

13 November 2025

Exceptionally High-Grade Manganese Discovery at Christmas Creek Project, WA

Laboratory assays return extremely high-grade rock chips up to 58% Mn from a newly discovered cluster of manganese outcrops, interpreted to represent a large hydrothermal manganese system

Highlights

- Extremely high-grade rock chip assays returned, grading up to 58% Mn (approaching the theoretical maximum manganese content of ~63% in pure manganese oxide).
- Potential for a much larger system given the multiple outcrops cluster over a strike extent of ~750m, before disappearing under recent sand cover.
- No previous drilling has been undertaken to test the manganese mineralisation.
- Further work was recently completed with additional rock chips collected late last month and assays currently pending (expected late December).
- Geophysical investigation planned with preliminary petrophysical investigations of the rock chips suggesting the mineralisation should be detectable via electromagnetics and/or gravity.
- Strong fundamentals exist around manganese, where it is essential and non-substitutable in the manufacturing of alloys for the steel industry and is included as a critical mineral largely due to its role in the manufacture of Li-ion batteries and numerous other industrial applications.



Figure 1. Trek Metals geologist atop the high-grade manganese discovery outcrop at Christmas Creek.

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Trek Metals Limited (ASX: **TKM**) ("**Trek**" or the "**Company**") is pleased to announce a potentially significant high-grade manganese discovery at its 100%-owned **Christmas Creek Project** in the Kimberley region of Western Australia.

The Company has received assays from recent rock chipping undertaken at a recently discovered cluster of very high-grade manganese outcrops (Figure 2 and Figure 3), returning exceptionally high manganese grades which have confirmed the commercial potential and significance of the find.



Figure 2. High-grade manganese rock chip sample example with 58.37 % Mn (sample ID TKMCCR2506) interpreted to represent near endmember pyrolusite, a high-grade manganese oxide.

The results are highly encouraging with very high-grade manganese assays (ranging from 47-58% Mn) and additional moderate to high iron results of >50% Fe (refer Table 1 & Figure 3).

The occurrence of both high-grade Mn and Fe in close proximity to one another is a common feature of hydrothermal manganese deposits such as Woodie Woodie in the Pilbara region of WA.

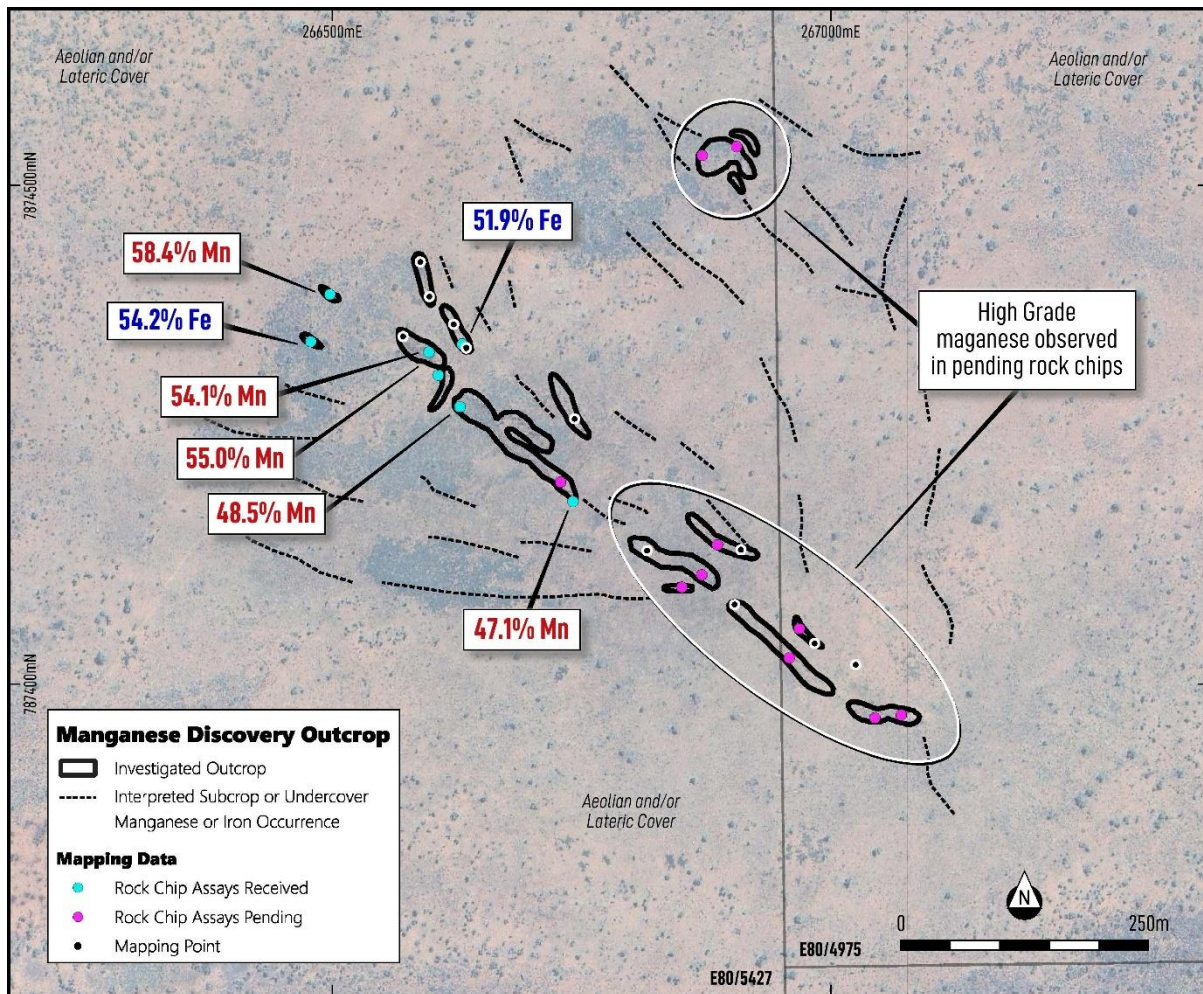


Figure 3. Plan view of the recently identified high-grade manganese discovery outcrop area, with semi-continuous outcrop over ~750m of strike, the first batch assay results – all >47% Mn in callouts – and recently submitted second batch sample locations in pink (assays pending – expected late December).

Trek Metals CEO, Derek Marshall, said:

“This is a very exciting development in a greenfields exploration setting at Christmas Creek, with exceptionally high-grade manganese mineralisation discovered in outcrop by our field team. The grades are impressive, with all manganese samples returning assays more than >47% Mn, with a peak value of >58% Mn.

“Significantly, the target has never been drill tested and the cluster of identified outcrops extends over a strike length of ~750m, with the geology then being obscured by recent Aeolian sand and/or laterite cover, potentially allowing for a much larger system to be present.

“The interpretation of the genesis of the mineralisation is hydrothermal, similar in nature and style to the world-class Woodie Woodie manganese deposits of the Pilbara. It is common in these systems to also have high-grade iron areas, as we see we grades of >50% Fe in close proximity to the Mn. This is important because this style of deposit can host very high-grade material and provide a premium product.

“Trek has discovered a high-grade, walk-up drill target which has become a priority due to the exceptional high grades and the apparent scale of the system. Follow-up rock chip sampling has been completed, with assays expected later this year, and the team is rapidly preparing a drill program to test beneath the manganese outcrop.

"This is an exciting development in the prospectivity of the area. Additionally, we look forward to updating the market shortly with the remaining assays from our recent gold drilling at the project."

Authorised by the Board of Directors

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COMPETENT PERSONS STATEMENT

The information in this report relating to Exploration Results is based on information compiled by the Company's Chief Executive Officer, Mr Derek Marshall, a Competent Person, and Member of the Australian Institute of Geoscientists (AIG). Mr Marshall has sufficient experience relevant to the style of mineralisation and to the type of activity described to qualify as a competent person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves." Mr Marshall has disclosed that he holds fully paid Ordinary Shares and Performance Rights in the Company. Mr Marshall consents to the inclusion in this announcement of the matters based on his information in the form and content in which it appears.

DISCLAIMERS AND FORWARD-LOOKING STATEMENTS

This announcement contains forward looking statements. Forward looking statements are often, but not always, identified A words such as "seek", "target", "anticipate", "forecast", "believe", "plan", "estimate", "expect" and "intend" and statements that an event or result "may", "will", "should", "could" or "might" occur or be achieved and other similar expressions.

The forward-looking statements in this announcement are based on current expectations, estimates, forecasts and projections about Trek and the industry in which it operates. They do, however, relate to future matters and are subject to various inherent risks and uncertainties. Actual events or results may differ materially from the events or results expressed or implied by any forward-looking statements. The past performance of Trek is no guarantee of future performance.

None of Trek's directors, officers, employees, agents or contractors makes any representation or warranty (either express or implied) as to the accuracy or likelihood of fulfilment of any forward-looking statement, or any events or results expressed or implied in any forward-looking statement, except to the extent required by law. You are cautioned not to place undue reliance on any forward-looking statement. The forward-looking statements in this announcement reflect views held only as at the date of this announcement.

Table 1. Manganese rock chip sample results from Christmas Creek.

Sample ID	East GDA20	North GDA20	Tenement	Mn %	Fe %	Al %	Si %	P %
TKMCCR2501	266597	7874333	E80/5427	54.11	0.85	2.29	1.72	0.11
TKMCCR2502	266596	7874334	E80/5427	54.97	3.19	1.13	0.61	0.14
TKMCCR2503	266638	7874286	E80/5427	48.44	3.58	2.17	2.69	0.12
TKMCCR2504	266631	7874341	E80/5427	4.96	51.91	0.81	2.57	0.14
TKMCCR2505	266742	7874183	E80/5427	47.11	4.19	1.53	4.71	0.05
TKMCCR2506	266498	7874391	E80/5427	58.37	0.81	0.56	0.97	0.01
TKMCCR2523	266478	7874343	E80/5427	0.70	54.12	1.00	4.49	0.45

JORC Table Section 1: Sampling Techniques and Data:

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.	- Rock chip surface samples of approximately 1kg each were taken by qualified and experienced exploration geologists based on visual identification in field. Samples are selective but representative of the outcrop from which they were taken. Rock chip sampling is an industry wide field technique for establishing metal content to understand potential tenor of underlying mineralisation. - Samples were analysed at ALS Perth using ME-XRF26s. It consists of a Lithium Borate Fusion and X-Ray Fluorescence Spectroscopy analysis. This method is suitable for the determination of major and minor elements in ore samples which require a high dilution digest such as Chromite and high Manganese ores. These are considered industry-standard and appropriate methods.
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).	Not applicable as no drilling was undertaken.
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.	Not applicable as no drilling was undertaken.
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.	Description, sample ID and location are digitally recorded in field and then stored in a database for each sample collected.
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	- No in field subsampling has been undertaken, with approximately 1kg samples taken at each site. - At ALS Laboratories, the entire sample is passed through a primary crusher to yield a crushed product which passes the screen specifications of the designated crushing procedure. A prepared sample (~0.33 g) is used during ME-XRF26s. - The sample size and subsampling method is considered appropriate.

Criteria	JORC Code explanation	Commentary
	<i>duplicate/second-half sampling.</i> <i>Whether sample sizes are appropriate to the grain size of the material being sampled.</i>	
Quality of assay data and laboratory tests	<i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i> <i>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.</i> <i>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.</i>	- Rock chip samples were analysed by Australian Laboratory Services Pty Ltd (ALS) in Western Australia utilising their analysis technique for manganese ore (ME-XRF26s). - ME-XRF26s uses a fusion disc with XRF for Al₂O₃, BaO, CaO, Cr₂O₃, Fe₂O₃, K₂O, MgO, MnO, Na₂O, P₂O₅, SO₃, SiO₂, TiO₂ and LOI. - These techniques are considered appropriate for the elements of interest. - ALS laboratories have undertaken internal QAQC checks using CRM, blanks and duplicates and no issues have been reported or identified. - The assay data has sufficient quality for the reporting of Exploration Results at this early stage of exploration.
Verification of sampling and assaying	<i>The verification of significant intersections by either independent or alternative company personnel.</i> <i>The use of twinned holes.</i> <i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i> <i>Discuss any adjustment to assay data.</i>	- Significant results have been verified by multiple geologists confirming the observations. - Field data is collected and logged into a digital device by a qualified and experienced geologist. Field data is routinely checked for accuracy and completeness by the geologist, with further checks once the data is forwarded to the database manager. Any errors or omissions reported by the database manager are verified and corrected by the geologist with the corrected data returned to the database manager for import and safe storage. - Data management consultants compile the data into a relational SQL database, hosted in a secure data centre, which enforces data integrity and ensures that the data meets the required validation protocols. Assay certificates are loaded directly from the laboratory supplied files to the SQL database, to prevent data transcription errors, with routine quality control monitoring to ensure the accurate performance of the assay data. - No adjustments have been made to any assay data.
Location of data points	<i>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.</i> <i>Specification of the grid system used.</i> <i>Quality and adequacy of topographic control.</i>	- Location of rock chip samples were recorded using a handheld GPS which is considered appropriate at this stage of exploration. - Grid projection system has been standardised in the database to GDA2020 MGA zone 52 - Surface RL data is collected using GPS, which is then projected to an SRTM DTM to improve accuracy. This is considered appropriate for this stage of exploration.
Data spacing and distribution	<i>Data spacing for reporting of Exploration Results.</i> <i>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.</i> <i>Whether sample compositing has been applied.</i>	Selective sampling was conducted based on field observation and outcrops identified as hosting potential for mineralisation.
Orientation of data in relation to geological structure	<i>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</i> <i>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.</i>	At this early stage of exploration, the exact influence of geological structure is unknown.

Criteria	JORC Code explanation	Commentary
Sample security	The measures taken to ensure sample security.	Chain of custody is managed by the Company. Samples are freighted directly to the laboratory with the appropriate documentation.
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	Not applicable at this early stage of exploration.

JORC Table 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 license to operate in the area.	- The Project is located ~140 km south-west of Halls Creek in northern Western Australia and comprises granted licences E80/4975, E80/5082, E80/5083, E80/5427, E80/5914, E80/6010, and E80/6011, and two applications, E80/6007 & E80/6012. All tenements are held by Archer X Pty Ltd. - Key terms for the 100% acquisition of Archer X Pty Ltd by Trek are outlined in the ASX:TKM release dated 11/10/2023. - The Licences are located on Native Title determined land belonging to the Yi-Martuwarra Ngurrara in the West, and the Jaru people in the East. There is no determined Native Title claim over the Zahn prospect in the southeast of the Project. - Native title, heritage protection and mineral exploration agreements have been entered into with the Jaru and Yi-Martuwarra Ngurrara Native Title Holders and Newmont Exploration Pty Ltd and/or Archer X Pty Ltd. All agreements are currently in the process of being assigned to Archer X Pty Ltd. All fieldwork activities have been undertaken in conjunction with approval from Native Title representatives of the Yi-Martuwarra Ngurrara and Jaru people with heritage surveys completed at Martin, Coogan, Willis, Austin and Turner, and cultural monitors were present when requested. An archaeological survey was completed prior to drilling activities at Zahn. - The Project area lies within five cattle stations; Larrawa, Lamboo, Carranya, Yougawalla and Bulka.
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	- The Project area is relatively under explored with historical activity centred on the Christmas Creek and Burrina Pool prospects. A rare earth oxide Resource within a carbonatite dyke (Cummins Range Project, RareX Limited, ASX:REE), exists just outside and to the southeast of the Project area. - Gold nuggets were first discovered in proximity to the Christmas Creek in the 1890's. Barnes (1985) suggests several thousand ounces were produced from the area, mostly in the 1930s and 1950s. No official production records exist. Further prospecting and illegal dozing of the site has occurred. - CRA Exploration Pty Ltd (CRAE) undertook exploration in the area during the mid-1970s, undertaking an airborne magnetic and radiometric survey, where percussion drilling returned isolated bismuth (420ppm) and gold (0.6ppm) anomalism. - G.B. Barnes and Associates for M.H. Ynema in the mid-1980s to early 1990s undertook sampling across stockwork veining produced a peak gold value of 21g/t Au. A 20g/t Au result was returned in 1992 after further sampling. - Billiton Australia explored the southwestern portion of the Project between 1991 and 1994 for Pb-Zn mineralisation. Utilising 2D seismic data collected in 1985 for oil exploration, gravity, and magnetic data Billiton targeted an oil-

Criteria	JORC Code explanation	Commentary
		trap style limestone dome with a single 565m deep diamond core hole. No significant assay results were returned however the model they were targeting has been superseded. - Northern Star Resource Ltd completed Air Core (AC) drilling targeting the CRAE gold-bismuth anomaly and geophysical aeromagnetic and radiometric highs undercover. Forty-six AC holes were drilled for 1,636m over three years. No significant assays were returned. - Newmont entered into a Joint Venture agreement with Archer X Pty Ltd in 2017 and explored the Project until withdrawal in September 2023, with most of the on groundwork undertaken in the period 2018 – 2022. Exploration included significant surface geochemistry followed up by limited Air Core and Reverse Circulation drilling (details outlined in the announcement dated 11th October 2023, and associated Table 1). Three prospects (Coogan, Martin and Zahn) have been drill tested and have all returned positive results. Highlights from Martin include 7m at 4.9g/t Au (including 1m at 29.6g/t Au) from 24m in hole NEWXCAC196, 2m @ 9.65g/t Au from 72m in NEWXCRC012 and 3m @ 2.03g/t Au from 137m in NEWXCRC015. At Zahn, weak polymetallic mineralisation with a maximum intercept of 1m at 1% zinc was seen in association with sulphides along the contact between granodiorite and metasedimentary rocks. Drilling at Coogan returned 34m @ 0.18g/t Au from 58m in hole NEWXCRC021, 38m @ 0.16g/t Au from 14m and 30m @ 0.15g/t Au from 144m in hole NEWXCRC029. Newmont also undertook numerous geophysical surveys, including passive seismic, ground magnetics, wireline televiewer & airborne EM.
Geology	<i>Deposit type, geological setting and style of mineralisation.</i>	- The Project is centred on the southernmost extension of the Halls Creek Orogen, located within the Kimberley region of Western Australia. Proterozoic sediments of the Project area are broadly correlative with Proterozoic sediments of northwestern Australia, host to the world class Callie-Auron deposit in the Tanami Orogen. - It is hypothesised that this area may represent a triple junction with the Granites-Tanami Orogen, Wunaamin Miliwundi Orogen and the Halls Creek Orogen. Paleoproterozoic rocks of the eastern zone of the Lamboo Province are the oldest rocks mapped. Neoproterozoic rocks of the Wolfe and Louisa Basins are also present. In the Project area, these Palaeo- to Neoproterozoic rocks are largely covered by Phanerozoic sedimentary rocks of the Canning Basin. - The exploration undertaken by Newmont has identified gold mineralisation at Coogan and Martin associated with minor sulphides (pyrite, chalcopyrite) in quartz veins. Mineralisation at Martin has an association with bismuth, tellurium, tungsten and selenium. Mineralisation at Coogan has a strong correlation with bismuth and also an association with tellurium, copper and molybdenum, potentially pointing towards an intrusion-related mineral system. In both cases, the psammitic to pelitic host rocks are interpreted to be part of the Olympio Formation, a correlative of the Killi Killi Formation in the Tanami Region. - The recently identified manganese mineralisation appears to be a new style for the area.
Drill hole Information	<i>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:</i> <i>o easting and northing of the drill hole collar</i> <i>o elevation or RL (Reduced Level –</i>	Not applicable as no drilling was undertaken.

Criteria	JORC Code explanation	Commentary
	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.	
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 data aggregation has been undertaken.
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').	• The true width of mineralization is not currently known due to the early-stage nature of the exploration.
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.	• See relevant maps in the body of this announcement.
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 rock chips taken and analysed for manganese have been listed.
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.	• Exploration data for the project continues to be reviewed and assessed and new information will be reported if material.
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.	• Further work on the manganese discovery includes assay results from additional rock chip sampling recently undertaken (expected late December), with the potential to undertake gravity and/or electromagnetics, heritage surveying and drill testing.