ASX Announcement

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Fast Facts

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Multiple Volcanogenic Massive Sulphide targets identified at the Sturgeon Lake Project

Highlights

- **Multiple new potential Volcanogenic Massive Sulphide (VMS) targets identified from helicopter electromagnetic survey (VTEM) at Sturgeon Lake**
- **Targets visible in the preliminary data and along the known VMS trend include highly anomalous targets located;**
  - **Northeast of the Abitibi Zone,**
  - **East of the historic Mattabi mine,**
  - **and on the previously identified Swamp Lake trend**
- **Additionally, several discrete strongly anomalous VTEM targets have been identified in the south of the tenement block, that will require further investigation**
- **6,000m of diamond drilling is planned once processing of the new VTEM targets is completed and subsequent ranking along with existing drill targets which includes the more advanced Abitibi Zone, however it is anticipated that this may now be significantly expanded**
- **Drilling is estimated to commence in July 2019**

Odin Metals Limited (ASX: ODM) ("Odin" or "the Company") is pleased to announce the completion of the airborne VTEM survey at the Sturgeon Lake Zn Cu Project[1,2] ("Project") in Ontario, Canada. Approximately 1,800 survey line kilometres were flown (Figure 3). Preliminary data has been received from the contractor allowing initial investigation of approximately 80% of the data, with final data expected in approximately 4 weeks.

The historic Sturgeon Lake trend was previously the subject of concentrated exploration in the 1970's, followed by the mining of 3 shallow open pits and 2 small underground developments in the 1980's. Other than targeted drilling at the Abitibi Zone from 2011 to 2013, the project has lain dormant since.

An initial programme of drilling is planned to follow the processing of the new VTEM targets (Figures 1 and 2) and subsequent ranking along with existing drill targets and drilling at the more advanced Abitibi Zone, estimated to commence in July 2019, however it is anticipated that this may now be significantly expanded.

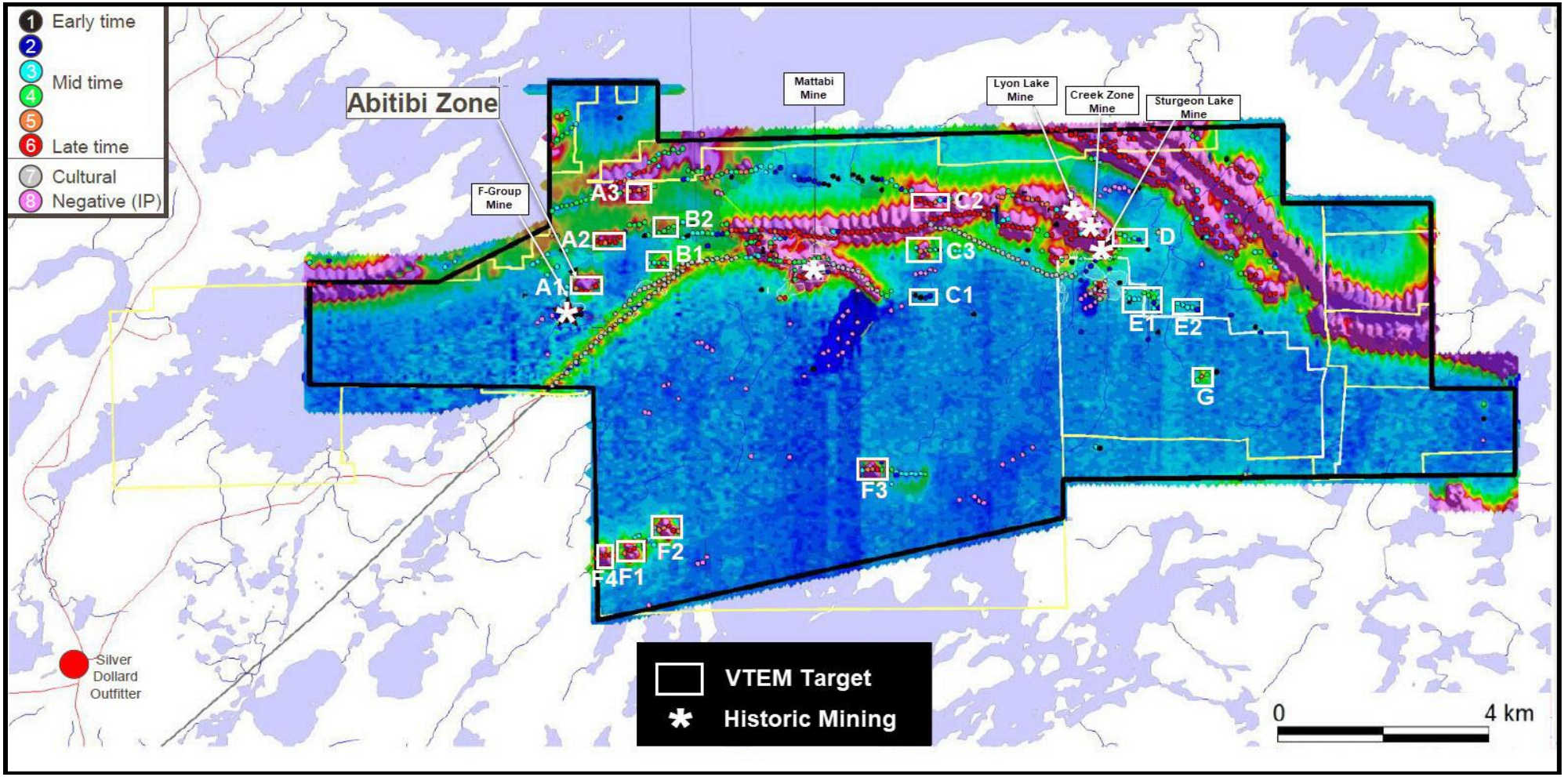

Figure 1: **VTEM Geophysical Survey Image (Chanel 35, Mid-time) Showing Significant EM Anomalies and Existing Pits**

The Company is extremely encouraged by the preliminary data showing numerous new targets previously not identified by previous historic work which mostly all dates from the 1970-80's, long before the advent of modern airborne EM techniques. Preliminary imagery shows numerous mid to late time EM anomalies, many of which are located within the prospective VMS corridor.

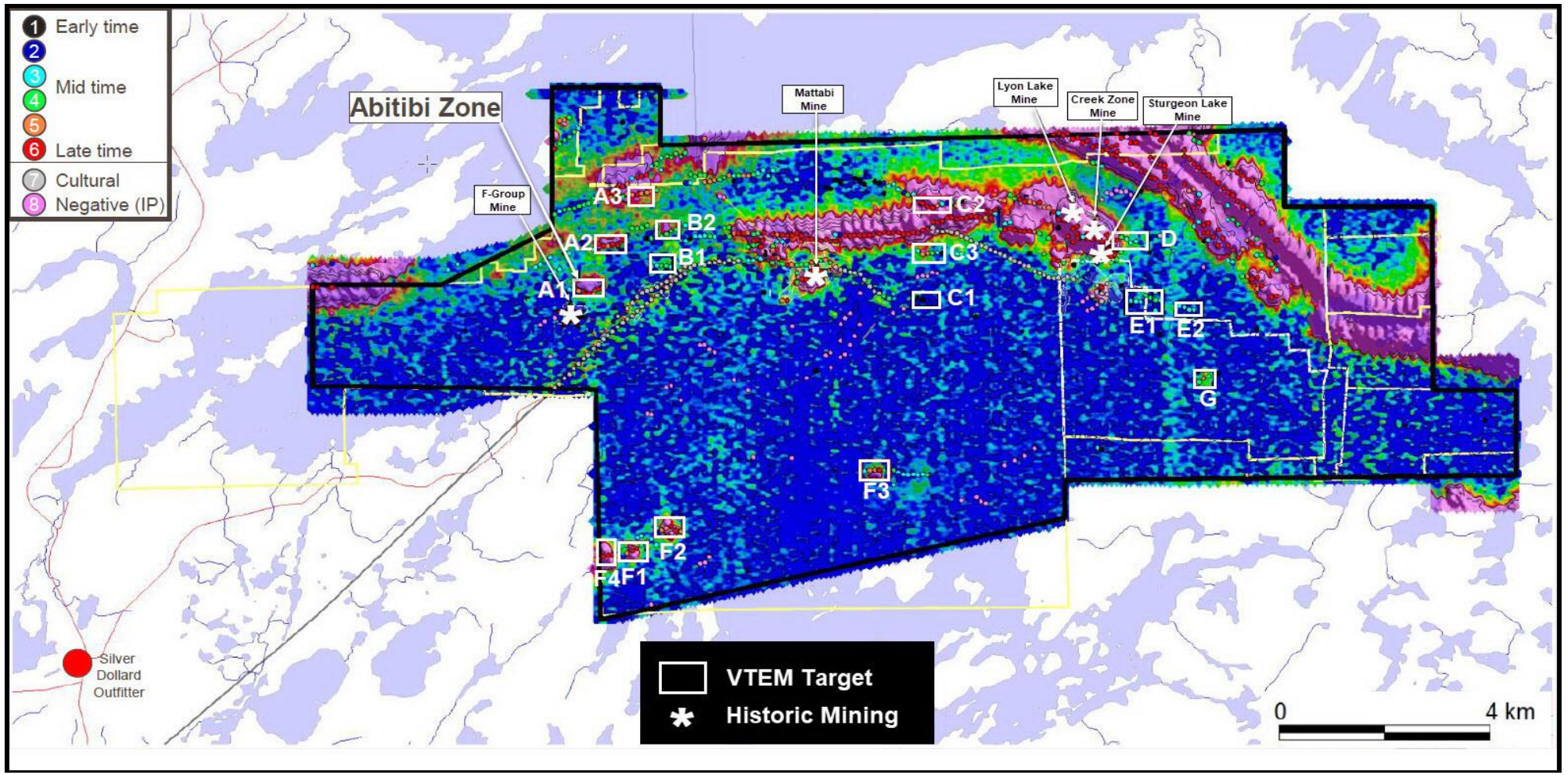

Figure 2: **VTEM Geophysical Survey Image (Chanel 44, Late-time) Showing Significant EM Anomalies and Existing Pits**

Preliminary imagery (Figure 2) of the latest time data (most favourable for massive sulphide conductors), continues to demonstrate the validity of anomalies. On receipt of the final data, plate modelling of targets will be completed, followed by drill planning to enable ranking with existing drill targets and the more advanced Abitibi Zone. The EM response (highly anomalous) at the Abitibi Zone can be seen clearly.

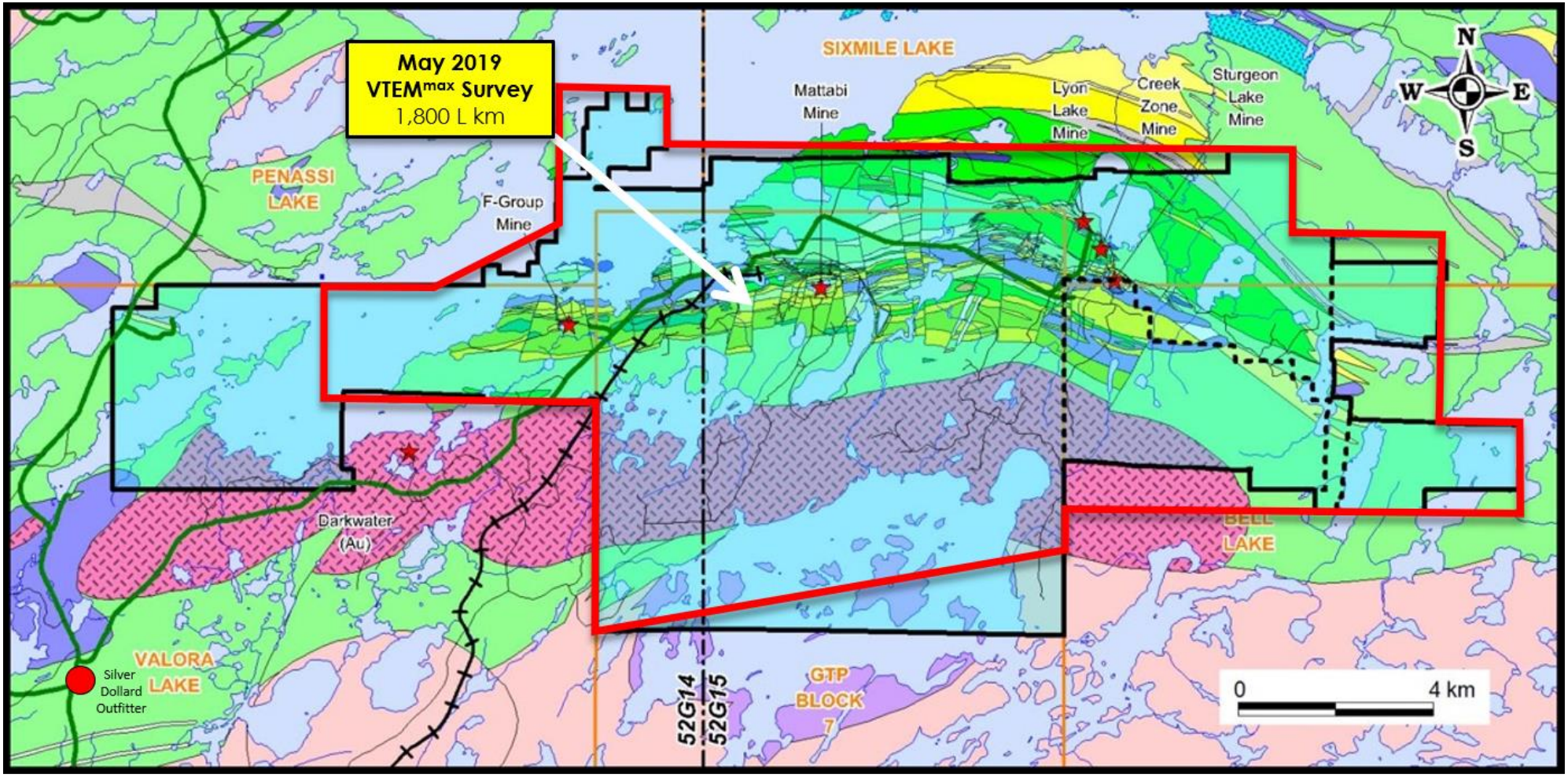

Figure 3: **Completed Airborne EM coverage in red. Tenure shown in black**

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The information in this report that relates to Exploration Targets, Exploration Results, Mineral Resources and/or Mineral Reserves is an accurate representation of the available data and is based on information compiled by Mr Simon Mottram who is a Fellow of the Australasian Institute of Mining and Metallurgy. Mr Mottram is the Chief Executive Officer of Odin Metals Limited, in which he is also a shareholder. Mr Mottram has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person (CP) 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". Mr Mottram consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

1. The Sturgeon Lake property and its associated targets and/or historic mines are Volcanogenic Massive Sulphide (VMS) style deposits/targets typical of that found elsewhere in Canada, and well documented in respected geological texts

2. The Earn in Option Agreement consists of 178km^2 in which Glencore has 100%, where Odin has a right to acquire 50% plus a further 22km^2 in which Odin has 100% (or has the right to acquire 100%), where Glencore has a right to acquire a 50% interest.

Appendix 1

Helicopter VTEM Max System Survey Details

The **VTEM Max** (VTEM) survey was completed by Geotech Ltd., from the 30th April to the 18th May 2019.

The electromagnetic (EM) data for the EM fields were acquired with a standard VTEM configuration working at a base frequency of 30Hz. B-field data was subsequently post processed from the measured dB/dt data. Magnetic data was collected with a magnetometer also hung below the helicopter, and elevation data from the aircraft differential GPS.

The VTEM system comprises a large, 35m diameter transmitter loop working at a peak current of ~320 amps, providing a dipole moment of 700,000 NIA. The VTEM system is a symmetric, In-loop type system with concentric Rx/Tx geometry.

Equipment
Aircraft: AS350 B3 Series helicopter
Transmitter: VTEM MAX – Z, X, and Y Coils
Magnetometer: Geometrics split-beam total field magnetic sensor
Magnetometer ambient range: ~20k-100k nT
GPS: Real time differential PROPAK-V3-RT20 (Novatel WAAS enabled)
GPS Accuracy: 1.5m, or 0.6m with WAAS enabled

Survey Specifications
Line Spacing: 100m
Transmitter Loop Size: 35m diameter
Coordinate System: NAD 83, UTM Zone 15N
Base Frequency: 30Hz
EM Loop Clearance: ~35m
Recording Sample: 50 recordings per second
Transmitter pulse width: 7ms
Peak Current: 320A
Peak Dipole Moment: 700,000 NIA

Appendix 2

Sturgeon Lake Project - JORC Code (2012) Edition Table 1

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 (e.g. '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 (e.g. submarine nodules) may warrant disclosure of detailed information.	▪ A **VTEM Max** survey of approximately 1,800km was conducted over the project. ▪ The survey was carried out on 100m spaced flight lines, oriented north-south (0-180°), with the follow specifications: ▪ VTEM Max Configuration Transmitter loop – 35m Peak dipole moment – 700,000 NIA Transmitter Pulse Width – 7ms Base Frequency: 30Hz Receiver – Z, X and Y coils Magnetic Sensor: Geometrics split-beam total field magnetic Helicopter Flying Height - 83 meters EM sensor Height- 35 meters Magnetic sensor Height – 73 meters ▪ VTEM geophysical surveying are an industry standard practice for exploration for conductors generated by massive sulphide bodies.
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).	▪ No drilling is reported.
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.	▪ No drilling is reported.
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.	▪ No drilling is reported.
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.	▪ No drilling is reported.

Criteria	JORC Code explanation	Commentary
	▪ 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.	
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 (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (e.g. lack of bias) and precision have been established.	▪ VTEM Max system is calibrated prior to commencement of the survey. ▪ All digital data is inspected daily by the Geotech site crew, and later by the Company's Joint Venture partner geophysicist. ▪ The Company receives a daily report on survey production and of any issues. If there any issues, then lines are re-flown. ▪ The current data set is preliminary
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.	▪ Not applicable.
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.	▪ A real-time differential PROPAK-V3-RT20 GPS navigation system with Novatel WAAS capable Real time differential. ▪ The GPS provides in-flight accuracy of 1.5m, or 0.6m with WAAS enabled. ▪ The grid Datum used NAD 83, UTM Zone 15N.
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.	▪ The spacing between the flight lines is approximately 100m. ▪ A preliminary flight path map is plotted daily and checked against design survey specifications.
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.	▪ The flight path is perpendicular to the strike of the known geological trends and is proven to be appropriate by the definition of remnants of previously mined deposits on the trend.
Sample security	▪ The measures taken to ensure sample security.	▪ Data acquired directly by Geotech Ltd. and reported to the Company's Joint Venture partner.
Audits or reviews	▪ The results of any audits or reviews of sampling techniques and data.	▪ The data is independently verified by to the Company's Joint Venture partner.

Section 2 Reporting of Exploration Results

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 consists of 22km^2 in which Odin has 100% (or has the right to acquire 100%), where Glencore has a right to acquire a 50% interest, plus a further 178km^2 in which Glencore has 100%, where Odin has a right to acquire 50%. Odin's leases are made up of 95 unpatented mining claims as well as five mining leases, in addition to five 21-year renewable mining and surface rights leases that Odin can acquire 100% from First Quantum under an Option Agreement. A 1.5 % transferable net smelter return royalty will be granted to First Quantum Minerals upon exercise of the Option Agreement. Further to this Odin has entered into an option agreement where is has the right to acquire a 50% interest in the Glencore Sturgeon Lake Properties (See press release "Odin Enters Option Agreement to expand interests in Sturgeon Lake", 4 February 2019) by expending not less than CAD$6.67m over a three-year period. Glencore the option to acquire a 50% interest in the properties above owned (or which may be owned) by Odin.
Exploration done by other parties	▪ Acknowledgment and appraisal of exploration by other parties.	▪ The Company's CP has determined that the quality and integrity of historical work is adequate for inclusion, consideration and interpretation with any new work completed by Odin.
Geology	▪ Deposit type, geological setting and style of mineralisation.	▪ The Sturgeon Lake Project - Occurs in the Sturgeon Lake greenstone belt which hosts a number of Archaean volcanic hosted massive sulphide Zn-Cu deposits. Mineralisation is hosted within the South Sturgeon Lake assemblage, a 9km thick, dominantly bimodal package of basalt-rhyolite volcanic rock.
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: o easting and northing of the drill hole collar o elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar o dip and azimuth of the hole o down hole length and interception depth o 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.	▪ No drilling is reported.
Data aggregation methods	▪ In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. 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.	▪ No assays are reported.

Criteria	JORC Code explanation	Commentary
	▪ The assumptions used for any reporting of metal equivalent values should be clearly stated.	
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 (e.g. 'down hole length, true width not known').	▪ No assays are reported.
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.	▪ Maps of geophysical results generated from the preliminary data are provided in the report.
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 results of significance that are relevant to the geophysical survey discussed in this report have been included.
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.	▪ Previous ad historical exploration relevant to the Sturgeon Lake project is detailed in previous ASX announcements, that can be found on the ASX or on the Company's website (www.odinmetals.com.au).
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.	▪ Odin Metals Ltd. and its Joint Venture partner are awaiting the delivery of the final data, following which targets will be modelled and subsequently ranked along with existing drill targets for a programme of drilling estimated to commence in July 2019.