

## Exploration Update

### Highlights

- Initial reconnaissance field mapping and sampling programme completed over the eastern Pine Creek Project licences with results imminent.
- Petrophysical studies completed on historical drillcore has confirmed electrical geophysical methods are an effective exploration tool at Fenton, important to exploring large gold-bearing structures.
- Passive seismic and detailed ground gravity test survey completed along two 4km-long traverses at Fenton, with 2D profiles currently being interpreted.
- Stream sampling was completed covering the area ~3km outboard of granite contacts, known as the “Goldilocks Zone”, in 6 key areas across the Fenix Project (Fig 1). The “Goldilocks Zone” is a defined corridor in which Lithium-Caesium-Tantalum (LCT) pegmatites may exist.
- Two exploration licences were granted at Shoobridge West, EL33225 and EL33188. These licences, along with Shoobridge East (EL32884), are proximal to Core Lithium’s (ASX:CXO) Shoobridge Lithium Project, and are high priority targets for the 2023 exploration program.
- Global review of manganese opportunities completed, with four countries selected in West Africa and NE South America. In-country assessment is underway and one initial project has been identified.

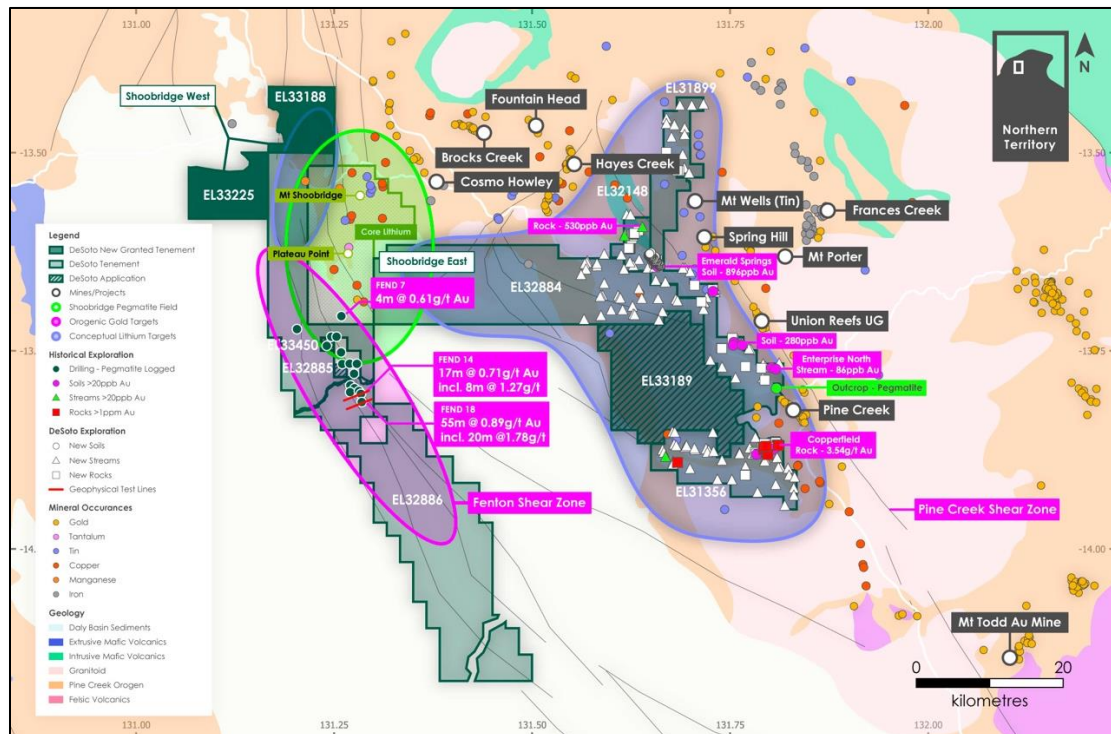


Figure 1 – Fenton and Fenix gold-lithium projects located in the Northern Territory, overlain historic drilling and sampling.

## Next Steps

- Geochemical sampling assays from the eastern Fenix Project expected January 2023.
- 2D geophysical profiles of Fenton are currently being modelled, incorporating historic down-hole structure and magnetic susceptibility data, to help constrain the geological structure of the Fenton Project.
- Initial test electrical geophysical surveys to be completed Q1 2023. This to be directly followed by a full regional electrophysical survey targeting sulphide bearing structures, early Q2 2023.
- Diamond drilling program targeting gold at Fenton to be undertaken mid-2023.
- Sampling and mapping program for Shoobridge West and Shoobridge East to be completed-Q2 2023.
- Global manganese review completed with first manganese project seeking to be identified.

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**DeSoto Resources Limited (ASX:DES or 'Company')** is pleased to provide an update on exploration programs at its 100%-owned Fenton and Fenix Lithium-Gold Projects, located in the Northern Territory and also provide an update on its global Manganese search.

### Fenton Gold-Lithium Project (Northern Territory)

Historic drilling was completed by Homestake Mining Company in the mid-90's, noting similarities between the stratigraphy and mineralisation of Homestake's then +39Moz South Dakota gold mine.

### Geophysics

A petrophysical study has been completed by Terra Petrophysics on 15 samples of drill core from the Fenton Gold Project. Samples were collected from historic drill holes FEND18 (55m at 0.89g/t gold from 418m incl. 20m at 1.74 g/t gold from 423m) and FEND14 (17m at 0.71g/t gold from 610m<sup>1</sup>).

The petrophysical study was undertaken to develop an understanding of physical properties of rocks in the Pine Creek region and to assist with the interpretation of geophysical field data for the upcoming gold exploration program.

The results of the study successfully demonstrated a correlation of pyrrhotite sulphide mineralisation with positive magnetic susceptibility, density, conductivity, and chargeability responses. This new data confirms that geophysics, and in particular electrical methods, will be the key to successfully exploring the Fenton Gold project. These results will be used to design geophysical acquisition programs including magnetics, IP and EM.

<sup>1</sup>DES ASX Announcement – Prospectus (14<sup>th</sup> December 2022)

A Passive Seismic (HVSr) and Ground Gravity test survey was completed by Atlas Geophysics along two 4km-long lines, at the Fenton Gold prospect (Figure 1). This survey was designed to assess the applicability of HVSr for mapping the depth of the basement unconformity beneath Cambrian limestone cover.

The concept is that topographic highs in the Proterozoic basement unconformity may be a proxy for hills that resisted weathering due to silicified regions in the bedrock and may be more prospective gold targets. This concept was based on the notable association of topographic highs with mineralised areas in the outcropping Pine Creek region to the east. However, in this instance, the HVSr passive seismic profile results did not image the basal unconformity due to the acoustic response (hardness) of the overlying limestone cover (upwards of 100m thick).

In combination with the seismic survey, detailed gravity profiles (50m station spacing) were collected along the two lines at Fenton. 2D profiles will be forward modelled, incorporating historic down-hole structure and magnetic susceptibility data, to help constrain the geological structure of the Fenton region.

Compilation, re-interpretation and re-processing of historic drilling and geophysical data is on-going. This has confirmed the folded antiformal architecture of the prospect, a key consideration given the association of gold deposits in the Pine Creek District with these structural positions further to the east. A detailed aeromagnetic grid was sourced from open file searches which provides an improved resolution of the response and structure at the Fenton prospect area. In addition, a regional scale Airborne Electromagnetic (AEM) survey (Rum Jungle TEMPEST survey by GA/NTGS) covers the Fenton prospect on wide spaced lines. Critical lines are being re-processed, to provide input to, and de-risk planned future programs. Modelling and interpretation of these data are on-going.

The work completed to date has demonstrated that geophysics is a powerful exploration tool at Fenton, with current and future work designed to identify key structures which have the potential to host fluid pathways for gold mineralisation.

The Shoobridge West applications EL33188 and EL33225 were both granted. These licences, along with Shoobridge East (EL32884), are close to Core Lithium's (ASX:CXO) Shoobridge Lithium Project and are high priority targets for the 2023 exploration program.

Both licences lie within the Tipperary Pegmatite district and are near the Shoobridge pegmatite field. The Shoobridge pegmatites have been exploited for their tin and tantalum, being the site of the first discovery of tin-bearing pegmatites in the NT in 1882 (Frater, 2005) and are considered analogous to those in the Bynoe pegmatite district. Now that the new licences have been granted, Lithium-focused mapping and sampling programme planning is underway.

## Fenix Gold-Lithium Project (Northern Territory)

Initial reconnaissance field mapping and geochemical sampling programs comprising streams (125), rock chips (90) and soils (269) were completed over the eastern Pine Creek Project licences (Fenix) before the onset of the NT wet season (Figure 1). Rocks and soil samples were predominantly focused on gold exploration along the main Pine Creek Shear Zone, however 9 rocks were also collected and submitted for lithium analysis.

A lithium focussed stream sediment sampling programme was conducted within ~3km of granite contacts, known as the “Goldilocks Zone”. The “Goldilocks Zone” is a defined corridor in which Lithium-Caesium-Tantalum (LCT) pegmatites may exist.

All samples were submitted to ALS in Perth for a combination of gold and/or multi-element analysis including rare earths as deemed appropriate. Analytical results are expected by the end of January.

## Manganese

The Company’s Directors have a track record of exploration success in Australia and overseas, most recently with the Bankan gold discovery in Guinea, West Africa. Directors Paul Roberts and Dr Barry Murphy developed a targeting methodology which they have successfully applied to gold exploration in West Africa for over a decade. The Company is seeking to take advantage of this capability in relation to manganese exploration. Both Directors have an interest in manganese discovery predating the formation of DeSoto.

In addition to its gold-lithium exploration programs in the Northern Territory and, as outlined in the prospectus, the Company is undertaking project generation activities targeting manganese deposits in the tropics, as a core exploration focus.

The Company’s efforts are focused on exploration for manganese deposits in West Africa, South America and Australia. It brings together a top tier team with experience in major aspects of the manganese industry, from exploration through to project development, mining and marketing, project financing and investor relations. The team includes Barrie Bolton with over 40-years’ experience in the field, much of this with BHP’s global manganese exploration program, where he was responsible for area selection and execution of programs in diverse environments. He has published several peer-reviewed papers on the genesis of sedimentary manganese deposits

The Company has also undertaken a global review of the market, from an end user perspective, looking to tailor its exploration for deposits that meet refining and industrial needs. While most manganese is destined for steel production, there is a rising market in battery electric vehicles (BEV’s). Both ore grades (in either manganese oxides or carbonates) and purity of product are key considerations.

At this stage a global database of manganese deposits has been compiled which has allowed the Company to focus its efforts in certain of areas where it sees opportunities for exploration and investment.

## ABOUT DES AND PROJECTS

DeSoto is a gold and battery-metal exploration Company with a 1,893km<sup>2</sup> landholding located in the Northern Territory's prolific Pine Creek gold and pegmatite province (Fig.3). The Company's immediate focus is the ongoing exploration of these exciting assets with an experienced Board that uses a distinctive exploration method and capability which sets us apart from our peers.

With strong mineral-finding capability and a systematic geophysics and geochemical approach to gold exploration, DeSoto is well positioned to make new mineral discoveries. The Company has already identified important indicators of lithium potential in our Northern Territory projects, including pegmatites in some historical core and known tin occurrences.

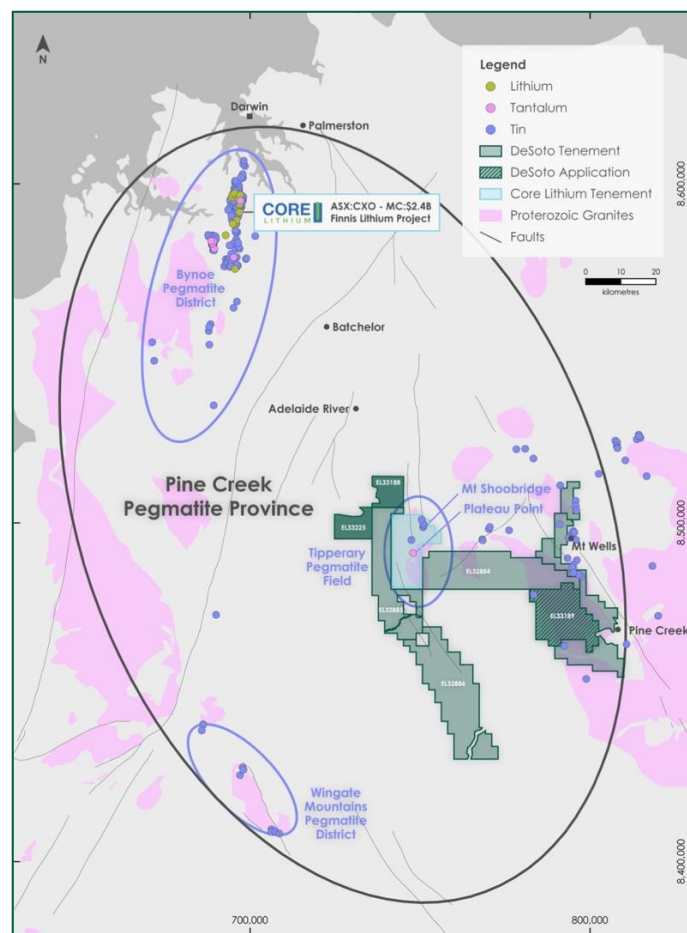


Figure 2 – DeSoto Resources Fenton and Fenix Lithium-Gold Projects, located in the Northern Territory close to new and existing lithium and gold projects.

**-END-**

This announcement is authorised for release by the Board of Directors of DeSoto Resources Limited.

For further information visit our website at [Desotoresources.com](http://Desotoresources.com) or contact:

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## **COMPETENT PERSONS STATEMENT**

The information in this report that relates to exploration results is based on and fairly represents information and supporting documentation prepared by Ms Bianca Manzi. Ms Manzi is an employee of the company, is a member of the Australian Institute of Geoscientists and has sufficient experience of relevance to the styles of mineralisation and types of deposits under consideration, and to the activities undertaken to qualify as Competent Persons as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Ms Manzi consents to the inclusion in this report of the matters based on this information in the form and context in which they appear.

## **COMPLIANCE STATEMENT**

DeSoto advises that it is not aware of any new information or data that materially affects the previous exploration results or mineral resource estimate contained in this announcement and all material assumptions and technical parameters underpinning the mineral resource estimate continue to apply and have not materially changed.