

29<sup>th</sup> November 2021

# **BEREHAVEN EXPLORATION UPDATE**

- Downhole electromagnetic (DHEM) surveys completed in four diamond drill holes at the Commodore Nickel Sulphide Prospect
- High-grade discovery validates Metal Hawk exploration model
- Regional aircore drilling continuing at Berehaven
- Extensive ground EM surveys planned

Metal Hawk Limited (**ASX: MHK**, "**Metal Hawk**" or the "**Company**") is pleased to provide an exploration update for the Berehaven Nickel Project, 20km south-east of Kalgoorlie in the West Australian goldfields.

Four diamond holes were completed at the Commodore Prospect for 1,210m drilled (see <u>MHK announcement dated 12 November 2021</u>). BVD001 intersected 3.4m @ 2.32% Ni from 203.8m, approximately 50m down-dip from the discovery RC hole BVNC002 (1m @ 5.89% Ni from 144m). Assay results are pending for BVD002 which was drilled a further 70m down-dip from BVD001 and intersected a zone of matrix-to-heavily disseminated mineralisation from 247.5m to 248.5m.

Although drilling on section 6,584,480mN has confirmed the down-dip continuity of nickel sulphide mineralisation, which remains open at depth (see cross-section, Figure 1), follow-up drilling to the north (BVD004) and south (BVD003) of this section did not intersect any significant mineralisation, with the latter hole indicating that the fertile ultramafic unit may be offset by faulting.

DHEM surveys have now been completed from the four diamond holes at Commodore. No conductors were identified, indicating that the nature of the nickel sulphide mineralisation intersected to date is not electromagnetically conductive. These results also suggest that it is less likely additional massive sulphide will be present in the immediate vicinity of the surveyed holes.

The Company is undertaking a detailed structural review utilising the recently acquired drill data and is reinterpreting aeromagnetic data prior to planning the next phase of exploration at Commodore.

Metal Hawk Managing Director Will Belbin commented: "Although the DHEM at Commodore has not generated any new drill targets, the intersection of high tenor nickel sulphide within a previously unidentified sequence of ultramafic rocks is an extremely positive sign for the regional prospectivity of the Berehaven Project. With up to 10km of untested fertile stratigraphy, we are continuing to push ahead with more regional exploration on this exciting nickel project."





Figure 1. Commodore cross-section

### **Berehaven Geology Model**

Previous explorers have not recognised the potential for high-MgO fertile ultramafic rocks beneath the cover of magnetic gravel and clay which conceal the Commodore nickel sulphide mineralisation. Geological interpretations have referred to a dome setting (see Figure 2), with comparisons to the world-class Kambalda and Widgiemooltha nickel domes. Very little nickel exploration has been carried out on the Berehaven tenements and the vast majority of all historical nickel exploration in the Blair region has been south of the previously interpreted basal contact (or dome margin).

The discovery of high-grade nickel sulphide at Commodore has validated Metal Hawk's exploration model at Berehaven and has shown that the "nickel dome" model is probably incorrect. The Company has recently reprocessed regional aeromagnetics over the project area and has identified multiple target horizons (shown in Figure 2), which remain very poorly tested for nickel sulphide mineralisation.





Figure 2. Berehaven Nickel Project showing interpreted NNW trending target zone (yellow) and previously interpreted dome margin (black)

### **Downhole Electromagnetics**

The transitional nature of sulphide mineralisation (ie. violarite-pyrite) and low electromagnetic conductivity due to extreme weathering processes at Commodore has limited the effectiveness of DHEM surveying in the holes drilled to date.



A possible geophysical explanation of the unconstrained modelled conductor **CMA\_01** identified by earlier electromagnetic surveys (see MHK announcement dated 18 October 2021) is that the conductive source is located west of the drill holes and related to deeper weathering or paleo-drainage.

The DHEM response in diamond holes BVD001-BVD004 was similar to that in RC holes BVNC001-BVNC003 but indicated a more distal source than previously interpreted and is hence not related to sulphide mineralisation.

### **Looking Forward**

Regional aircore drilling is underway at Berehaven and will continue into the new year as the Company continues to explore the NNW striking ultramafic rocks north and south of Commodore (see Figure 2).

An extensive ground moving loop electromagnetic (MLTEM) survey has been planned and is expected to commence in January.

Programme of Works (PoW) applications have been approved for additional regional aircore drilling at Berehaven.



Figure 3. Berehaven Nickel Project location



This announcement has been authorised for release by Mr Will Belbin, Managing Director, on behalf of the Board of Metal Hawk Limited.

For further information regarding Metal Hawk Limited please visit our website at <u>www.metalhawk.com.au</u> or contact:

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Hole ID	Туре	Depth (m)	East	North	Dip	Azimuth
BVD001	DD	250	376540	6584476	-55	90
BVD002	DD	301	376476	6584482	-65	90
BVD003	DD	300	376503	6584401	-65	90
BVD004	DD	360	376390	6584480	-65	65

#### **Table 1.** DHEM survey – diamond drillhole collar details

Notes to Table 1:

- Grid coordinates GDA94: zone51, collar positions determined by handheld GPS.
- All holes nominal RL 350 +/-1m AHD.
- Hole azimuths planned at between 065 to 090 degrees, but slight downhole deviation may result in hole paths slightly different to those intended.

#### **About Metal Hawk Limited**

Metal Hawk Limited is a Western Australian mineral exploration company focused on early-stage discovery of gold and nickel sulphides. Metal Hawk owns a number of quality projects in the Eastern Goldfields and the Albany Fraser regions.

Metal Hawk discovered high grade nickel sulphide at the Berehaven Nickel Project, located 20km southeast of Kalgoorlie, in September 2021. The Company has consolidated over 90km<sup>2</sup> underexplored tenure at Berehaven, which is situated north of the Blair Nickel sulphide deposit.

Western Areas Limited (ASX: WSA) has an Earn-In and Joint Venture Agreement with Metal Hawk whereby WSA have the right to earn a 75% interest on three of MHKs projects; Kanowna East, Emu Lake and Fraser South by spending \$7.0 million over 5 years. Metal Hawk is free carried to decision to mine and retains gold rights at Kanowna East and Emu Lake.

Chalice Mining Limited (ASX: CHN) has an Earn-in Agreement with Metal Hawk on the Viking Gold Project whereby CHN can earn up to 70% of the Viking Project by spending \$2.75 million on exploration over 4.5 years.





Figure 4. Metal Hawk project locations

#### **Competent Person statement**

The information in this announcement that relates to Exploration Targets and Exploration Results is based on information compiled and reviewed by Mr William Belbin, a "Competent Person" who is a Member of the Australian Institute Geoscientists (AIG) and is Managing Director at Metal Hawk Limited. Mr Belbin is a full-time employee of the Company and hold shares and options in the Company. Mr Belbin has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he has undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Belbin consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

#### **Forward-Looking Statements**

This document may include forward-looking statements. Forward-looking statements include, but are not limited to, statements concerning Metal Hawk Limited's planned exploration program(s) and other statements that are not historical facts. When used in this document, the words such as "could," "plan," "estimate," "expect," "intend," "may", "potential," "should," and similar expressions are forward looking statements.



# 2012 JORC Table 1

# SECTION 1: SAMPLING TECHNIQUES AND DATA

	JORC Code explanation	Commentary
Sampling techniques	Nature and quality of sampling (e.g. 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.	<ul> <li>No new assay results are reported in this announcement.</li> <li>A total of 7 RC holes (BVNC001 to BVNC007) have been previously reported for 1211m.</li> <li>Four diamond holes have been completed for 1,210m (including pre-collars).</li> <li>Hole diameter was 5.5" (140mm) reverse circulation percussion (RC).</li> <li>Hole diameter for diamond drilling was HQ and NQ2.</li> <li>Drill holes were generally angled towards the east to intersect the interpreted geology as close to perpendicular as possible.</li> <li>RC sampling was undertaken by collecting 1m cone split samples at selected intervals and 2-5m composite samples throughout the remainder of the drillhole.</li> <li>Drillcore is cut and sampled to ensure the sample is representative and no bias introduced.</li> <li>Core samples are selected based on geological logging boundaries or nominal metre marks.</li> <li>Samples were collected in calico bags for dispatch to the sample laboratory. Sample preparation was in 3-5kg pulverizing mills, followed by sample splitting to a 200g pulp which will then be analysed by Intertek Genalysis Perth using methods 4AE/OE (multi-acid digest) in Teflon tubes. Analysis by Inductively Coupled Plasma Optical (Atomic) Emission Spectrometry and for higher precision analyses (eg. Ni &gt; 1%) method 4AH/OE, modified (for higher precision) multi-acid digest.</li> <li>Selected samples were also analysed for platinum group elements (Au, Pt, Pd) via 25g fire assay (Intertek method FA25/MS) with mass-spectrometer finish.</li> </ul>
Drilling techniques	Drill type (e.g. core, reverse circulation, open- hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. 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).	<ul> <li>Reverse Circulation (RC) drilling has a hole diameter of 140mm face sampling hammer.</li> <li>RC hole depths ranged from 161m to 192m.</li> <li>Diamond drill core was HQ2 and NQ2 with RC pre-collar or mud-rotary tri-cone from surface to fresh rock.</li> </ul>
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	<ul> <li>Core recovery and RQD measurements were recorded by the field geologist. Negligible core loss was observed throughout the sampled core.</li> <li>RC drill recoveries were visually estimated from volume of sample recovered. All sample recoveries within the mineralized zone were above 80% of expected.</li> <li>RC samples were visually checked for recovery, moisture and contamination and notes were made in the logs.</li> </ul>



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	may have occurred due to preferential loss/gain of fine/coarse material.	<ul> <li>There has been no recognisable relationship between recovery and grade, and therefore no sample bias.</li> </ul>
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.	<ul> <li>Detailed geological logs have been carried out on all RC drill holes, but no geotechnical data have been recorded (or is possible to be recorded due to the nature of the sample). The geological data would be suitable for inclusion in a Mineral Resource estimate.</li> <li>Logging of RC drill chips recorded lithology, mineralogy, mineralisation, weathering, colour and other sample features.</li> <li>RC chips are stored in plastic RC chip trays.</li> <li>All holes were logged in full.</li> <li>Core was photographed wet prior to sampling.</li> <li>Geotechnical and structural logging was carried on drill core.</li> </ul>
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.	<ul> <li>No new assay results are reported in this announcement.</li> <li>Core is cut using an automatic core saw to achieve a half-core sample for the laboratory.</li> <li>The Company used Industry standard of collecting core in core trays, marking metre intervals and drawing orientation lines.</li> <li>RC samples were collected on the drill rig using a cone splitter. All of the mineralised samples were collected dry or moist as noted in the drill logs and database.</li> <li>The RC field sample preparation followed industry best practice. This involved collection of 1m samples from the cone splitter and transfer to calico bag for dispatch to the laboratory.</li> <li>Field QC procedures for DD and RC drilling involve the use of alternating standards and blank samples (insertion rate of 1:20).</li> <li>No field duplicates were considered more than adequate to ensure that there are no particle size effects relating to the grain size of the mineralisation, which lies in the percentage range.</li> </ul>



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 (i.e. lack of bias) and precision have been established.	<ul> <li>No new assay announcement.</li> <li>Samples were su and analysed via digest including hy hydrochloric acids Inductively Coup Emission Spectron analysis, with all c</li> <li>An Olympus V analyser was use selection of single intervals, and mineralisation. Not</li> <li>Field QC procedur and blank samp addition, the labor duplicate analyses</li> <li>DHEM surveys Geophysics Pty Li contractor.</li> <li>The system specifi are as follows:</li> </ul>	results are reported in this ubmitted to Intertek Genalysis a method 4A/OE04: Multi-acid ydrofluoric, nitric, perchloric and s in Teflon tubes. Analysed by led Plasma Optical (Atomic) metry. This is considered a total of the target minerals dissolved. anta portable handheld xrf ed only for a guide to logging, metre and composite sampling confirmation of logged o pXRF values are reported. res involve the use of standards oles (insertion rate 1:20). In oratory runs routine check and s. were undertaken by Merlin td, an independent geophysical fications and configuration used
		SIGNAL Base Frequency (Hz)	0.5 Hz
		Current (A)	Max
		Stacks	Minimum 64
		Readings	Minimum three repeatable
		Window Timing	SMARTem Standard
		GEOMETRY	
		Station Spacing (m)	10m with 5m infill over peaks and cross-overs
		Loop Dimensions (m)	400m x 400m
		Loop Dimensions (m) Loop Turns	400m x 400m 1
		Loop Dimensions (m) Loop Turns Coordinate System(s)	400m x 400m 1 GDA94, MGA Zone 51
		Loop Dimensions (m) Loop Turns Coordinate System(s) SYSTEM	400m x 400m 1 GDA94, MGA Zone 51
		Loop Dimensions (m) Loop Turns Coordinate System(s) SYSTEM Transmitter	400m x 400m 1 GDA94, MGA Zone 51 MT400P
		Loop Dimensions (m) Loop Turns Coordinate System(s) SYSTEM Transmitter Sensor	400m x 400m 1 GDA94, MGA Zone 51 MT400P DigiAtlantis probe
		Loop Dimensions (m) Loop Turns Coordinate System(s) SYSTEM Transmitter Sensor Receiver	400m x 400m 1 GDA94, MGA Zone 51 MT400P DigiAtlantis probe Smartem 24
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.	Loop Dimensions (m) Loop Turns Coordinate System(s) SYSTEM Transmitter Sensor Receiver No new assay announcement. No holes have bee Primary data was of Excel templa computer in the fit to Newexco Ex verification and loop	400m x 400m  1  GDA94, MGA Zone 51  MT400P  DigiAtlantis probe Smartem 24  results are reported in this en twinned at this stage. collected using a standard set tes on a Toughbook laptop eld. These data are transferred cploration Pty Ltd for data ading into the database.

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Location of data points	Accuracy and quality of surveys used to locate drillholes (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.	•	Not applicable. A hand-held GPS has been used to determine collar locations at this stage. Gyroscopic downhole surveys were taken at approximately every 30m to 50m. The grid system used is MGA94, zone 51 for easting, northing and RL. A nominal height of 350m +/- 1m AHD was used. All the drillhole collars are within 1m height difference.
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 drillholes are spaced 80m and 40m apart. Some sections have had limited historical aircore and RAB drilling. At this early stage of exploration there is insufficient data to complete a geological understanding of geological and grade continuity appropriate for Mineral Resource and Ore Reserve estimation work. No sample compositing has been applied.
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 holes have been designed to intersect the interpreted geology as close to perpendicular as possible, however there is insufficient data to determine actual orientation of mineralisation at this stage
Sample security	The measures taken to ensure sample security.	•	The samples were delivered to the laboratory by the Company.
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	•	No review of the sampling techniques has been carried out.

# **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.	<ul> <li>Tenement E 26/210 is owned by Berehaven Holdings Pty Ltd. Metal Hawk Limited holds an Option to Purchase the tenement 100%.</li> <li>The tenement is in good standing.</li> </ul>



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	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 tenements are in good standing and no known impediments exist.
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	Historical gold exploration by other parties intersected anomalous and nickel and copper values in limited RAB drilling. No known significant nickel sulphide exploration has taken place at the Commodore prospect.
Geology	Deposit type, geological setting and style of mineralisation.	• The geological setting is of Archaean age with common host rocks related to komatiite-hosted nickel sulphide mineralisation as found throughout the Yilgarn Craton of Western Australia. The Archaean rocks are deeply weathered and locally are covered by 20m to 30m thick transported ferruginous clays and gravel.
Drill hole Information	<ul> <li>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:</li> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</li> </ul>	<ul> <li>Refer to Table 1 and the Notes attached thereto.</li> <li>For exploration results and details of previously reported MHK drillholes see announcements dated 28 September 2021 and 17 October 2021.</li> </ul>
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. The assumptions used for any reporting of metal equivalent values should be clearly stated.	<ul> <li>No new assay results are reported in this announcement.</li> <li>Cut-off grade for reported assays of 1.0% Ni has been used with a minimum width of 1m.</li> <li>No internal dilution has been stated.</li> <li>No maximum or minimum grade truncations were applied.</li> <li>High grade intervals internal to broader mineralised zones may be reported as included zones – refer to drill intercept and detail tables.</li> <li>No metal equivalent values have been stated.</li> <li>Reported nickel mineralised intersections for the drilling are based on intercepts using a lower grade cut-off of 1.0% Ni.</li> </ul>



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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').	• Not known at this stage.
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.	<ul> <li>No new assay results are reported in this announcement.</li> <li>Refer to Figures in text.</li> </ul>
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.	<ul> <li>The company believes that the ASX announcement is a balanced report with all material results reported.</li> </ul>
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.	• Everything meaningful and material is disclosed in the body of the report. Geological and geophysical observations have been factored into the report.
Further work	The nature and scale of planned further work (e.g. 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.	<ul> <li>Further work will be planned following further analysis of results.</li> <li>Detailed mineralogical work will also be carried out on drill samples.</li> </ul>