MANLBLM-12	100%	100%
NT, Australia	Berinka	Granted	EL31710	100%	100%
WA, Australia	Jimperding	Granted	EL70/5345	100%	100%

ASX Listing Rule 5.3.5: Payments to related parties of the Company and their associates during the quarter per Section 6.1 of the Appendix 5B total \$122,000, comprised of Directors' fees, salaries and secretarial and accounting services performed by directors.

This announcement has been authorised by the board of directors of Mandrake.

About Mandrake Resources

Mandrake is an ASX listed explorer, focused on advancing its large-scale lithium project in the prolific 'lithium four corners' Paradox Basin in south-eastern Utah, USA. The Company's 100%-owned tenure position exceeds 93,000 acres (~379km²).

Mandrake has produced a significant Exploration Target (JORC 2012) for Lithium mineralisation which ranges from 1.7 to 5.6 million tonnes (Mt) of contained Lithium Carbonate Equivalent (LCE) and is currently establishing a maiden Mineral Resource.

The Exploration Target has been prepared and reported in accordance with the 2012 edition of the JORC Code. The potential quantity and grade of the Exploration Target is conceptual in nature. There has been insufficient exploration to estimate a Mineral Resource. It is uncertain if further exploration will result in the estimation of a Mineral Resource.

Positioned within Utah's pro-mining jurisdiction, the project benefits from a favourable regulatory environment that supports mining activities. The project has access to Tier 1 infrastructure, including power and water resources.

Furthermore, the project aligns with the proactive efforts of the US government and industry to promote domestic exploration and production of strategic and critical materials.

For further information visit www.mandrakeresources.com.au

Competent Persons Statement

The technical information in this announcement complies with the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code) and has been compiled and assessed under the supervision of Mr James Allchurch, Managing Director of Mandrake Resources. Mr Allchurch is a Member of the Australian Institute of Geoscientists. He has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the JORC Code. Mr Allchurch consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears.

Appendix 5B

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

Name of entity

MANDRAKE RESOURCES LIMITED

ABN

60 006 569 124

Quarter ended ("current quarter")

30 June 2024

Consolidated statement of cash flows		Current quarter \$A'000	Year to date (..12.months) \$A'000
1.	Cash flows from operating activities		
1.1	Receipts from customers	-	-
1.2	Payments for		
	(a) exploration & evaluation	(189)	(2,187)
	(b) development	-	-
	(c) production	-	-
	(d) staff costs	-	-
	(e) administration and corporate costs	(78)	(433)
1.3	Dividends received (see note 3)	-	-
1.4	Interest received	184	737
1.5	Interest and other costs of finance paid	-	-
1.6	Income taxes paid	-	-
1.7	Government grants and tax incentives	-	-
1.8	Other (provide details if material)	-	-
1.9	Net cash from / (used in) operating activities	(83)	(1,883)

2.	Cash flows from investing activities		
2.1	Payments to acquire or for:		
	(a) entities	-	-
	(b) tenements	-	-
	(c) property, plant and equipment	-	-
	(d) exploration & evaluation	-	-
	(e) investments	-	-
	(f) other non-current assets	-	-

Consolidated statement of cash flows		Current quarter \$A'000	Year to date (..12.months) \$A'000
2.2	Proceeds from the disposal of:		
	(a) entities	-	-
	(b) tenements	-	-
	(c) property, plant and equipment	-	-
	(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	-	-
3.	Cash flows from financing activities		
3.1	Proceeds from issues of equity securities (excluding convertible debt securities)	-	-
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	(1)	(6)
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 (provide details if material)	-	-
3.10	Net cash from / (used in) financing activities	(1)	(6)
4.	Net increase / (decrease) in cash and cash equivalents for the period		
4.1	Cash and cash equivalents at beginning of period	15,005	16,810
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(83)	(1,883)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	-	-
4.4	Net cash from / (used in) financing activities (item 3.10 above)	(1)	(6)

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 (..12.months) \$A'000
4.5	Effect of movement in exchange rates on cash held	-	-
4.6	Cash and cash equivalents at end of period	14,921	14,921

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	421	505
5.2	Call deposits	14,500	14,500
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)	14,921	15,005

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	122
6.2	Aggregate amount of payments to related parties and their associates included in item 2	-

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.

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

7.	Financing facilities	Total facility amount at quarter end \$A'000	Amount drawn at quarter end \$A'000
	<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>		
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)	(83)
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)	(83)
8.4	Cash and cash equivalents at quarter end (item 4.6)	14,921
8.5	Unused finance facilities available at quarter end (item 7.5)	-
8.6	Total available funding (item 8.4 + item 8.5)	14,921
8.7	Estimated quarters of funding available (item 8.6 divided by item 8.3)	179.8
	<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: n/a	
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: n/a	
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: n/a	
	<i>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.</i>	

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 July 2024.....

Authorised by: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.