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AIM: AAZ

RNS Announcement-Linked Report

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Dr. Stephen Westhead

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# ZTEM<sup>™</sup>-Aeromagnetic Results Summary at the Gedabek Contract Area - Highlights

#### **Objectives of the Airborne Geophysics Survey**

The aim of the heli-borne geophysical survey ("the Survey"), completed during H2 2018, was to define new drill targets and identify new mineable deposits, the results of which may provide additional producing mines over the Gedabek Contract Area ("CA"). The survey and subsequent data interpretation were completed by Geotech Limited ("Geotech"), one of the leading global airborne geophysical surveying companies.

#### **Overview of the Survey**

The Survey utilises the Z-Axis Tipper Electromagnetic<sup>™</sup> system ("ZTEM") and a high-sensitivity magnetometer. The ZTEM system is an innovative, airborne electromagnetic surveying system using the natural magnetic field of the Earth. The system is an excellent mapper of surface geology, is able to penetrate to great depths and is well-suited to rugged topography, ideal for the Gedabek CA. This method is especially suitable for porphyry copper-gold ("Cu", "Au") and epithermal copper-gold-silver ("Ag") exploration. A total of 3,385 linear kilometres were flown over the Gedabek CA. The Ministry of Emergency Situations of the Republic of Azerbaijan worked with AAM, AIMC and Geotech to provide helicopter services. This is the first survey of its kind to be carried out both over the Gedabek CA and in Azerbaijan.

#### Main Results of the Survey

The 3D magnetic inversion and their interpretation results have given new insights into the magnetic properties distribution within the survey area and have provided a new litho-structural map of the Gedabek property. A total of 31 individual targets were identified by Geotech and presented to Anglo Asian Mining plc. ("AAM" or "the Company"). These targets have been classified as either shallow-seated (around 300 m depth; no. 20), deep-seated (greater than 500 m depth; no. 5) and porphyry (variable depths; no. 6) prospects requiring further investigation.

#### **Outlook for 2019**

The results from the ZTEM survey are currently being used to identify regions around the Gedabek CA that can be followed up with geochemical soil campaigns, ground-based geophysics, outcrop sampling and surface drilling. This is being conducted through analysis of existing data and interrogating the sections provided by Geotech, amongst other tasks, so that all 31 targets may be ranked to enable priority exploration to commence. Once this has been completed, a further report shall be issued.

For enquires, use "Contact" form www.angloasianmining.com







#### **Contract Areas and Projects**

#### **Gedabek Contract Area:**

Gedabek Open Pit
Gadir Underground Mine
Ugur Open Pit
Söyüdlü Exploration
Gedabek Regional Exploration

#### **Gosha Contract Area:**

Gosha Underground Mine
Asrikchay Exploration

#### **Ordubad Contract Area:**

Shakardara Exploration
Ordubad Regional Exploration

#### Anglo Asian Director of Geology and Mining, Dr. Stephen Westhead,

commented: "The survey was a great success and the very encouraging three-dimensional results provided a significant number of potential copper and gold bearing targets. In total, it has identified 25 epithermal and six porphyry precious and base metal targets. We are now busy on the next stage of the work which is ranking the geophysical signatures by integrating the geophysics results with Company geological data to prioritise the exploration targets. Based on this work, the Company will follow-up with ground-based exploration techniques including drilling, on the most promising targets. It is an exciting stage in the Company's strategic development as we now start to fully explore all our three contract areas. This survey forms part of that exploration and the good progress made towards our identified objectives will potentially have a significant growth impact on the Company."

## <u>Lead Competent Person and Technical Specialists Declaration</u> Lead Competent Person

Stephen Westhead has a minimum of 5 years relevant experience to the type and style of mineral deposit under consideration and to the activity which is being undertaken to qualify as a Competent Person ("CP") as defined in the JORC Code [1]. Stephen Westhead consents to the inclusion in the Report of the matters based on this information in the form and context in which it appears.

"I am not aware of any material fact or material change with respect to the subject matter of the Report, which is not reflected in the Report, the omission of which would make the report misleading. At the time this Report was written and signed off, to the best of my knowledge, information and belief, the Report contains all scientific and technical information that is required to be disclosed to make the Report not misleading"

#### **Technical Specialists**

The following Technical Specialists were involved in the preparation of this Airborne Geophysical Survey Summary Report and have the appropriate experience in their field of expertise to the activity that they are undertaking and consent to the inclusion in the Report of the matters based on their technical information in the form and context in which it appears.

Name	Job Title	Responsibility	Signed
Anar Valiyev	Exploration Manager	Exploration Programme	A. Berear
		Management	
Katherine Matthews	Project Geologist	Survey Results Interpretation,	EMauhes
		Report Compilation and Review	
Stephen Westhead	Director of Geology and Mining	Management	Stan



Glossary of Terms and Abbreviations			
AAM	Anglo Asian Mining PLC.; the AIM-listed company with a portfolio of gold, copper and silver production and exploration assets in Azerbaijan		
AAZ	ticker for Anglo Asian Mining PLC., as listed on the AIM trading index		
AIMC	Azerbaijan International Mining Company Limited; a subsidiary of AAM		
CA	Contract Area		
СР	Competent Person, as defined in [1]		
Geotech	Geotech Limited; Canadian contractor that completed the airborne geophysics survey		
HS	High-sulphidation; a classification of epithermal system that describes Gedabek		
LS	Low-sulphidation; a classification of epithermal system that describes Gadir		
OP	open pit		
ZTEM	Z-axis Tipper Electromagnetic geophysical system		
Au	chemical symbol for gold		
Ag	chemical symbol for silver		
Cu	chemical symbol for copper		

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The information contained in the report below is extracted from the 'ZTEM $^{\text{\tiny M}}$  & Aeromagnetic Interpretation Results' report as submitted to the Company by the contractor, Geotech. The objective is to provide a summary of the technical exploration techniques utilised and an overview of results. The maps have been clipped to the Gedabek CA boundary.



#### Introduction

Geotech carried out a helicopter-borne ZTEM and aeromagnetic survey for Azerbaijan International Mining Company Ltd. ("AIMC", a subsidiary of AAM) over the Gedabek CA, situated in the Gedabay region, western Azerbaijan. The aim of the airborne geophysical survey was to delineate favourable target areas for the exploration of epithermal and porphyry, precious and base metal mineralisation. The survey was conducted from October to December 2018.

Principal geophysical sensors included a ZTEM system and a high-sensitivity magnetometer. Ancillary equipment included a GPS navigation system and a radar altimeter. In total, 3,385 line-kilometres of geophysical data were acquired over the survey area.

The survey operations were based out of the Gedebek mine camp. In-field data quality assurance and preliminary processing were carried out on a daily basis during the acquisition phase. Final data processing, including generation of final digital data and map products, were undertaken from the office of Geotech in Aurora, Ontario.

This report summarises the interpretation and targeting results for epithermal and porphyry, precious and base metal mineralisation within the survey block. It describes the 3D ZTEM inversion, the 3D magnetic inversion and the obtained integrated results from the combined interpretation of ZTEM and aeromagnetic data.

#### Overview

Geotech, one of the leading global airborne geophysical surveying companies, was contracted in 2018 by AAM to carry out a geophysical survey and subsequent interpretation over the Gedabek CA. The Ministry of Emergency Situations of the Republic of Azerbaijan worked with AAM, AIMC and Geotech to provide helicopter services. This is the first survey of its kind to be carried out both over the Gedabek CA and in Azerbaijan.

The commencement of the survey was initially delayed by four weeks due to logistical issues and the on-site flight schedule was intermittently interrupted by a total of 23 days due to bad weather (notably fog, strong winds and snowfall). Flight days totalled 19 days and the survey was commissioned from 18<sup>th</sup> October until 3<sup>rd</sup> December 2018.

The aim of the survey was to identify geophysical anomalies that could outline new drill targets with the aim to define new mineable deposits, which may provide additional assets via producing mines, within the Gedabek CA. AIMC are already aware of multiple additional Au and Cu mineral occurrences in the region, but the additional geophysical data is helping to prioritise targets for further exploration work (soil geochemical, ground-based geophysics, reverse circulation and diamond drilling).

Geotech were provided a set of traverse lines over and beyond the Gedabek CA to ensure optimum coverage of the region; however, the south-western corner was not surveyed due



to proximity with an international border. The survey lines were flown on a 200 m spacing in the E-W direction and 2000 m in the N-S direction.

The survey utilised a ZTEM system and a high-sensitivity magnetometer. The ZTEM system is an innovative, airborne electromagnetic surveying system using the natural magnetic field of the Earth. The system is an excellent mapper of surface geology as well as being able to penetrate deep beneath the topography. Rigging the system up to a helicopter allowed the survey to be completed over the rugged terrain of the CA.

Using ZTEM techniques is especially suitable for porphyry Cu-Au and epithermal Au-Ag-Cu exploration as it can map conductive bodies (e.g. sulphide-bearing) or resistive features in bedrock (e.g. volcanic or intrusive rocks), useful along the Tethyan Tectonic Belt where the Gedabek CA is located. Surveying via this method can also identify linear features, such as major fault zones, that could host associated hydrothermal alteration, conducive to mineralisation.

The survey has provided data with regards to geophysical anomalies arising from lithological or alteration variations, significant geological structures, mineral occurrences and any trends that may exist. The initial results and interpretations by Geotech have been provided to AIMC and AAM; these are currently undergoing analysis, with prospective targets identified and ranked. The geophysical 'signatures' of known deposits including the Gedabek open pit ("OP"), Gadir underground mine and Ugur OP will assist in identification of these targets.

Potential targets will be followed up with ground-based investigative techniques, including geological mapping, geochemical surveys, targeted geophysical surveys and exploration drilling. It is anticipated that the targets will be defined and prioritised by the end of 2019.

Depending upon results and success, airborne surveys may be employed in the future at AAM's other CAs.

# **Survey Techniques and Interpretations**

The following sections summarise the main techniques utilised in the surveying and interpretation, which are:

- I. Magnetics (including Figure 1)
- II. Structural Complexity Mapping (including Figures 2 & 3)
- III. ZTEM Inversion (including Figure 4)

#### I. Magnetics

The main objectives of the magnetic data analysis and inversion results (Figure 1) were to derive a detailed structural analysis of the property, a 3D distribution of the magnetic characteristics of the subsurface area and to provide geometric and magnetic parameters of



the magnetic sources (such as mafic rocks and magnetite-bearing and magnetite-rich structures) that may host or control base metal and precious metal mineralisation.

The use of standard and advanced filtering techniques via Fast Fourier Transforms provides a good understanding of the structural framework of the study area, whilst the 3D inversion yields a tri-dimensional distribution of the magnetic properties of the subsurface to help detect zones of interest, including mineralisation-controlling faults, alteration zones, magnetite-rich and magnetite-bearing mineralisation.

Hydrothermal alteration associated with porphyry-style mineralisation typically comprises concentric, near-circular alteration zones surrounding a roughly circular central intrusion. Depending on the type of alteration, the magnetic response can be either high (magnetite-rich) or low (magnetite-depletion). The magnetic high can also be produced by the stockwork intrusion itself defined by its mafic nature, or by the presence of a magnetite-rich potassic zone.

## II. Structural Complexity Mapping

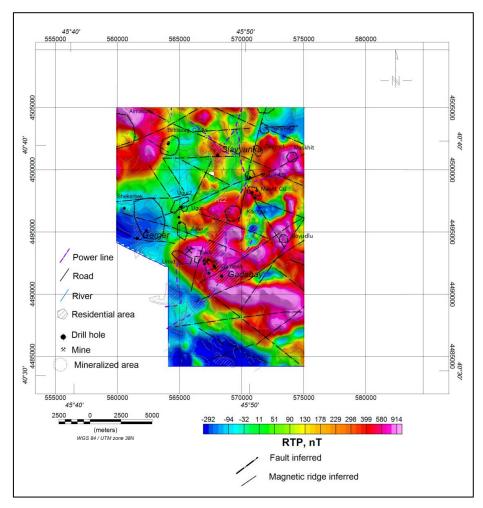
Structural complexity mapping (Figure 2) has recently been introduced as a powerful image analysis tool for identifying areas of geologic structural complexity from aeromagnetic data. Structural complexity maps are used to delineate favourable areas associated with faults, shear zones and fractures, that often serve as conduits for mineralised hydrothermal fluids which may deposit concentrations of minerals near the surface. This technique has been successfully used for targeting epithermal and porphyry mineralisation types using airborne magnetic data.

Structurally, the Gedabek contract area exhibits two main fault systems: 1) SW-NE striking fault system, and 2) SE-NW striking fault system. This interpretation is to be assessed in relation to the previously-defined dominant NNW-SSE trend. The SW-NE striking fault system cross-cuts other fault orientations and therefore thought to be related to the latest tectonic event.

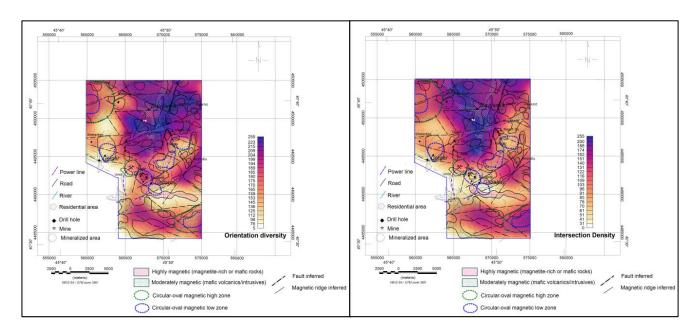
A texture analysis performed, via the use of heat maps as developed by the Centre for Exploration Targeting (CET), on the magnetic data has provided local structural complexity maps that can be used to highlight and emphasise areas of structural intensity. These may be of interest for the exploration of metalliferous mineralisation within the survey area depending upon field reconnaissance. From this data, a new litho-structural map of the Gedabek property has been produced (Figure 3).



**Figure 1** - RTP (Reduced to Pole) magnetic image of the Gedabek property including elements of magnetic interpretation

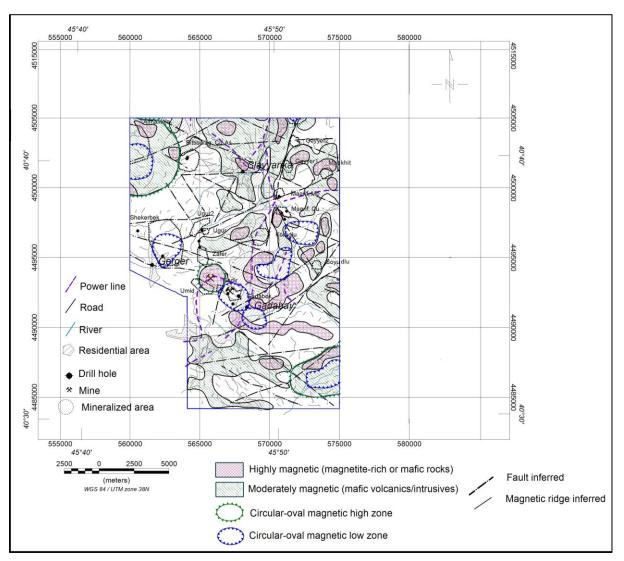


**Figure 2** - Structural complexity heat maps (used to determine intensity of structural features). *Left:* the feature orientation diversity heat map. *Right:* the feature intersection density heat map





**Figure 3** - Structural interpretation map of the Gedabek property, inferred from magnetic data inversion and magnetic data analysis

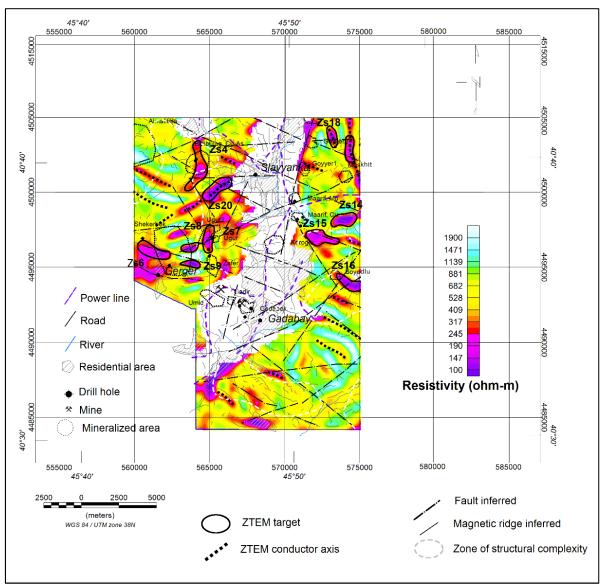


#### III. ZTEM Inversion

The 3D ZTEM inversion results revealed the presence of numerous conductive features, characterised by either lower or higher resistivity values in contrast to host rocks. The conductive features may point to epithermal or porphyry copper-gold mineralisation and related alteration zones. Moreover, the resistive features may indicate porphyry stockwork that could host base and precious metal mineralisation. The magnetic inversion results additionally revealed the presence of several circular and/or oval-shaped features that may represent links to porphyry systems. Among all these indicative features, a number have been selected for more detailed exploration (example presented in Figure 4).



 $\textbf{Figure 4} \text{ - Shallow-seated ZTEM targets, including integrated interpretation results, over the ZTEM resistivity depth slice of 300 \, \text{m}$ 



# **Summary of Results**

The 3D magnetic inversion and the interpretation results have provided new insights into the magnetic properties distribution within the survey area and have resulted in the production of a new litho-structural map of the Gedabek property. These results suggest that the overall structure is very complex and is composed of three main lithological units: a) magnetite-rich, mafic volcanic and intrusive structures, b) mafic to intermediate volcanic and intrusive structures, and c) non-magnetic structures associated with a wide range of felsic volcanics, felsic intrusives and non-magnetic metasediments. Additionally, there are a number of circular and oval magnetic features within the survey area, that are characterised by either magnetic highs or magnetic lows. These circular features may be attributed to either



geological formations (intrusions or volcanic rocks) or alteration zones. In the latter case, they could indicate areas of interest for the exploration of porphyry systems.

Structurally, the Gedabek property appears to have experienced intense tectonic activity, which is reflected by the presence of numerous fault zones forming two main systems: 1) SW-NE striking fault system, and 2) SE-NW striking fault system. The SW-NE striking fault system seems to affect and control all structures occurring within the property and may belong to a late tectonic event. A texture analysis performed on the magnetic data has provided local structural complexity maps that can be used to highlight and emphasise areas of complex textures, which may be of interest for the exploration of epithermal precious metal and base metal mineralisation within the survey area. Additionally, an automatic porphyry analysis was performed to predict the centres of porphyry features using an idealised model.

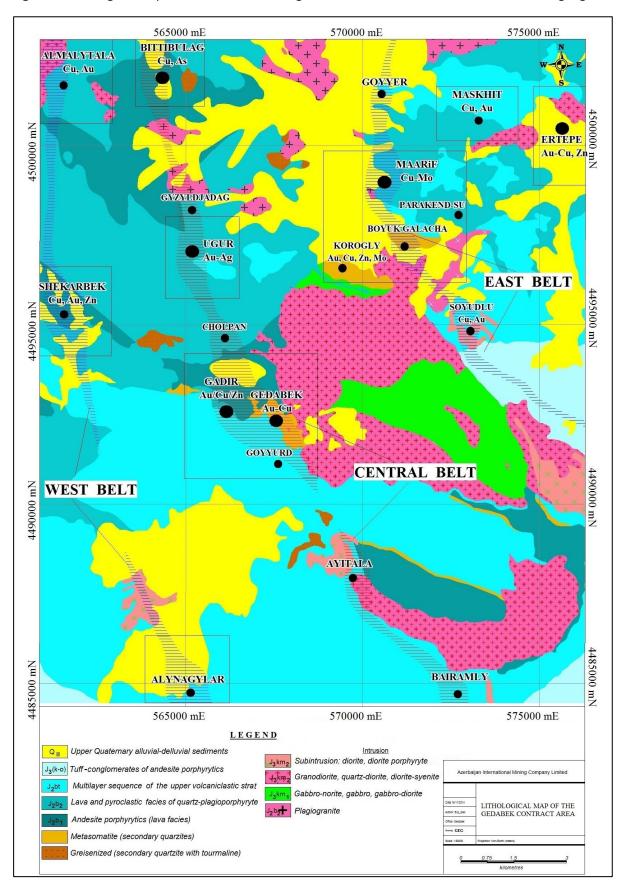
The 3D ZTEM inversion outcomes performed on the tipper transfer functions have provided a 3D resistivity model of the subsurface of the survey area, comprised between the topographic surface and depths of approximately 1500 m. The interpretation of the 3D inversion results has identified numerous shallow and deep-seated conductive and resistive zones. The identified conductive zones are mainly represented by linear and curvilinear conductors and confined conductive zones. The conductive features, which are of various lengths and strikes, may be links to fault zones and alteration (sericite-argillic) zones that are susceptible to host/control epithermal and porphyry copper-gold mineralisation. Also, the highlighted resistive zones may be links to silicic alteration zones, as well as to unaltered intrusive and stockwork bodies.

Further to the geophysical data inversion, interpretation and integration of results with geological information yields numerous targets favourable for epithermal and porphyry precious and base metal mineralisation. Among these targets, 20 are associated with shallow-seated targets (around 300 m depth) and 5 with deep-seated targets (greater than 500 m depth). Additionally, 6 magnetic targets that may present a link to porphyry systems have been delineated and selected for further investigation.

A simplified geological map showing the known areas of mineralisation is presented in Figure 5.



Figure 5 - Geological map of the Gedabek mining district with the main mineralised zones highlighted





### **Conclusions**

In summary, the key criteria for target selection are highlighted in the following points:

- Association with low resistivity. This is typically valid for low-sulphidation ("LS")
  epithermal and porphyry mineralisation styles. The low resistivity may also be
  indicative of phyllic/argillic/propylitic alteration zones, as well as of zones of sulphide
  mineralisation
- Association with circular or oval magnetic lows (in the case of magnetite-destructive alteration, typical of epithermal and porphyry mineralisation styles) and magnetic highs (in the case of magnetite-rich alteration)
- Association with fault zones that may serve as conduits for mineralised hydrothermal fluids
- Association with deep-seated mafic rocks (often epithermal LS deposits are associated with alkaline magmatism)

The 3D magnetic inversion results and subsequent interpretation provide new insights into the distribution of magnetic properties within the survey area and a new litho-structural map of the Gedabek property has been created from this data. These results indicate that the area is complex and includes rocks of various natures (mafic and felsic volcanics, intrusives and non-magnetic metasediments). The results also suggest the presence of two main fault systems, striking in the SW-NE and NW-SE directions, that have affected the geological formations and shaped the overall structure of this area. These are suggested to have played a key role in the distribution of potential zones associated with epithermal precious and base metal mineralisation.

Based on the 3D ZTEM data interpretation, a 3D resistivity model of the subsurface of the survey area, between the topographic surface and to a depth of approximately 1500 m, was created. This has resulted in the identification of numerous shallow and deep-seated conductors, as well as several resistive zones, that are interpreted to relate to the prevalent faulting features. These areas focus the likely positions that host/control epithermal and porphyry precious and base metal mineralisation types.

#### In summary:

- 25 targets favourable for epithermal and porphyry mineralisation are selected and analysed, comprising:
  - o 20 are shallow-seated (at a depth of 300 m or less)
  - o 5 deep-seated (at a depth of 500 m or greater)
- Additionally, 6 magnetic targets consistent with porphyry systems are suggested for more detailed exploration



## References

[1] JORC, 2012. Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code) [online]. Available from: http://www.jorc.org (The Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia).