# 9 April 2015 ASX ANNOUNCEMENT



## NIHKA TARGET DELIVERS COPPER ANOMALY

Highlights

- Copper anomaly identified through bedrock auger sampling over the Nihka magnetic target
- Copper anomalism is open along strike and currently has been defined over >600m
- Diamond drilling to test the Nihka Target is planned to commence during the current quarter

**Avalon Minerals Limited** ('Avalon' or 'Company') (ASX: AVI) is pleased to announce significant exploration results from the Nihka exploration target located ~2km south of the Viscaria A Zone copper deposit.

As previously reported, a significant magnetic anomaly, referred to as 'Nihka', has been defined ~3km south of D Zone, and ~2 km south of A Zone (Figure 1). The anomaly has a strike extent of approximately 1000m, and displays similarities to the magnetic response of the Viscaria D Zone copper-magnetite deposit, but is significantly larger (Figures 1 and 3).

A 42 hole auger drilling program was completed in February to sample the base of till and the uppermost bedrock. The drilling was completed on 200m spaced lines and copper anomalism has been detected across a significant area (Figure 2). Four of the holes intersected trace visible chalcopyrite. The copper anomalism overlaps the northern margin of the magnetic anomaly. The host rocks are mafic volcanic rocks, with local areas of gabbroic and other intrusive rocks. The domains of magnetite and copper anomalism correlate with areas of enhanced epidote and potassium feldspar alteration. Copper anomalism and alteration remain open to the east and west.

Avalon's Managing Director, Mr Malcolm Norris said, "Our near mine exploration has been developing well during the last few months and to identify a magnetic target that has not been previously explored, and then to follow up with a preliminary drilling program which has identified trace chalcopyrite and associated copper anomalism, is very significant. We are excited by this and by what the Viscaria district may deliver with a disciplined, focussed exploration effort."

Ongoing magnetic modelling is underway which will allow for the definition of a diamond drill hole and drilling is expected to commence in late April.

## ASX: AVI

#### **REGISTERED OFFICE**

Avalon Minerals Ltd ABN 68 123 184 412 9 Gardner Close Milton Qld 4064 Australia P + 61 7 3368 9888 F + 61 7 3368 9899 info@avalonminerals.com.au www.avalonminerals.com.au



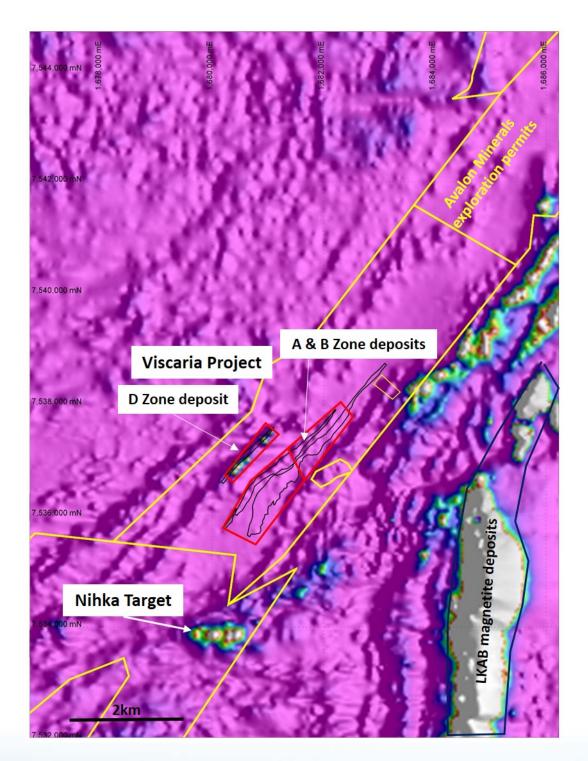


Figure 1 –Location of the Nihka target relative to the Viscaria A, B and D Zone deposits. Background image is TMI magnetics





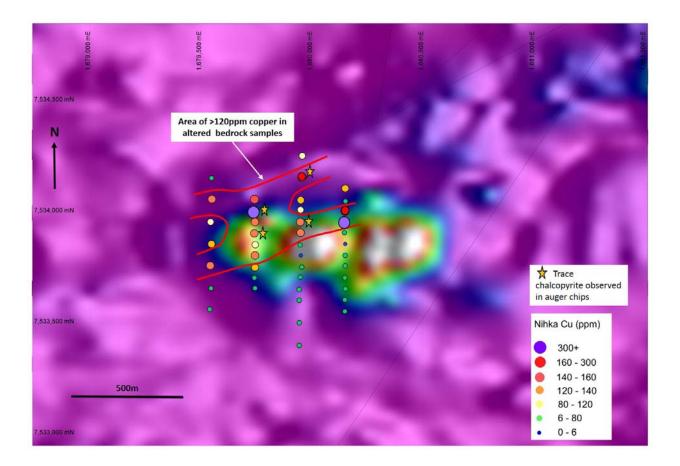


Figure 2: Nihka target – backdrop image is TMI magnetics. Auger holes shown on 4 x 200m spaced traverses. Colour coding represents copper anomalism. Stars indicate samples with visible trace chalcopyrite.





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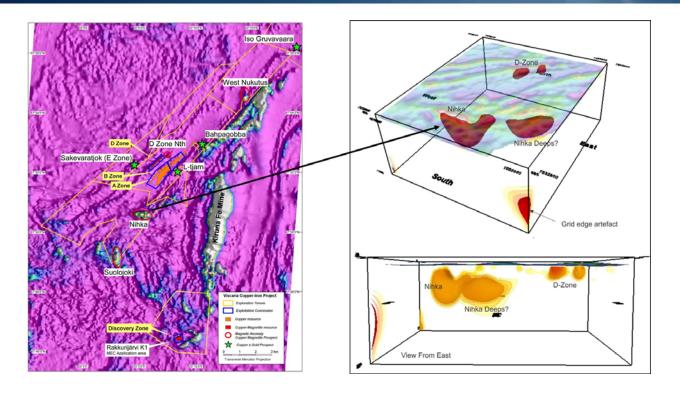


Figure 3: 3-D inversion modelling of magnetic data showing the location of the Nihka target in relation to the D Zone magnetic anomaly

#### **Competent Persons Statement**

The information in this report that relates to exploration results is based upon information reviewed by Mr Malcolm Norris who is a Fellow of the Australasian Institute of Mining and Metallurgy. Mr Norris is a fulltime employee of Avalon Minerals Ltd and 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 as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Norris consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

For further information please visit www.avalonminerals.com.au or contact:

Mr Malcolm Norris Managing Director Avalon Minerals Limited Tel: 07 3368 9888 Email: malcolm.norris@avalonminerals.com.au

#### APPENDIX 1 The following Table is provided to ensure compliance with the JORC Code (2012 Edition)

#### **TABLE 1 – Section 1: Sampling Techniques and Data**

Criteria	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 downhole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.	• Drilling was base of till and uppermost bedrock auger drilling. Samples generated were chip samples.
	• Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	• Full samples were sent to the assay laboratory where they were split to ensure adequate representivity.
	• 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.	• Auger chip samples were collected over 1m and 1.5m intervals. These samples were then split and a 250g pulverised sample was produced. Then a 50g portion of this sample was then used for multi-element analysis. A small portion of the auger chips were retained for reference purposes.
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.).	• Auger drilling, vertical drill holes, targeting top of bedrock only.
Drill sample	• Method of recording and assessing core and chip sample recoveries and results assessed.	• Auger chip data for this drilling was measured for each interval and captured in a digital logging software package.
recovery	• <i>Measures taken to maximise sample recovery and ensure representative nature of the samples.</i>	• Experienced drilling contractor and frequent cleaning of drill hole.
	• 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.	• Sample recovery was good and no relationship exists between recovery and assay results.

Criteria	JORC Code explanation	Commentary
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.	• Auger chips were logged for lithology, weathering, mineralogy, mineralisation, colour and other features. Logging and sampling was carried out according to Avalon's internal protocols and QAQC procedures which comply with industry standards.
	• Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.	• Logging was qualitative in terms of color, lithology, weathering; mineralogy and mineralisation.
	• The total length and percentage of the relevant intersections logged.	• All drill holes are logged in full from start to finish of the hole.
Sub-sampling techniques and	• If core, whether cut or sawn and whether quarter, half or all core taken.	• N/A.
sample preparation	• If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	• Split at laboratory.
	• For all sample types, the nature, quality and appropriateness of the sample preparation technique.	<ul> <li>Avalon samples were sent to the ALS Sample Preparation Facility in Pitea, Sweden for sample preparation. The standard ALS sample preparation for drilling samples is: drying the sample, crushing to size fraction 75% &gt;2mm and split the sample to 250g portion by riffle or Boyd rotary splitter. The 250g sample is then pulverised to 85% passing 75 microns and then split into two 50g pulp samples. Then one of the pulp samples was sent to the Vancouver ALS laboratory for base metal analysis.</li> <li>The sample preparation is carried out according to industry standard practices.</li> </ul>
	• Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	<ul> <li>Avalon used an industry standard QAQC programme involving Certified Reference Materials "standards" (with Cu grades ranging from near cut-off, average resource grades and very high grades) and blank samples, which were introduced in the routine sample batches.</li> <li>Standards, blanks and duplicates were submitted at a rate of 1 in 20 samples or one standard, blank and duplicate per hole if the hole has less than 20 samples.</li> <li>The check assay results are reported along with the sample assay values in the preliminary and final analysis reports.</li> </ul>
	• 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.	<ul> <li>Full samples submitted to the laboratory where the samples were split.</li> <li>The results from duplicate samples were compared with the corresponding routine sample to ascertain whether the sampling was representative.</li> </ul>

Criteria	JORC Code explanation	Commentary
	• Whether sample sizes are appropriate to the grain size of the material being sampled.	• Sample sizes are considered to be appropriate and correctly represent the style and type of mineralisation.
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.	<ul> <li>Avalon used assay method was ME-ICP61, which involves sample decomposition by four acid digest. The digests are then analysed by ICP-AES. The lower detection limit for copper using ME-ICP61 is 1ppm Cu and the upper detection limit is 1% Cu.</li> <li>This analysis technique is considered suitable for this style of sample and mineralisation.</li> </ul>
	• 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.	• A handheld XRF instrument was used to develop some understanding of potential anomalism prior to assay data being received. Results from the handheld XRF instrument were not used for any reporting purposes.
	• 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.	• The values of the standards range from low to high grade and were considered appropriate to monitor performance.
Verification of	• The verification of significant intersections by either independent or alternative company personnel.	• Results were checked independently by Avalon staff in Australia and Sweden.
sampling and	• The use of twinned holes.	No twin holes were drilled
assaying	• Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	• The sampling intervals and sample numbers are recorded/generated directly in the acQuire <sup>TM</sup> database package. Then assay data directly from the laboratory is brought together with the sampling data and validated within the acQuire <sup>TM</sup> database package.
	Discuss any adjustment to assay data.	No adjustments or calibrations were made to assay data.
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.	<ul> <li>Surface collar co-ordinates are surveyed by Differential GPS in Swedish co-ordinate system RT90 gon vast (west) 2.5 by qualified local contract surveyors to a high level of accuracy (1-3cm).</li> <li>It has been standard procedure to use the same contract surveyors to survey collar points since Avalon's involvement, so there is high confidence that all the surface drill holes are supported by accurate location data.</li> <li>No down hole surveys were completed for these shallow, vertical holes (maximum depth 16.5m).</li> </ul>

Criteria	JORC Code explanation		Comm	entary	
	• Specification of the grid system used.	RT90 Map proje	RT90 Map projection parameters:		
		Parameter	Value		
		Reference Ellipsoid	Bessel 1841		
		Semi Major Axis	6377397.155 m		
		Inverse Flattening (1/f)	299.1528128		
		Type of Projection	Gauss-Krüger (Transverse Mercator)		
		Central Meridian:	E15°48'29.8" (2.5 gon West of the Stockholm Observatory)		
		Latitude of Origin	0°		
		Scale on Central Meridian	1		
		False Northing	0 m		
		False Easting	1500000 m		
		• RT90 gon vast North.	(west) 2.5 grid nor	th is situated $4.01^{\circ}$ to the east of True	
	• Quality and adequacy of topographic control.	scanning) that y cadastral and la metre square an surfaces and 60 topographic surf estimation. The	was purchased from nd registration auth d is specified as ac cm in planimetry. face was considered	en from LIDAR data (airborne laser n Lantmäteriet (the Swedish mapping, nority). Data point resolution is 0.5 per ccurate to 20cm in elevation on distinct The level of accuracy of the LIDAR d adequate for the purposes of resource c surface has also been verified by the v co-ordinates.	
Data spacing and distribution	• Data spacing for reporting of Exploration Results.	aligned traverses,	spaced 200m. Four	at either 50m or 100m on north-south traverses were completed. 1 meter intervals in the cover till and	

Criteria	JORC Code explanation	Commentary
	• 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.	• N/A
	• Whether sample compositing has been applied.	• No sample compositing was done.
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.	• Drilling and drilling traverse orientations were appropriate for the orientation of the geophysical anomaly being explored.
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.	• N/A.
Sample security	• The measures taken to ensure sample security.	<ul> <li>Avalon sampling procedures show that individual samples were given due attention.</li> <li>ALS is an internationally accredited laboratory that has all its internal procedures heavily scrutinised in order to maintain their accreditation.</li> </ul>
Audits or reviews	• The results of any audits or reviews of sampling techniques and data.	• Avalon's sampling techniques and data have been audited multiple times by independent mining consultants during the process of reporting a JORC Compliant Mineral Resource on the various mineral deposits that make up the nearby Viscaria Copper Project (A Zone, B Zone, D Zone and Discovery Zone). These audits have always resulted in the conclusion that Avalon's sampling techniques and data are industry standard and suitable for the purposes of reporting a JORC Compliant Mineral Resource.

### **TABLE 1 – Section 2: 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 Nihka Prospect is covered by Exploration Permit Viscaria nr 107.
	• 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.	• Exploration Permit Viscaria nr 107 is valid till 10/08/2015.
Exploration done by other parties	• Acknowledgment and appraisal of exploration by other parties.	• There has been no historical exploration of the Nihka Prospect.
Geology	• Deposit type, geological setting and style of mineralisation.	• The Nihka Prospect comprises a magnetic anomaly that exhibits magnetic geophysical similarities to the nearby D Zone copper-magnetite orebody. This recent drilling indicates that the host rock is a mafic rock, exhibiting varying degrees of alteration, and that it contains magnetite and some sulphides.
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>a. easting and northing of the drill hole collar</li> <li>b. elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>c. dip and azimuth of the hole</li> <li>d. down hole length and interception depth</li> <li>e. hole length.</li> </ul>	• 42 shallow (max depth 16.5m) auger holes were completed covering the western two thirds of the magnetic anomaly shown in Figure 2. The holes were drilled on 4 x 200m spaced traverses, and holes along traverses were spaced at either 50m or 100m intervals.
	• 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.	• N/A

Criteria	JORC Code explanation	Commentary
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.	• N/A
	• 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.	• N/A.
	• The assumptions used for any reporting of metal equivalent values should be clearly stated.	• N/A
Relationship between	• If the geometry of the mineralisation with respect to the drill-hole angle is known, its nature should be reported.	• N/A
mineralisation widths and intercept lengths	• 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').	• N/A
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 Figures 1 and 2 for location of the Nihka prospect.
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.	• N/A
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.	• N/A

Criteria	JORC Code explanation	Commentary
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).	• Further work will involve a diamond drill hole to better sample the target zone and to identify the geological setting.
	• Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	• See Figure 2 in the main announcement.