Date: 19 July 2023

ASX Code: MAN

Capital Structure
Ordinary Shares: 598,759,920
Current Share Price: 3.9c
Market Capitalisation: $23.3M
Cash: $18.3M (Mar 2023)
EV: $5.0M
Debt: Nil

Directors

Lloyd Flint
Non-Executive Chairman
Company Secretary

James Allchurch
Managing Director

Roger Fitzhardinge
Non-Executive Director

Contact Details
First Floor
10 Outram Street
West Perth WA 6005
Australia

Tel: +61 9200 3743

mandrakeresources.com.au

181 km² 3D seismic dataset to greatly enhance Lithium exploration

Highlights

- **Mandrake has secured 181km² of modern 3D seismic incorporating much of its Utah Lithium Project**
- **Once tied in with existing historic well logs, 3D seismic enables Mandrake to target and then correlate known lithium brine reservoirs across vast areas of the project, assisting with the compilation of JORC Mineral Resources**
- **3D seismic provides detailed structural information, allowing Mandrake to identify potential migration pathways for relatively high concentration lithium-rich brines**

Mandrake Resources Limited (ASX: MAN) (Mandrake or the Company) is pleased to announce that it has secured 181km² of 3D seismic data incorporating much of the Utah Lithium Project (Figure 1). The 3D survey was shot in 2008 and 2012 and was merged and reprocessed in 2022.

The two 3D seismic datasets were provided to Mandrake by local oil, gas and helium producer and oilfield owner Paradox Resources LLC (Paradox) for nil consideration. Mandrake and Paradox have executed a Well Access Agreement (WAA) covering 84 Paradox oil and gas wells that can potentially be accessed by Mandrake for the purposes of sampling for lithium-rich brine.

The 3D seismic has enabled Mandrake to map the known lithium-brine hosting stratigraphic units across a broad swathe of the Utah Lithium Project, confirming lateral continuity and thickness. It is anticipated that the 3D dataset will greatly assist with the determination of a lithium JORC Mineral Resource Estimate following forthcoming sampling activites.

Clearly evident from the 3D data, and new to previous geological interpretations, is the location of deep-rooted faults that traverse the deep McCracken and Leadville formations and extend up into the overlying clastic units. It is these deep-rooted structures that are of exploration interest as they provide the potential for relatively high lithium concentration fluids to migrate from basement (potential lithium source) to the overlying brine reservoirs.

The 3D data has been able to be calibrated against the host of petrophysical logs available across the Utah Lithium Project from historic oil and gas wells.

Mandrake has completed the work programmes for the first workovers at the B-912 well and Big Indian Unit 1 (BIU-1) well and is in the process of well re-entry permitting and final selection of preferred contractors.

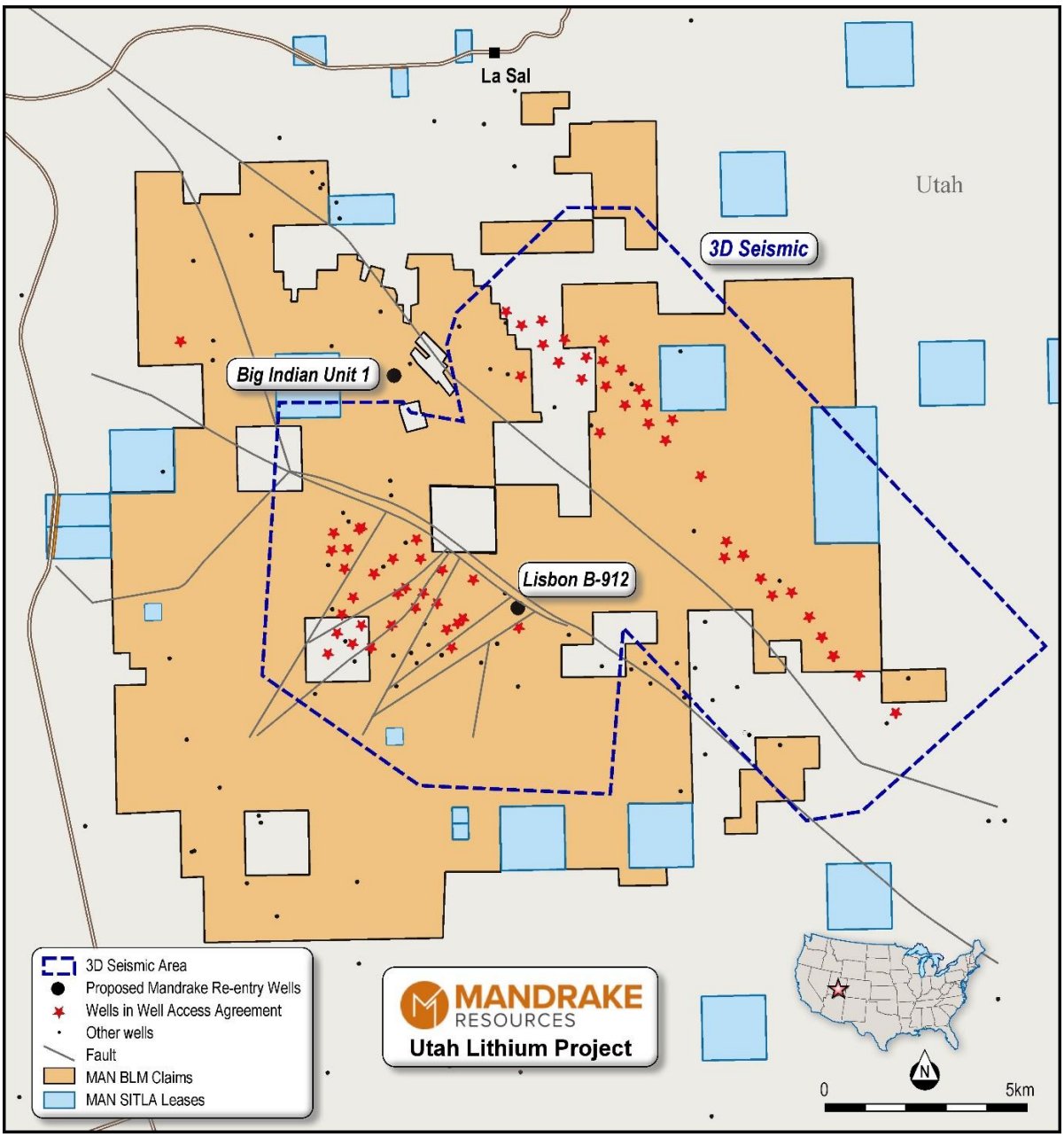

Figure 1: 3D Seismic across the Utah Lithium Project

Paradox Basin, USA

The Paradox Basin in the south-eastern Utah 'lithium four corners' area hosts hypersaline brines historically documented to contain significant concentrations of lithium, potassium salts (potash), bromine, boron and other elements. The Paradox Basin hosts the Cane Creek potash mine operated by Intrepid Potash (NYSE: IPI) (the United States' biggest potash producer) and the operations of mid-tier ASX-listed lithium developer Anson Resources (ASX:

ASN) who has an existing JORC Mineral Resource of 1.04Mt of Lithium Carbonate Equivalent (LCE) and 5.27Mt of Bromine[1].

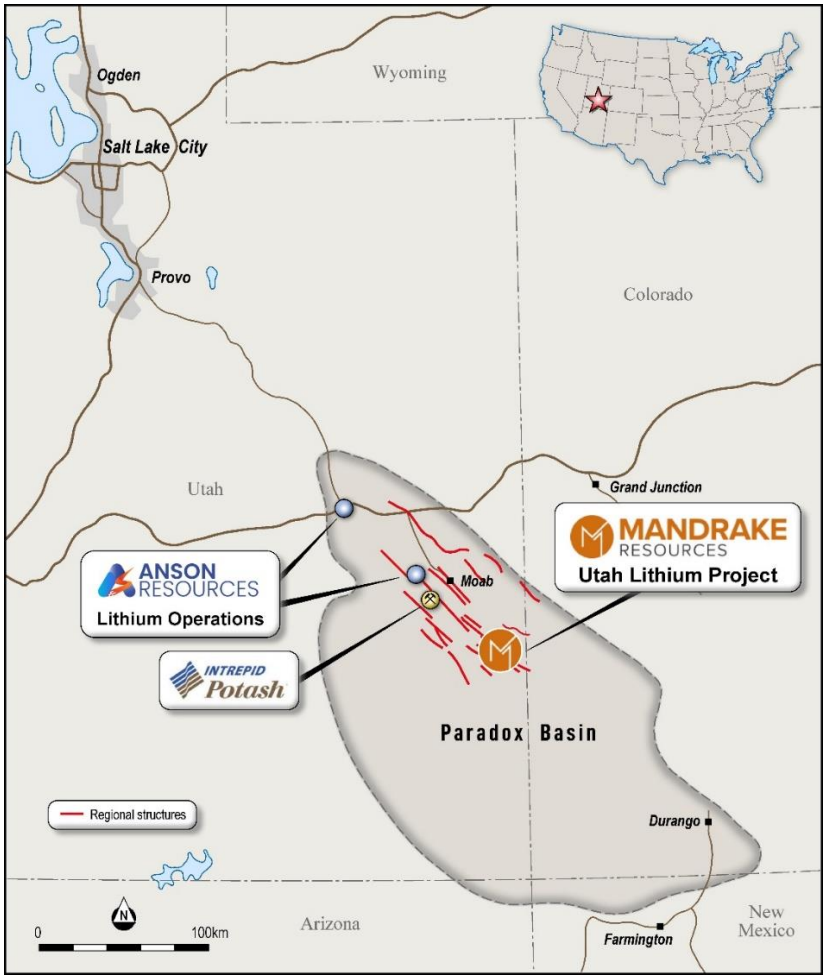

Figure 2: Location of the Utah Lithium Project

The release of this announcement is authorized by the board of directors.

Competent Persons Statement

The information related in this announcement 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 information 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.

[1] ASN ASX release dated 2 November 2022

JORC Code, 2012 Edition – Table 1 report template

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	• Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling. • Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. • Aspects of the determination of mineralisation that are Material to the Public Report. • In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.	• The Lasal and Lisbon 3D seismic surveys were undertaken in 2008 and 2012 respectively using the NAD 1927 survey system. Survey details below: **Recording System:** I/O, SEGD FORMAT, 3/4-NYQ MIN **Sample Interval:** 2 MS SAMPLES/TRACE 2001 SYSTEM IMPERIAL **Source:** DYN, 5.5 LB AT 40 FT **Source Lines:** VARIOUS **Group Interval:** 165/220 FT **Shot Interval:** 300/220 FT **Geophones:** GEOSPACE 30 CT, 10 HZ, 6 PER STRING OVER 50 FT **Record length:** 4.0 SECS **Sample rate**: 2 MS **3D Geometry Assignment:** AZIM=227 DEG; CDP BIN SIZE 110 x 110 FT • Processing details below: **Amplitude Recovery:** Spherical divergence correction, +4 dB boost **Tomo Statics:** DATUM = 7500 FT, Vr =10000 FT/S **Surface-Consistent Statics:** MAX SHIFT 20 MS, 400-3200 MS WINDOW **F-XY Decon:** 3x3, 200 MS OPERATOR LENGTH, RATE OF ADAPTATION 1.0 **Kirchhoff Time PreStack Migration:** ANISOTROPIC FROM FLOATING DATUM CDP Stack: MEAN, 0 MS BULK SHIFT • Mandrake has yet to conduct exploration work and collect brine samples at the Project. Mandrake has not drilled any wells and is reliant on petroleum company wells to access brine.

Criteria	JORC Code explanation	Commentary
Drilling techniques	• Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).	• Mandrake has yet to conduct exploration work at the Utah Lithium Project including the drilling of oil and gas-type wells.
Drill sample recovery	• Method of recording and assessing core and chip sample recoveries and results assessed. • Measures taken to maximise sample recovery and ensure representative nature of the samples. • Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	• Mandrake has yet to conduct drilling at the Utah Lithium Project.
Logging	• Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies. • Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography. • The total length and percentage of the relevant intersections logged.	• Historical petrophysical well logs associated with the historical wells include gamma-ray, neutron density, resistivity, sonic, mud logs. • The petrophysical logs provide information such that geologists can make stratigraphic formation picks to define the down well lithology of each well. These interpreted lithological logs are used to prepare cross-sections to map the reservoir and to target future well locations.
Sub-sampling techniques and sample preparation	• If core, whether cut or sawn and whether quarter, half or all core taken. • If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry. • For all sample types, the nature, quality and appropriateness of the sample preparation technique. • Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples. • Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.	• Specific sampling techniques, sample preparation of brine, and Quality Control-Quality Assurance procedures related to all historical wells is unknown.

Criteria	JORC Code explanation	Commentary
	• Whether sample sizes are appropriate to the grain size of the material being sampled.	
Quality of assay data and laboratory tests	• The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total. • For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc. • Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.	• Mandrake has yet to conduct drilling at the Utah Lithium Project.
Verification of sampling and assaying	• The verification of significant intersections by either independent or alternative company personnel. • The use of twinned holes. • Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. • Discuss any adjustment to assay data.	• Mandrake has yet to conduct drilling at the Utah Lithium Project.
Location of data points	• Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. • Specification of the grid system used. • Quality and adequacy of topographic control.	• Mandrake has yet to conduct drilling at the Utah Lithium Project.
Data spacing and distribution	• Data spacing for reporting of Exploration Results. • Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied. • Whether sample compositing has been applied.	• Mandrake has yet to conduct drilling at the Utah Lithium Project.

Criteria	JORC Code explanation	Commentary
Orientation of data in relation to geological structure	• Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. • If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	• Seismic interpretation has been undertaken by Mandrake to evaluate geological structures.
Sample security	• The measures taken to ensure sample security.	• Mandrake has yet to conduct drilling at the Utah Lithium Project.
Audits or reviews	• The results of any audits or reviews of sampling techniques and data.	• No audits/reviews have been undertaken on the historical work conducted by oil and gas companies to date.

• Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary

Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.*
	• *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*
		• The Utah Lithium Project is located approx. 60km SSE of the City of Moab, in the eastern State of Utah in the United States.
		• The total land position is 88,096 acres and includes:
		  o 34,670 acres within a Other Business Agreement (OBA) with the Utah State Government's School and Institutional Trust Lands Administration (SITLA).
		  o The remaining land position of 53,426 acres is comprised of over 2,700 staked Bureau of Land Management (BLM) placer claims.
		• All the land tenure is approved, in good standing and is 100% owned by Mandrake's US subsidiary (Mandrake Lithium USA Inc.) or held in trust by Mandrake's commissioned landman, in which the

Criteria	JORC Code explanation	Commentary
		deeds are awaiting transfer to Mandrake Lithium USA Inc.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• Currently, all exploration work reported in this announcement have been performed by oil and gas companies who have completed hydrocarbon-specific exploration and production activities over the last 80 years across the lease and claim areas. • Individual wells within oilfields continue to produce in the Paradox Basin and within the boundaries of the Utah Lithium Project.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The Project is in the north-central portion of the Paradox Basin. • Structurally, Mandrake's Property occurs on the southern margin of the "Paradox fold and fault belt", which consists of a series of roughly parallel, northwest-trending faults, northwest striking diapiric salt-cored anticlines, and synclines in the northern part of the Paradox Basin. • Currently, Mandrake's lithium-brine geological target units are defined by the Devonian McCracken sandstone, the Mississippian Leadville-Ouray Limestone Formation (Leadville Limestone), and the Pennsylvanian Paradox Member of the Hermosa Formation. • The Leadville Limestone comprises massive to thinly laminated, gray, buff, and yellow limestone that were deposited in intertidal to subtidal environments. • The Paradox Basin can be defined by the maximum extent of halite and potash salts in the Middle Pennsylvanian Paradox Formation and is composed of halite interbedded with gypsum, shale, sandstone,

Criteria	JORC Code explanation	Commentary
		and dolomite deposited intermittently closed marine depositional environment. • Aquifers associated with the Leadville Limestone and Paradox Member are defined as the Mississippian-Devonian carbonate aquifer unit and the Paradox unit, respectively. The aquifers are separated by the Lower Pennsylvanian Molas Formation confining unit, or aquitard.

Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:*
	  ○ *easting and northing of the drill hole collar*
	  ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*
	  ○ *dip and azimuth of the hole*
	  ○ *down hole length and interception depth*
	  ○ *hole length.*
	• *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*
		• Mandrake has yet to conduct drilling at the Utah Lithium Project.

Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• Mandrake has yet to conduct drilling at the Utah Lithium Project.

Criteria	JORC Code explanation	Commentary
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	• Mandrake has yet to conduct drilling at the Utah Lithium Project. • The oil and gas fluids (hydrocarbons and brine) are produced from large, confined aquifer/reservoir deposits; hence, the brine samples – as fluid media – represent samples from a larger pool of fluids. Accordingly, it is accurate to state that brine data do not have common solid mineral deposit sample intervals or intercepts. Hence downhole lengths and true widths are not applicable to this type of deposit.
	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• Mandrake has yet to conduct drilling at the Utah Lithium Project.
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• Mandrake has yet to conduct drilling at the Utah Lithium Project.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• Mandrake has yet to conduct drilling at the Utah Lithium Project.
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• Mandrake must access reservoir brines from wells owned by oil and gas operators, or by drilling its own oil and gas type wells. • Once the brine is acquired, geochemical trace element work is required to assess the lithium content and to verify the historical lithium-brine analytical results at the property.

Criteria	JORC Code explanation	Commentary
		• Mandrake requires independently sampled brine to initiate mineral processing test work to verify that lithium can be extracted from deep-seated brine underlying the Utah Lithium Project. • Post exploration work – consider a lithium-brine mineral resource in accordance with JORC (2012).