MANDRAKE RESOURCES

Date: 29 February 2024

ASX Code: MAN

Capital Structure
Ordinary Shares: 615,759,920
Current Share Price: 3.8c
Market Cap: $23.4M
Cash: $15.3M (Dec. 2023)
EV: $8.1M
Debt: Nil

Directors

Lloyd Flint
Non-Executive Chairman
Company Secretary

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Managing Director

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High grade uranium up to 0.55% U3O8 at surface

Highlights

- **Initial results from preliminary field work and rock chip sampling have returned consistent, significant concentrations of uranium up to 0.55% U3O8**
- **Uranium associated with high vanadium concentrations**
- **Remaining rock chip samples that exceeded laboratory radiation limits (see 26 Feb ASX announcement) have been shipped to a laboratory equipped to analyse high radiation material – results expected in March 2024**
- **Initial results validate uranium prospectivity with Mandrake making significant progress collating historic petrophysical data from the numerous existing oil and gas wells in the area**
- **The petrophysical dataset, along with 3D seismic, will be used to determine the distribution and volume of uranium mineralisation across the project**

Mandrake Resources Limited (ASX: MAN) (Mandrake or the Company) is pleased to advise that the first tranche of rock chip results from preliminary field work designed to assess the uranium potential of its 93,755-acre Utah Lithium Project located in the Lisbon Valley mining district has been received.

Uranium (U3O8) concentrations up to 0.55% were recorded with the corresponding vanadium (V2O5) concentration exceeding the upper limit (1.79% V2O5) of the laboratory instrument. Additional testing has been requested on this sample with results pending.

Figure 1: Uranium mineralisation in dark-coloured beds bounded by sandstone (sample LM3)

Managing Director James Allchurch commented:

'Initial results confirm high grade uranium mineralisation at Mandrake's Utah Project, providing impetus for the already advanced work undertaken in compiling and assessing petrophysical data from old oil and gas wells across the project. Interrogation of the 3D seismic and the petrophysical wellbore data is seeking to identify significant uranium mineralisation in the sub surface.

Despite the downbeat lithium sector, Mandrake continues to advance the lithium brine asset and I look forward to presenting the JORC-compliant Lithium Exploration Target shortly, along with other related material developments.'

Table 1: Utah project rock chip results and observations – uranium and vanadium

Sample	Easting*	Northing*	U (ppm)	U3O8** (ppm)	V (ppm)	V2O5** (ppm)	Sample Description
LM3	653041	4221848	4,460	**5,259**	9,470	**16,906**	Black laterally extensive conglomeritic bed bounded by sandstone. Suspected carnotite and uraninite observed.
LM4	656114	4219782	3,590	**4,233**	1,715	**3,062**	Coarse grained boulder in float with carnotite and uraninite, genesis undetermined. Semi-continuous 7m vertical zone of sandstone was reading over 1,000ppm[1] U in the area.
DE1	652036	4221398	4,690	**5,530**	>10,000[FA]	**>17,852[FA]**	Interbedded sandstone and mudstone of varying grain sizes adjacent to the abandoned Bow Mine. Coarse-grained grey material with suspected carnotite and uraninite mineralization. Uranium readings reached 12,000[1] across the exposed bed.

* - Datum: WGS1984 UTM 12N
** - Standard stochiometric conversions used: U to U308 - 1.1792; V to V2O5 - 1.7852
[1] - consultant geologists were equipped with a RS-125 spectral scintillometer by Radiation Solutions Inc
FA - V exceeds reporting limit of instrument, further analysis pending

A total of six samples were collected and submitted to ALS Global's (ALS) laboratory in Reno, Nevada for analysis.

ALS advised that three of the six rock chip samples exceed ALS's radiation safety guidelines (3 microsieverts/hour) and cannot be processed in Reno (see 26 February ASX release).

The samples have been placed in a lead-lined container within a DOT 7a steel drum and shipped to a laboratory facility equipped to process and analyze high radiation material. The samples are to be accompanied by a Geiger-Mueller meter to monitor radiation in transit.

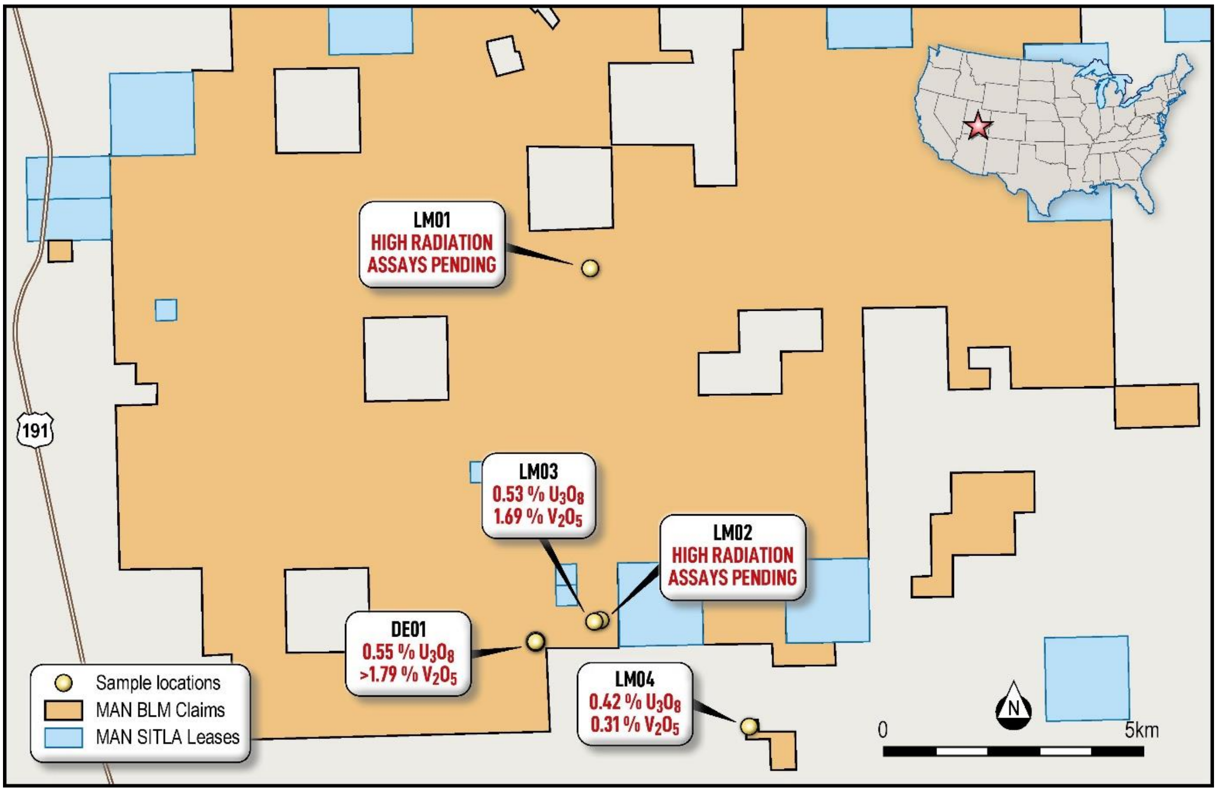

Figure 2: Uranium mineralisation in dark-coloured beds bounded by sandstone (sample LM3)

Mandrake expects results from these relatively high radiation samples to be available in March 2024.

Rock chip sampling and mapping was conducted by local consultant geologists targeting areas of relatively high radioactivity in the Salt Wash Member of the Morrison Formation, the Chinle Formation and the Cutler Formation. The consultant geologists were equipped with two scintillometers, one RS-125 spectral scintillometer by Radiation Solutions Inc, and an SC-132 from Mount Sopris Co.

Several anomalously radioactive outcrops were located and sampled for laboratory testing, including outcropping areas where uranium mineralisation was preliminarily identified as carnotite, uraninite and potentially covellite.

Uranium Work Underway

As part of Mandrake's lithium exploration, a Well Access Agreement was executed with Paradox in May 2023[1] allowing Mandrake to sample Paradox-owned oil and gas wells. Paradox operates over 150 wells on approximately 98,000 net acres in the Paradox Basin.

The petrophysical logs of these oil and gas wells compiled by Mandrake include intersections of known uranium host rocks with, in most instances, gamma logs that potentially indicate the presence of uranium mineralisation. This dataset is crucial in that it will likely be able to determine the distribution and volume of uranium-bearing units across the project area.

[1] See ASX Announcement 22 May 2023

Similarly, Mandrake is well positioned with the 3D seismic dataset in its possession to determine the thickness and lateral continuity of potential uranium-bearing sediments whilst also potentially assisting with uranium targeting and mapping.

The compilation of gamma logs and associated information is in progress and will potentially allow for the estimation of a JORC-compliant Exploration Target and Resources.

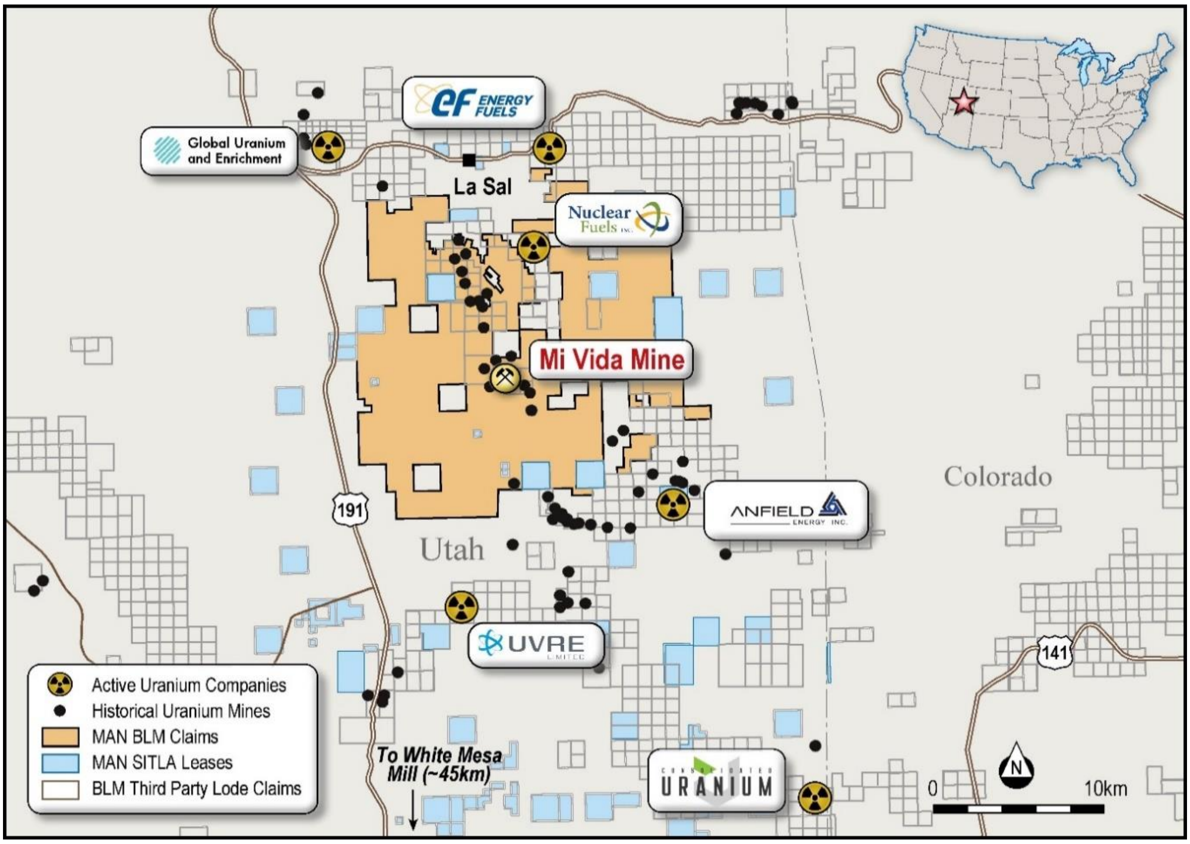

Figure 3: Utah Project – Location of Uranium mines and explorers

Uranium in the Lisbon Valley and Environs

Utah is the third largest uranium producing state in the US with the Lisbon Valley district by far the most important, accounting for nearly 78 million pounds of U_30_8 production, or 64% of the Utah's total production[2] and approximately 8% of total United States U_3O_8 production between 1949 and 2019.[2]

Uranium and vanadium in the Lisbon Valley mining district were discovered in 1913 as outcrops of basal sandstone at the southeast end of the Lisbon Valley anticline, the dominant geologic feature in the region. Mineralisation was then identified to the north west tracing an arcuate belt 16 miles long by one mile with over 40 historical uranium mines/occurrences, of which 20 are located within Mandrake's Utah Project tenure (Figure 3).

[2] Table 8.2 - Uranium Overview. Washington, DC: U.S. Energy Information Administration. April 2020.

The most significant uranium mine in the district is the Mi Vida mine which returned average ore grades of 3,700 ppm U_3O_8 and 1.4% V_2O_5 and was the catalyst for the 1953 to 1961 uranium boom in the region.[3]

Declining uranium prices in the early 1980s forced many of the mines to close, however exploration activity has since ramped up in the region, attracting a host of uranium juniors (see Figure 1) as well as larger players such as Energy Fuels Inc. (NYSE:UUUU ~ US$1.2B market cap) and Consolidated Uranium Inc. (TSX-V:CUR ~CAD$200M market cap).
Energy Fuels operates the White Mesa Mill, located 100km south of Mandrake's Utah Project, which is the only fully licensed and operational conventional uranium-vanadium mill in the US with a licensed capacity of over 8 million pounds of U_3O_8 per year.

In December 2023, Energy Fuels announced the restart of their La Sal uranium mine, located less than 5km to the north of the Utah Project (Figure 3). Resources at La Sal are quoted at 4.3Mlb of U_30_8 and 17.8Mlb of V_2O_5 from 0.8Mt of material with grades of 0.26% U_30_8 and 1.08 V_20_5[4].

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.

This announcement has been authorised for release by the Board of Mandrake Resources.

[3] Chenoweth (1990) Lisbon Valley, Utah's Premier Uranium Area, A Summary of Exploration and Ore Production, Utah Geological and Mineral Survey, Open-file report 188
[4] https://www.energyfuels.com/la-sal-complex

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.	• Mandrake geological consultants collected rock chip samples from areas of anomalous radioactivity as determined by in-field scintillometer readings. • Geological consultants were equipped with two recently calibrated scintillometers, one RS-125 spectral scintillometer by Radiation Solutions Inc, and an SC-132 from Mount Sopris Co. • Five samples were collected from outcropping rocks/float and one sample was collected from a waste stockpile. • Historical grades quoted are based on public literature, with the most relevant information sourced from files of the U.S. Atomic Energy Commission (AEC) and more specifically from the AEC annual production records for the years 1948 to 1970. • Precise details of historic sampling techniques were not provided.
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 is yet to conduct uranium exploration drilling.
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.	• Mandrake is yet to conduct uranium exploration drilling.

Criteria	JORC Code explanation	Commentary
	• 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.	
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.	• Surface rock sample lithology, minerals, textures, structural orientations and uranium mineralogy were logged together with scintillometer readings for U, K and Th.
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. • Whether sample sizes are appropriate to the grain size of the material being sampled.	• Rock chip samples were collected from areas of anomalous radioactivity as determined by in-field scintillometer readings.
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	• The analysis was completed at a certified laboratory (ALS Global) in North Vancouver, BC, Canada. ME-MS61r 4A multi-element ICP-MS.

Criteria	JORC Code explanation	Commentary
	acceptable levels of accuracy (ie lack of bias) and precision have been established.	
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.	• Rock chip sample GPS location points were recorded in the field during field mapping. Photos of each rock sample were taken at the location of the sample with samples collected in a 5" x 8" calico bag filled about two-thirds and double-knotted. • Standard stochiometric conversions used including U to U3O8 1.1792 and V to V2O5 1.7852.
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.	• The rock chip sample points were recorded on a handheld GPS. Results were then reported. • The longitude and latitude of the historical mines are recorded in government databases. • One sample (DE02) was unintentionally collected off-claim. • Locations of historical mines are also easily identifiable in the field. Mandrake has verified the location of the most significant mines (Mi Vida and Little Beaver) on the ground.
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.	• Data spacing and distribution is likely insufficient to establish the degree of geological and grade continuity appropriate for a potential future Mineral Resource or Ore Reserve. • It is not known if compositing was applied to the historical reported data.
Orientation of data in relation to	• Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.	• Further work is required by Mandrake to evaluate details of the Project's geology.

Criteria	JORC Code explanation	Commentary
geological structure	• 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.	
Sample security	• The measures taken to ensure sample security.	• Samples were collated in the field and were then sent by courier to ALS in Reno, Nevada, USA for analysis. No sample tampering was reported.
Audits or reviews	• The results of any audits or reviews of sampling techniques and data.	• No audits/reviews have been undertaken on current or historical results.

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 Project is located approx. 60km SSE of Moab, Utah United States. • Mandrake has staked over 2,950 placer claims with the U.S. Bureau of Land Management (BLM) over the area of the Project. The claims cover a total area of 59,085 acres. Mandrake has also staked 183 acres of lode claims (targeting uranium) overlapping existing Mandrake placer claims. • Mandrake holds an Other Business Agreement (OBA) with the Utah State Government's School and Institutional Trust Lands Administration (SITLA) over 34,670 acres. The OBA does not currently include uranium or vanadium. • All the land tenure / staked BLM claims are 100% owned by Mandrake's US subsidiary (Mandrake Lithium USA Inc.).
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• Historical exploration work reported in this announcement has been performed by other companies who have completed exploration and production activities that date back to the early 1900's.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The Project is in the north-central portion of the Paradox Basin.

Criteria	JORC Code explanation	Commentary
		• Uranium and vanadium deposits are known to occur in the Chinle, Morrison and Cutler formations in the flanks of the Lisbon Valley anticline. • All deposits are irregular, amoeba-shaped masses that are concordant with the bedding of the host rocks.

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 is yet to conduct uranium exploration drilling.
		• No drill hole information is reported.

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.*	• No length weighting or cut-off grades have been applied. • No metal equivalent values have been reported.
Relationship between mineralisation widths and	• *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.*	• Mandrake is yet to conduct uranium exploration drilling. • No drilling results are being reported.

Criteria	JORC Code explanation	Commentary
intercept lengths	• *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').*	
Diagrams	• *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.*	• Location of samples is included in Figure 2. • A summary table of significant geochemistry results is included in Table 1. • Location of historical mines are presented within the figures and text contents of this announcement. • No discoveries are reported.
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.*	• All significant results received to date have been reported.
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.*	• Based on Mandrake's current knowledge of the project, all meaningful information has been provided.
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 is in the process of compiling the existing 3D seismic dataset and geophysical logs from historical oil and gas wells in the region to select specific areas of interest which will be assessed in the field.