THE MSA GROUP

Specialist Consultants
to the Mining Industry

# J1794

# NI 43-101 Technical Report on the Hakkari Zinc Project

## Prepared by The MSA Group (Pty) Ltd on behalf of:
## NiCo Mining Limited


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**Date:** 28 March 2010

**Project Code:** J1794

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# INDEPENDENT TECHNICAL REPORT

28 March 2010

The Directors
NiCo Mining Limited
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Dear Sirs,

The MSA Group ("MSA") has been commissioned by Red Crescent Resources Holding A.S ("RCR") to provide an Independent Qualified Persons' Report on mineral properties (The Hakkari Zinc Project ("HZP")) located in the Republic of Turkey in which RCR has an interest. This report forms part of the Policy 2.1 Minimum Listing Requirements of the Toronto Stock Exchange ("TSX") & Venture Exchange ("TSX-V").

MSA has not been requested to provide an Independent Valuation, nor have we been asked to comment on the Fairness or Reasonableness of any vendor or promoter considerations, and we have therefore not offered any opinion on these matters.

MSA has based its review of the HZP on information and independent reports provided by RCR, along with other relevant published and unpublished data available up to and including March 2010. Site visits were undertaken to the HZP by Mike Robertson between 26 July to 7 August, 2009 and from 16 to 30 March 2010. This NI 43-101 Technical Report has been prepared in accordance with National Instrument 43-101 Standards of Disclosure for Mineral Projects and Form 43-101F1, as issued by the Canadian Securities Administrators (CSA). A final draft of the report was provided to RCR, along with a written request to identify any material errors or omissions prior to lodgment. MSA has provided consent for the release of the NI 43-101 Technical Report in the form and context in which it appears.

The HZP comprises 13 granted Exploration Licenses located in southeastern Turkey. RCR has a fully vested 50% interest in these licenses through a Definitive JV Agreement with Seyitoğlu Madencilik, the original holder of the licenses, now held in an RCR subsidiary company called RCR Seyitoğlu Cinko Madencilik A.Ş. ("RCR Zinc" or ("RCRZ"). The legal status and rights of RCRZ to these Exploration Licenses has been independently verified by attorneys Cakmak Avukatlik ("Cakmak") and the relevant letters are attached to this report as an Appendix. The present status of tenements listed in this report is accordingly based on information provided by Cakmak and copies of the Exploration Licenses have been observed by the author.

The mineral properties that form the HZP are considered to be "Exploration Projects" which have associated attached risks; however MSA considers nonetheless, that the projects have been acquired on the basis of sound technical merit. The properties are also considered to be sufficiently prospective on the basis that significant quantities of non-sulphide zinc-lead ore have been mined from informal small-scale workings exploiting the same and/or related mineralized units on contiguous and/or adjacent properties. Therefore, subject to varying degrees of exploration risk, the HZP warrants further exploration and assessment of its specific economic potential, consistent with the proposed programs by RCR. Exploration and evaluation work programs and budgets summarized in the report amount to a total expenditure of approximately USD$ 5 000 000. RCR has prepared staged exploration and evaluation programs, specific to the potential of the projects, which are consistent with the budget allocations. MSA considers that the relevant areas have sufficient technical merit to justify the proposed work programs and associated expenditure.

Additionally, budget allocations are specified for parallel execution of bulk metallurgical test work and sampling programs, engineering studies at pre-feasibility (“PFS”) level during calendar year 2010, followed by a planned bankable feasibility (“BFS”) study in the first half of 2011. The justification of these programs and associated expenditure has been adjudicated as having sufficient technical merit by other suitably qualified and experienced signatories to this report. These activities and costs are attached to this report as an Appendix.

MSA is an exploration and resource consulting firm, which has been providing services and advice to the international minerals industry and financial institutions since 1983. This report has been compiled by Mike Robertson supported by other suitably qualified specialists. Mr. Robertson is a professional geologist with 22 years experience in the exploration and evaluation of mineral properties and is a full time employee of The MSA Group. He is Principal Consultant (Gold and Base Metals) for The MSA Group and is a member in good standing with the South African Council for Natural Scientific Professions (SACNASP) and the South African Institute of Mining and Metallurgy (SAIMM). Mr Robertson has considerable experience in base metal mineral systems gained during 22 years of exploration experience. He has the appropriate relevant qualifications, experience, competence and independence to be considered a “Qualified Person” under the definitions provided in National Instrument 43-101 (Standards of Disclosure for Mineral Projects).

Neither MSA, nor the authors of this report, have or have previously had any material interest in RCR or the mineral properties in which RCR has an interest. Our relationship with RCR is solely one of professional association between client and independent consultant. This report is prepared in return for professional fees based upon agreed commercial rates and the payment of these fees is in no way contingent on the results of this report.

Yours faithfully
The MSA Group

Mike Robertson
Principal Consultant

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# 1 SUMMARY

The Hakkari Zinc Project ("HZP") is located in the Hakkari and Sirnak Provinces of southeastern Turkey, close to the borders with Iraq and Iran. The HZP comprises 13 Exploration Licenses covering an area of 214.66 $km^2$ and is located within a broad 60 km long east-west belt extending westwards from approximately 10 km west of Hakkari.

Red Crescent Resources Holding Anonim Şirketi ("RCR") has a fully vested 50% interest in these licenses through a Definitive JV Agreement with Seyitoğlu Madencilik, the original holder of the licenses, now held in an RCR subsidiary company called RCR Seyitoğlu Cinko Madencilik A.Ş. ("RCR Zinc" or (RCRZ").

The project area is situated within the northern margins of the Arabian Platform within a north facing fold and thrust belt known as the Border Folds region. The fold and thrust belt comprises a sequence of marine platform carbonate dominated rocks and interbedded subordinate clastic units.

Non-sulphide zinc-lead mineralization appears to be restricted to a sequence of Triassic to Cretaceous shallow water "reef" type limestones, with subordinate interbedded fine-grained rocks having a variable clastic component. Mineralization outcrops within a series of thrust packages that have a general east-west trend and lie within a district of at least 60 km strike length. Mineralization is dominated by smithsonite and hemimorphite with variable amounts of iron oxide and subordinate hydrozincite and cerrusite in a matrix of calcite, barite and quartz. Mineralization varies in style from tabular zones of variable thickness (<0.5 m to 13 m) to cross cutting breccia zones to disseminated mineralization occupying pore spaces and fracture planes. The presence of up to three stacked mineralized horizons, parted by several metres, has recently been confirmed on adjacent properties.

The non-sulphide zinc-lead deposits and occurrences within the Hakkari project area are considered to represent supergene weathered derivatives of primary Mississippi Valley Type (MVT) zinc-lead sulphide deposits. Up to 6% sphalerite has been observed in samples from various stockpiles, while lead occurs as both cerrusite and galena. Sulphide-dominant mineralization has also been reported by small-scale mining operators in the district.

Although no modern systematic exploration has been historically carried out in this district, small-scale informal mining of high grade non-sulphide zinc-lead mineralized zones has been ongoing for a long time. Old Roman workings testify to the exploitation of lead in the upper parts of these zones. Small-scale mechanized mining (hydraulic excavators and dump trucks) has seen increased activity over the last five years in line with increased zinc demand from China. In excess of 400 000 tonnes of zinc-lead ores have been officially recorded as sold under contracts through traders with typical grades (certified by SGS and Alfred Knight laboratories) ranging from

25% to 40% Zn and 4% to 8% Pb. A significant proportion of this material has been mined from areas adjacent to and between the RCR licenses.

Preliminary metallurgical test work conducted on samples from stockpiles associated with adjacent small-scale mining operations has indicated that this material is amenable to direct acid leaching.

Despite these small-scale mining activities, the geological understanding and exploration status of this area is at a relatively early stage. Notwithstanding this however, the mineralized zones outcrop on the RCR licenses and the exposures afforded by open pit and underground small-scale mining on adjacent properties will lead to an accelerated geological understanding and will enable RCR to fast track exploration and evaluation on their current best opportunities. These opportunities have been identified and will be rapidly advanced through detailed mapping, trenching, channel sampling and diamond drilling.

The potential for defining a new and modern zinc mining district within the region is regarded as significant. Previous small-scale mining has focussed on high grade zones; significant potential exists to define additional such zones and well as lower grade – higher tonnage zones which collectively can be exploited through multiple open pits feeding a central plant.

Based on adjacent small-scale mining activities and on RCR exploration results to date, Licenses 5 and 8 present the best opportunities for delineating zinc mineralized zones and for fast tracking parts of these zones towards compliant mineral resource estimates.

A phased and prioritized exploration program is recommended in order to delineate the best zinc opportunities and to confirm the geometry, size and grade of these deposits. Ongoing regional exploration is recommended in order to identify additional such opportunities. RCR wish to delineate an initial resource of 3 000 000 tonnes to be mined at an initial rate of 150 000 tpa. Exploration and evaluation work programs and budgets summarized in the report amount to a total expenditure of approximately USD$ 5 000 000.

# 2 INTRODUCTION

## 2.1 Scope of Work

The MSA Group ("MSA") was commissioned by Red Crescent Resources Holding A.Ş. ("RCR") to provide an Independent Technical Report ("ITR") on RCR's 13 Exploration License areas located in Turkey for which RCR holds, or has the right to acquire a majority interest through its Joint Venture agreement with the Seyitoğlu family vested in an RCR subsidiary company called RCR Seyitoğlu Cinko Madencilik A.Ş. ("RCR Zinc" or ("RCRZ"). These 13 Exploration Licenses together comprise the Hakkari Zinc Project ("HZP").

This ITR has been prepared to comply with disclosure and reporting requirements set forth in the TSX and TSX-V Corporate Finance Manual, Canadian National Instrument 43-101, Companion Policy 43-101CP, Form 43-101F1, the 'Standards of Disclosure for Mineral Projects' of December 2005 and the Mineral Resource and Reserve classifications adopted by CIM Council in August 2000.

MSA understands that RCR is seeking to list on either the TSX-V or TSX main board Exchange in Toronto utilising an already listed shell company for RTO ("reverse takeover") by mid 2010, has met with officials of the TSX and TSX-V in this regard and has appointed both a NOMAD ("nominated advisor") and legal council as required and approved by the regulatory authorities of the exchanges.

All monetary figures expressed in this report are in United States of America dollars (US$) unless otherwise stated. A glossary of all technical terms and abbreviations is attached as **Appendix 1**.

## 2.2 Principal Sources of Information

MSA has based its review of RCR's HZP on information provided by other independent parties from reports commissioned by RCR, from RCR itself based upon actual relevant works completed as well as other relevant published and unpublished data. A listing of the principal sources of information is included at the end of this ITR. Site visits were made by the Qualified Person ("QP") Mike Robertson during the period 26 July to 7 August 2009 and by Brendan Clarke and Mike Robertson from 16 to 30 March 2010 to the 13 properties comprising the HZP and forming the subject of this report. A QP Certificate is included as **Appendix 2**. We have endeavoured, by making all reasonable enquiries, to confirm the authenticity and completeness of the technical data upon which the ITR is based. A final draft of the report was also provided to RCR, along with a written request to identify any material errors or omissions prior to lodgement.

The mineral properties that form the HZP are considered to be "Exploration Projects" which have associated attached risks; however MSA considers, nonetheless, that the projects have been acquired on the basis of sound technical merit.  The properties are also considered to be sufficiently prospective on the basis that significant quantities of non-sulphide zinc-lead ore have been mined from informal small-scale workings exploiting the same and/or related mineralized units on contiguous and/or adjacent properties.  Therefore, subject to varying degrees of exploration risk, the HZP warrants further exploration and assessment of its specific economic potential, consistent with the proposed programs by RCR.

Exploration and evaluation work program costs are summarised in Table 20-1. Other associated metallurgical studies, engineering studies, PFS and BFS report compilation costs are summarised in the RCR Business Plan and Budget contained in **Appendix 3**.   RCR will aim to raise sufficient working capital to ensure at least two years of operation. The funds raised in the initial private equity placement made in November 2009 are understood by MSA to have been committed to the exploration and development of the HZP. Funds being currently raised in a pre-financing private placement for the next two year's operations will be sourced from existing and new private and institutional shareholders.

RCR has prepared phased exploration and evaluation work programs, specific to the potential of the project areas, which are consistent with the budget allocations. The projects have evolved on the basis of ongoing exploration since October 2008 and MSA considers that the relevant areas have sufficient technical merit to justify the proposed programs and associated expenditure.

This ITR has been prepared on information available up to and including 30 March 2010.  MSA has provided consent for the inclusion of the ITR in the Prospectus for the RTO and/or IPO ("Initial Public Offering"), and has not withdrawn that consent prior to lodgement.

## 2.3 Qualifications, Experience and Independence

The MSA Group is an exploration and resource consulting and contracting firm, which has been providing services and advice to the international mineral industry and financial institutions since 1983. This report has been compiled by Mr Mike Robertson, who is a professional geologist with 22 years experience, the majority of which has involved the exploration and evaluation of gold and base metal properties in Southern, Central and East Africa, the Middle East, Australia, Canada, Mexico, Russia and the CIS states.

Mr Robertson is Principal Consultant – Gold and Base Metals with The MSA Group, a Member of the South African Institute of Mining and Metallurgy (SAIMM) and a Professional Natural Scientist (PrSciNat) registered with the South African Council for Natural Scientific Professions. Mr Robertson has the appropriate relevant qualifications, experience, competence and independence to act as a "Qualified Person" as that term is defined in National Instrument 43-101 (Standards of Disclosure for Mineral Projects).

Peer review has been undertaken by Mr Mike Venter, who is a professional geologist with 17 years experience in the exploration of mineral properties Mr Venter is a Professional Natural Scientist (Pr.Sci.Nat) registered with the South African Council for Natural Scientific Professions and is a Member of the Geological Society of South Africa and Society for Economic Geologists. Mr Venter is a Regional Consulting Geologist with The MSA Group and is based in The MSA Group's Cape Town office.

Neither The MSA Group, nor the author of this report, has or has had previously, any material interest in RCR or the mineral properties in which RCR has an interest. Our relationship with RCR is solely one of professional association between client and independent consultant. This report is prepared in return for professional fees based upon agreed commercial rates and the payment of these fees is in no way contingent on the results of this report.

## 3 RELIANCE ON OTHER EXPERTS

RCR's projects are understood to consist of a total of 23 granted Exploration Licenses, in which RCR holds a controlling right in terms of the Joint Venture ("JV") agreement signed with the Seyitoğlu family. This report deals exclusively with 13 of these licenses that collectively form the HZP and cover an aggregate but non-contiguous area of 214.66 square kilometres, issued in terms of the Turkish Mining Law, 2005.

The legal status and rights of RCRZ to these Exploration Licenses has been independently verified by attorneys Cakmak Avukatlik ("Cakmak") and the relevant report is attached as **Appendix 4**. The present status of tenements listed in this report is accordingly based on information provided by Cakmak. This report as well as copies of the Exploration Licenses have been viewed by the primary author.

Similarly, neither MSA nor the primary author of this report is qualified to provide comment on environmental issues associated with the RCRZ Projects. The RCRZ properties have to date seen reconnaissance mapping and rock chip and stockpile sampling with consequent minimal environmental implications. No trenching or drilling has yet been conducted.

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The preliminary metallurgical test work documented in this report was undertaken under the direction of Mike Plaskitt, a professional metallurgist. An independent review of this work was conducted by Ewald H. O. Meyer, a Professional Engineer registered with the Engineering Council of South Africa and a Member of the South African Institute of Mining and Metallurgy.

In compiling this report, the author has also relied extensively on reports and personal communications with Messrs Alan M. Clegg Pr.Eng FSAIMM (RCR Executive Chairperson), Doug Taylor (RCR Chief Executive Officer) and Mark Grodner Pr.Sci.Nat (RCR Chief Geologist & Exploration Director).

# 4 PROPERTY DESCRIPTION AND LOCATION

## 4.1 RCR Exploration Licenses

The HZP is located in the Hakkari and Sirnak Provinces of southeastern Turkey, close to the border with Iraq. The 13 RCRZ Exploration Licenses ("ELs") are located in a broad 60 km long east-west belt extending from approximately 10 km west of Hakkari (Figure 4-1). The 13 license areas cover a total area of 214.66 $km^2$. A summary of the 13 EL attributes is given in Table 4-1.

## 4.2 Mineral Tenure

Initially a legally binding Framework Agreement ("FA") was concluded and signed between the original EL holders, the Seyitoğlu family company Seyitoğlu Madencilik, and RCR. A subsequent Definitive Agreement ("DA") between RCR and Abdülkadir Seyitoğlu, Kadri Seyitoğlu, Melal Kazar ("Seyitoğlu Madencilik" or "SM") has been entered into to create a Joint Venture Company RCR Seyitoğlu Cinko Madencilik A.Ş. ("RCR Zinc" or "RCRZ"). The principal activity of this company will be the exploitation of zinc and associated lead resources to be defined within the strategy defined below.

The agreement with the Seyitoğlu family comprises a number of key provisions. RCR has an immediate vested 50% interest in the HZP and has agreed to match the stated, but as yet un-audited historical costs of Seyitoğlu Madencilik by expending US$4.5 million over two years. RCR has already expended a maximum of US$1 million from internal shareholder financial resources and a further approximate US$1 million raised in November 2009. The two year period is defined as starting once the licenses have been transferred to the jointly owned company RCRZ. RCRZ commenced in Feb 2010, placing RCR's expenditure program ahead of its committed schedule.

The agreement sets out other milestones, including the expectation of the completion of a first Bankable Feasibility Study ("BFS") within the two year period and this has been planned and budgeted for accordingly within the required capital raise currently underway. This schedule and budget is included as Appendix 3. The minimum production set for a joint operation within the DA signed is 25 000 tonnes per annum, with a 50:50 profit share envisaged. The DA has no formal clauses governing the specifics of RCR's right to increase its ownership beyond 50%, although it is an accepted principle within the DA that post the matching of historical costs, capital requirements will be covered on the basis of "contribute or dilute" by shareholders.

**Figure 4-1**
**Location of the RCR HZP exploration licenses in Turkey**

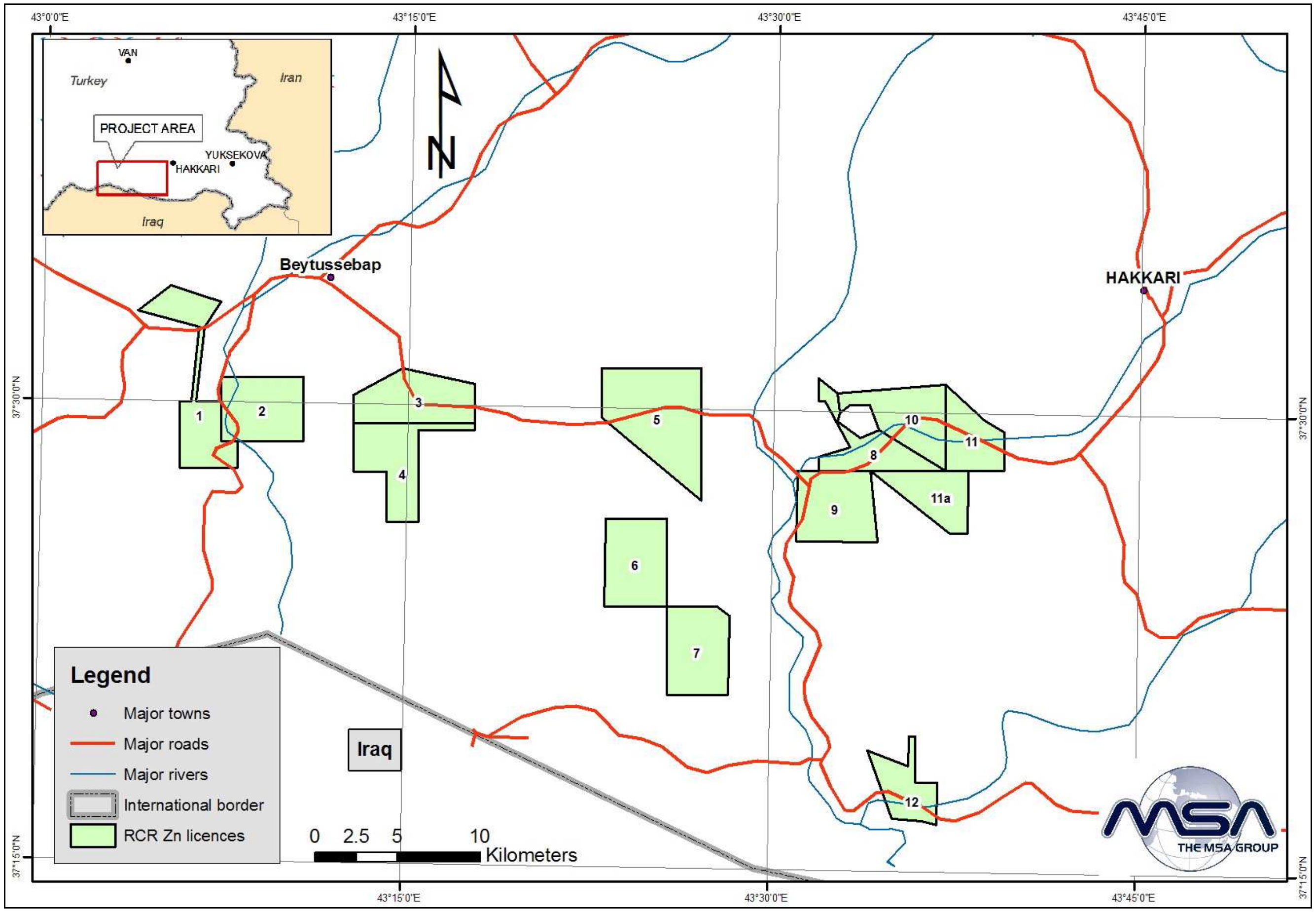


**Table 4-1**
**Summary of the HZP Exploration License Attributes (co-ordinates in decimal degrees)**

| Licence | Province | District | Point | Longitude | Latitude | Area (km2) |
|---|---|---|---|---|---|---|
| 1 | Sirnak | Beytussebab | A | 43.08652 | 37.56254 | 19.85 |
| | | | B | 43.12069 | 37.55407 | |
| | | | C | 43.10972 | 37.54038 | |
| | | | D | 43.10509 | 37.49975 | |
| | | | E | 43.12205 | 37.50002 | |
| | | | F | 43.12259 | 37.47840 | |
| | | | G | 43.13389 | 37.47858 | |
| | | | H | 43.13425 | 37.46416 | |
| | | | I | 43.09470 | 37.46353 | |
| | | | J | 43.09378 | 37.49957 | |
| | | | K | 43.10170 | 37.49969 | |
| | | | L | 43.10632 | 37.54032 | |
| | | | M | 43.06423 | 37.54865 | |
| | | | N | 43.08652 | 37.56254 | |
| 2 | Sirnak | Beytussebab | A | 43.12171 | 37.51353 | 19.50 |
| | | | B | 43.17826 | 37.51442 | |
| | | | C | 43.17911 | 37.47928 | |
| | | | D | 43.12259 | 37.47840 | |
| | | | E | 43.12171 | 37.51353 | |
| 3 | Sirnak | Beytussebab | A | 43.29589 | 37.49103 | 19.64 |
| | | | B | 43.21279 | 37.48980 | |
| | | | C | 43.21243 | 37.50478 | |
| | | | D | 43.24601 | 37.51995 | |
| | | | E | 43.29542 | 37.51196 | |
| | | | F | 43.29589 | 37.49103 | |
| 4 | Sirnak | Beytussebab | A | 43.29589 | 37.49103 | 19.07 |
| | | | B | 43.29599 | 37.48680 | |
| | | | C | 43.25741 | 37.48625 | |
| | | | D | 43.25855 | 37.43677 | |
| | | | E | 43.23666 | 37.43645 | |
| | | | F | 43.23603 | 37.46347 | |
| | | | G | 43.21342 | 37.46313 | |
| | | | H | 43.21279 | 37.48980 | |
| | | | I | 43.29589 | 37.49103 | |
| 5 | Hakkari | Merkez | A | 43.38175 | 37.52189 | 33.00 |
| | | | B | 43.44963 | 37.52280 | |
| | | | C | 43.45112 | 37.45072 | |
| | | | D | 43.38234 | 37.49486 | |
| | | | E | 43.38175 | 37.52189 | |
| 6 | Hakkari | Cukurca | A | 43.38602 | 37.44014 | 19.93 |
| | | | B | 43.42786 | 37.44072 | |
| | | | C | 43.42886 | 37.39281 | |
| | | | D | 43.38602 | 37.39223 | |
| | | | E | 43.38602 | 37.44014 | |
| 7 | Hakkari | Cukurca | A | 43.47157 | 37.34543 | 19.67 |
| | | | B | 43.42986 | 37.34490 | |
| | | | C | 43.42886 | 37.39281 | |
| | | | D | 43.46323 | 37.39325 | |
| | | | E | 43.47157 | 37.38833 | |
| | | | F | 43.47157 | 37.34543 | |
| 8 | Hakkari | Merkez | A | 43.54513 | 37.49968 | 13.13 |
| | | | B | 43.54352 | 37.49515 | |
| | | | C | 43.55896 | 37.48633 | |
| | | | D | 43.57189 | 37.49054 | |
| | | | E | 43.61810 | 37.46901 | |
| | | | F | 43.53139 | 37.46797 | |
| | | | G | 43.53124 | 37.47553 | |
| | | | H | 43.55228 | 37.48084 | |
| | | | I | 43.53483 | 37.50586 | |
| | | | J | 43.53065 | 37.50581 | |
| | | | K | 43.53040 | 37.51816 | |
| | | | L | 43.54345 | 37.51048 | |
| | | | M | 43.54513 | 37.49968 | |
| 9 | Hakkari | Merkez | A | 43.51661 | 37.46777 | 19.98 |
| | | | B | 43.56667 | 37.46839 | |
| | | | C | 43.57220 | 37.42989 | |
| | | | D | 43.51660 | 37.42927 | |
| | | | E | 43.51661 | 37.46777 | |
| 10 | Hakkari | Merkez | A | 43.54345 | 37.51048 | 18.01 |
| | | | B | 43.61723 | 37.51587 | |
| | | | C | 43.61810 | 37.46901 | |
| | | | D | 43.57189 | 37.49054 | |
| | | | E | 43.56540 | 37.50444 | |
| | | | F | 43.55183 | 37.50427 | |
| | | | G | 43.54513 | 37.49968 | |
| | | | H | 43.54345 | 37.51048 | |
| 11 | Hakkari | Merkez | A | 43.64417 | 37.49680 | 12.88 |
| | | | B | 43.65780 | 37.49055 | |
| | | | C | 43.65780 | 37.46946 | |
| | | | D | 43.61810 | 37.46901 | |
| | | | E | 43.61723 | 37.51587 | |
| | | | F | 43.64417 | 37.49680 | |
| 11a | Hakkari | Merkez | A | 43.63337 | 37.46915 | 13.29 |
| | | | B | 43.63337 | 37.43494 | |
| | | | C | 43.62099 | 37.43480 | |
| | | | D | 43.56666 | 37.46840 | |
| 12 | Hakkari | Cukurka | A | 43.59538 | 37.30808 | 11.21 |
| | | | B | 43.59531 | 37.32408 | |
| | | | C | 43.59950 | 37.32413 | |
| | | | D | 43.59997 | 37.29916 | |
| | | | E | 43.61486 | 37.29933 | |
| | | | F | 43.61487 | 37.27611 | |
| | | | G | 43.60430 | 37.27827 | |
| | | | H | 43.58450 | 37.27909 | |
| | | | I | 43.56715 | 37.31607 | |
| | | | J | 43.59538 | 37.30808 | |

Under this agreement RCR will raise the necessary funds for exploration and, pending positive exploration results, a Pre-Feasibility (“PFS”) and should this be positive, a BFS. The establishment of a mine and beneficiation plant with a capacity of up to 60 000 tonnes ROM zinc ore per year is further potentially planned for the generation of early cash flow and/or stock pile creation.

## 4.3 Turkish Minerals Legislation

Minerals legislation in Turkey is governed by the **Mining Law No. 3213** of 1985, amended by **Law No. 5177** of June 2004. The implementation regulation of the new Mining Law, enacted in February 2005, repeals the previous regulation.

Under current Turkish mining legislation, ‘underground resources’ are subject to the exclusive ownership and disposition of the State and are not considered a part of the land where they are located. The State delegates its right for exploration and operation to individuals or companies for specific periods by issuing licenses subject to royalty payments to the State.

Only Turkish citizens and the companies established under Turkish laws specifically for mining purposes are entitled to hold mining rights. Foreign capital companies established in Turkey for mining purposes, like RCR, are entitled to hold mining rights as they are deemed Turkish Companies.

The Mining Law categorizes minerals in five groups:

- Sand and gravel;
- Marble and other similar decorative stones;
- Salts in solution form that can be obtained from sea, lake and spring waters;
- Energy, metal and industrial minerals; and
- Precious metals and gem stones.

The Mining Law allows for overlapping licenses for different category minerals in the same area.

The General Directorate of Mining Affairs (GDMA), a unit of the Ministry of Energy and Natural Resources (MENR), is the authorized body to regulate the mining activities and issue mining licenses.

An **Exploration License** or **Certificate** (the license issued for the fifth group is named “certificate” in the legislation) is issued for 3 years; however, this period may be extended for some minerals for an additional two years.

Before the end of the exploration license period, the license holder must apply for an **Operation License** or **Certificate**. The term of an Operation License/Certificate for the first group of minerals may not be less than five years and for the other groups may not be less than ten years. The term of an operation license/certificate may be extended, but may not exceed 60 years.

In addition to an Operation License, an **Operation Permit** is required to start production activities. An operation license covers the area in which the mining activities will be conducted and provides the legal right to use the licensed area whereas the operation permit gives the license-holder the right to operate the mine. Operating activities are required to commence within 1 year upon receiving the operating permit. Failure to commence operations is subject to a penalty of 10% royalty on annual production.

A mining license may be transferred to those qualified under the Mining Law and the transfer must be registered at the GDMA. Parties may also execute a royalty agreement rather than transferring the license.

The license-holder must pay a **royalty** to the State for the extracted minerals. Different royalty percentages apply to the five different mineral group categories. The rate is 4% for first and fifth group minerals, and 2% for other groups and is based on annual total sales of the extracted minerals. An additional 30% royalty is payable for mining activities conducted on State-owned land; however the license holder will not be required to pay for leasing State-owned land not allocated for any special purpose, for its mining activities. Additionally, license holders obtain a 50% relief on royalties in the event that the extracted ores are processed in Turkey.

In essence for RCR this means normally its liability would be a 1% royalty on any zinc, lead or other by-product metal or industrial mineral which, in the case of RCRZ is barium sulphate. However as a result of government's commitment to socio-economic development in southeastern Turkey a special dispensation is given to investors and RCR will enjoy an initial royalty free period of up to 10 years.

The ownership of mineral rights does not cover the ownership of surface rights where the mineral resources are located. It is necessary to create a usufruct or easement right over the mineral exploration area in order to carry out any mining activities. Other legal options to utilise privately-owned lands are purchasing or leasing.

Turkey's policies regarding environmental protection and development are based on the harmonisation of policies and solutions with both European Union and international standards, reinforcement of existing legislation, improvement of environmental management, prevention of pollution and increasing awareness of environmental issues.

# 5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

## 5.1 Access

The nearest airport to the license areas is located in Van, approximately 100 km north-northwest of Hakkari (Figure 4-1). Major road-works are currently in progress, causing some delay, but it is anticipated that these will be completed within the next few years, providing double-lane freeway access from Van to Hakkari. There are regular scheduled commercial flights between Van and other major Turkish cities. A new airport is also being constructed at Yüksekova, approximately 50 km to the east of Hakkari, which will provide quicker access to the HZP (Figure 4-1).

Access to the majority of the license areas is good, with a double-lane sealed road from Hakkari following the course of the Zap River through the license areas. The western licenses are accessed via the sealed road from Çukurca to Şirnak Sealed roads extend to within 5 km of each of the primary license areas, and all licenses are accessible by maintained gravel roads.

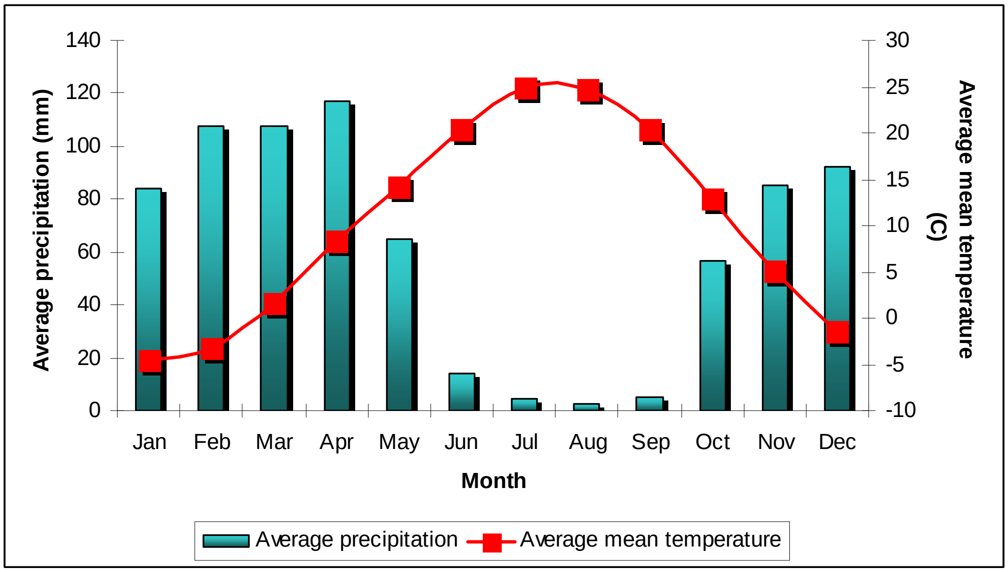
## 5.2 Climate

The climate in the Hakkari area varies significantly between summer and winter (Figure 5-1). During the summer months (May to August), maximum temperatures readily exceed 40°C. Winter, with associated snowfalls, ex tends from November to mid February and mean temperatures are generally below freezing. During this period, surface exploration is hampered due to access problems associated with snow cover. The summer months are also the driest, with the bulk of precipitation occurring from October to April (autumn, winter and spring months). During the winter months, the bulk of the precipitation occurs as snow.

## 5.3 Local Resources and Infrastructure

Electricity generation and reticulation is handled by Vangolu Elektrik Dagtim (a subsidiary of the TEDAS, the Turkish electricity company). Power lines extend along all of the main roads and since all license areas are within 5 km of the main roads, there is power available within 5 km of the license areas. Several villages are present within the license areas and all have access to electricity. Water is abundant and is supplied by the Hakkari Municipality (Turkish – Hakkari Belediyesi), who draw from the numerous rivers in the area. Several rivers are present within the licenses, including the Zap River that flows parallel to the main road leading southwards from Hakkari (Figure 4-1). Telecommunication infrastructure is good, with cellular telephone coverage throughout the license areas.

**Figure 5-1**
**Average climatic conditions in Hakkari. Source:**
http://www.dmi.gov.tr/veridegerlendirme/il-ve-ilceler-istatistik.aspx?m=HAKKARI




## 5.4 Physiography

As Figure 5-2 and Figure 5-3 illustrate, the licenses are located within rugged mountainous terrain, with elevation differences between the river valley floors and mountain tops in excess of 400 m. Outcrop is generally excellent allowing for ease of geological and structural mapping. The steep topography does not present a major problem to the companies currently undertaking small-scale mining in these areas. Well constructed road systems allow access to these informal mining sites. Other exploration methods, such as drilling from underground drives would not be impacted by the topography.

**Figure 5-2**

**Topography of the HZP license areas (elevation data courtesy NASA ASTER GDEM global digital coverage)**

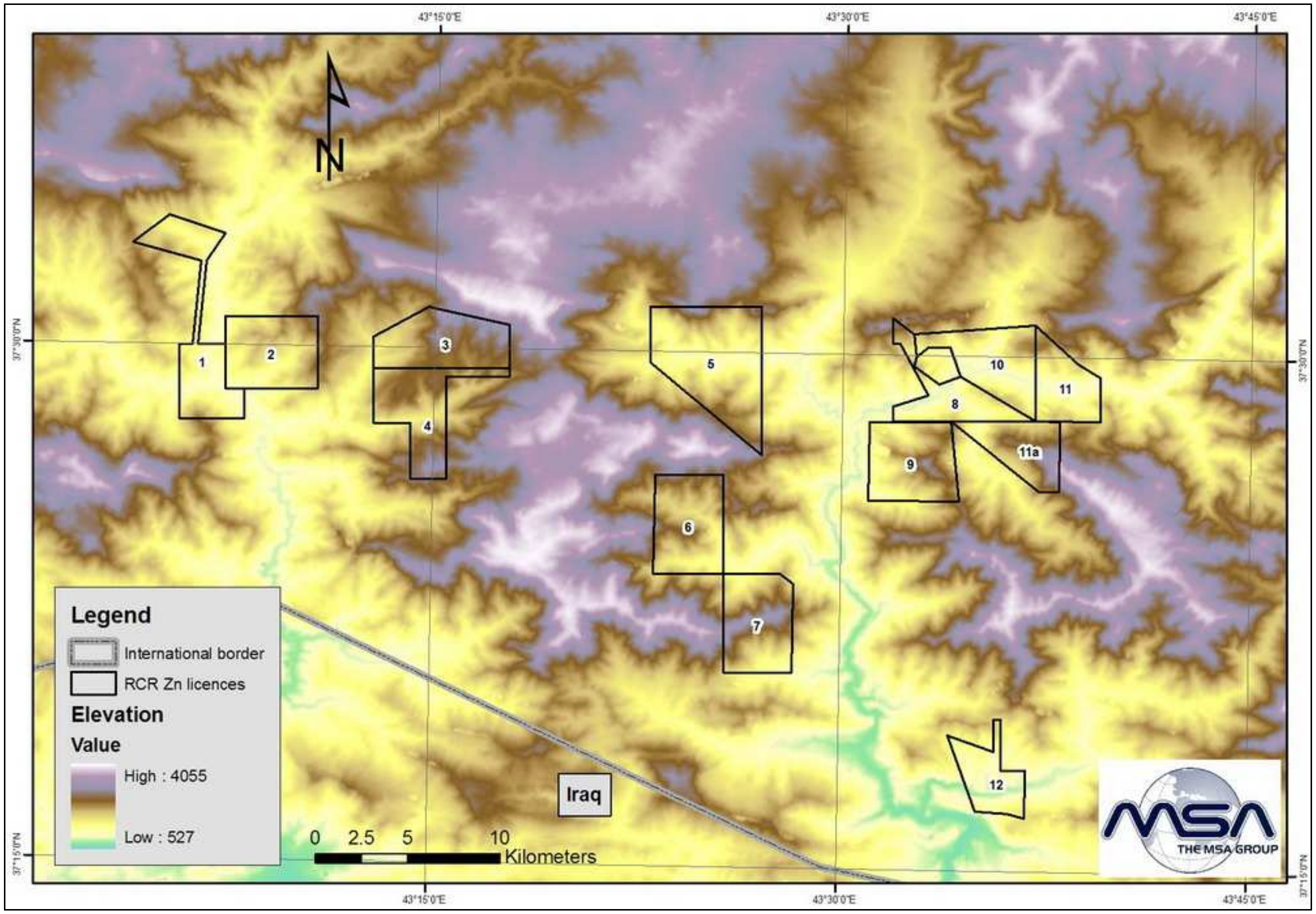


**Figure 5-3**
**Typical examples of the topography of the license areas**

# 6 HISTORY

During Roman and medieval times, the non-sulphide zinc ores known as “lapis calaminarius”, “calamine”, “galmei” or “galman” in the Latin-, French-, German-, and Polish-speaking worlds, respectively, were used as source materials for the production of brass, (a zinc-copper ± tin alloy), throughout Europe and the Mediterranean regions.

There are many examples of Roman underground mining galleries in the area of interest on the HZP, as for example shown in Figure 6-1. Although these excavations appear to have been focussed more on the upper lead-rich portion of the mineralized zone, it is quite likely that zinc has been sporadically mined around Hakkari for at least 2 000 years. However, the difficulties in beneficiation of smithsonite ores containing 10% to 20% Zn and complex ores containing zinc oxide, silicate, and clays from lack of available extraction technologies, led to large bodies of non-sulphide zinc material being ignored until very recently (Hitzman *et al*, 2003).

Current informal small-scale mining activities are underway on mineralized zones located between licenses 8 and 10 and licenses 5 and 8. Apart from this and similar small-scale mining excavations within the Hakkari area, no records of any previous systematic exploration activities exist.

On licenses currently held by RCR and others, some of which are contiguous and adjacent to RCR licenses, significant mining activities have been ongoing for many years. These have seen increased activity over the last 5 years in line with increased commodities demand from China. In excess of 400 000 tonnes of zinc-lead ores have been officially recorded as sold under contracts through traders with typical grades (certified by SGS and Alfred Knight laboratories) ranging from 25% to 40% Zn and 4% to 8% Pb. A significant proportion of this material has been mined from areas adjacent to and between the RCR licenses. Mining activities on adjacent properties are discussed more fully in section 15.

This is significant as it points to the potential of the areas of the HZP under investigation, especially in the light of the unusually high grades encountered. Relatively small tonnages are required to be mined, beneficiated and refined to produce significantly economic volumes of base metal products.

**Figure 6-1**
**Examples of Roman gallery tunnels exposed in a recently excavated open pit**

# 7 GEOLOGICAL SETTING

## 7.1 Regional Geology

The project area is situated within the northern margins of the Arabian Platform (Figure 7-1) that forms part of the Alpine-Himalayan Orogenic Belt (“AHOB”). This first developed in the Jurassic and continues to evolve to the Present. The AHOB is traditionally subdivided into four tectonostratigraphic domains: from north to south these are the Pontides, Anatolides, Taurides and Border Fold or Arabian Platform regions (Figure 7-1).

The south-eastern AHOB in the project area is characterised by north-vergent fold-and-thrust tectonics with the overriding Taurides separated from the weakly deformed Arabian Platform by the Bitlis suture/thrust (Yigit, 2009).

The rocks of the south-eastern Arabian Platform beneath the Bitlis Thrust can be generally described as a package of autochthonous north-facing folded and thrusted marine platform carbonate dominated rocks and interbedded subordinate clastic units (Figure 7-2). The northward younging sedimentary succession has been duplicated by a major east-west striking, south directed thrust structure, with licenses 1 to 11a situated in the upper thrust package and license 12 in the lower thrust package (Figure 7-2).

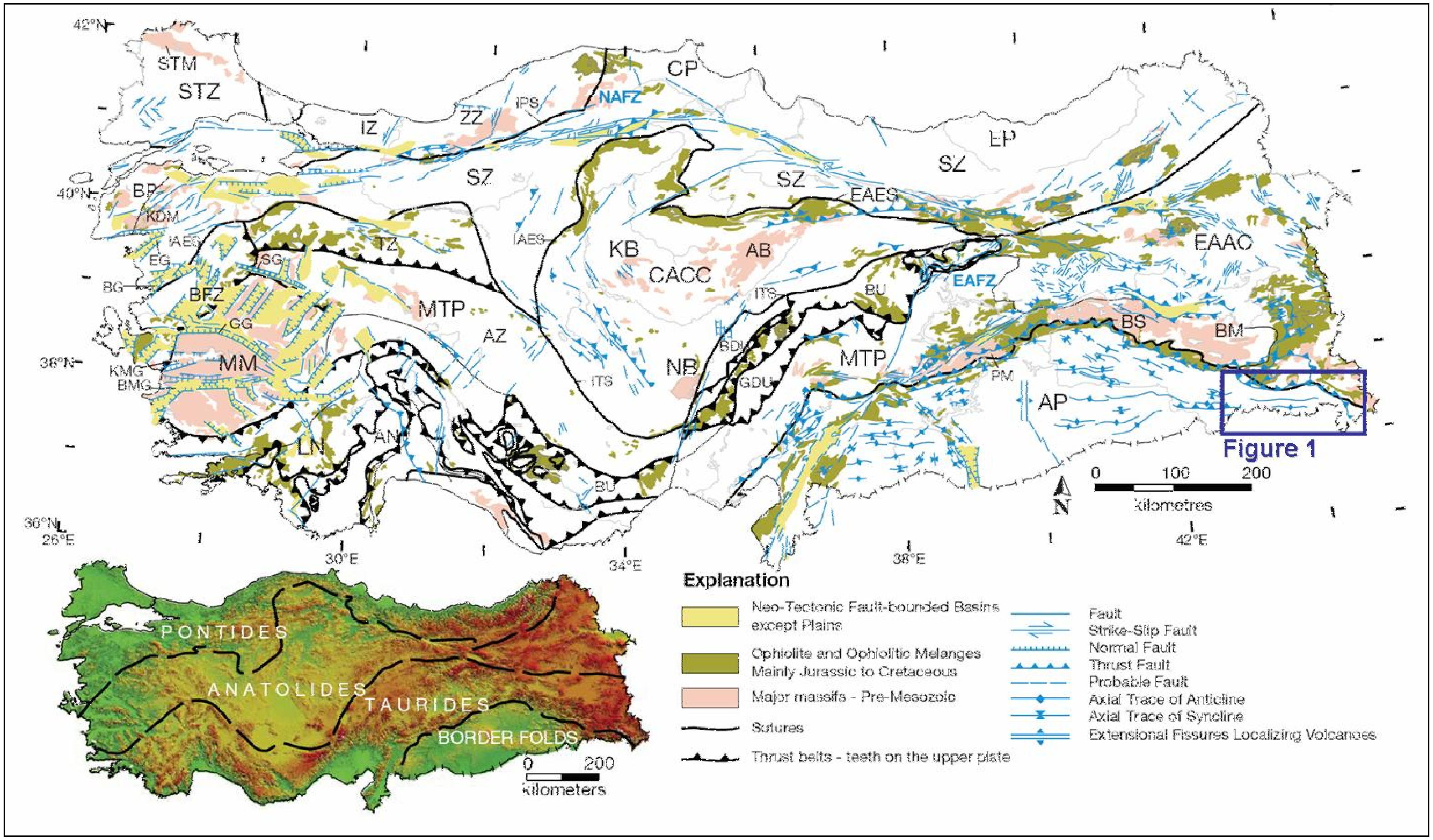
## 7.2 Property Geology

According to the 1:500 000 scale geological map (Günay and Şenel, 2002), the geology underlying the current study areas consists of 15 sedimentary units ranging in age from the Precambrian-Cambrian boundary to the Paleogene (Figure 7-3). Inspection of the 1:500 000 scale map legend points to several units being diachronous whilst others are separated by major hiatuses. The mapping also shows some lateral discontinuity of sedimentary units, apparently the result of primary facies variations and/or paleotopography rather than tectonic movements.

The target zinc-lead mineralized bodies of the Hakkari region are restricted to the t2k1 neritic limestones (ranging from mid-Triassic to early Cretaceous in age) and are interpreted to have been effective fluid conduits. The t2k1 limestone consists not only of shallower water “reef” type limestones, but also fine grained rocks with a variable clastic component. These dolomitic to cherty rocks have varying bedding thickness from approximately 1 cm to over 1 m and are often stacked as interlayed units of more massive layers alternating with more fissile layers.

The dominant non-sulphide zinc-lead mineralized zone recognised to date is generally present as an iron oxide stained negative weathering unit between more resistant and more competent finer grained wall rocks.

## Figure 7-1
## Geological setting of the HZP area (after Yigit, 2009)



## Figure 7-2
## Regional Geological Setting of the RCR HZP licenses (after Günay and Şenel, 2002)

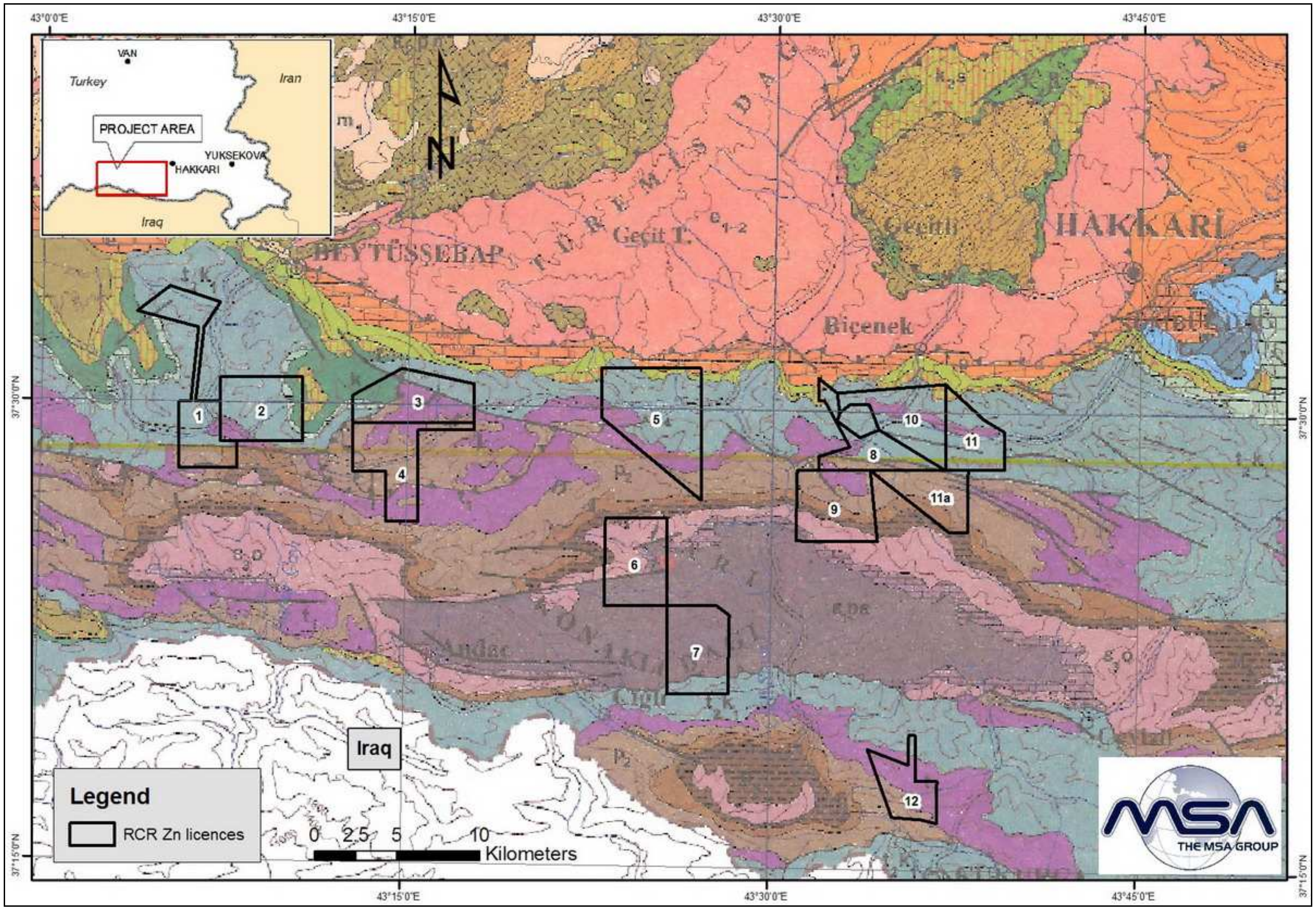
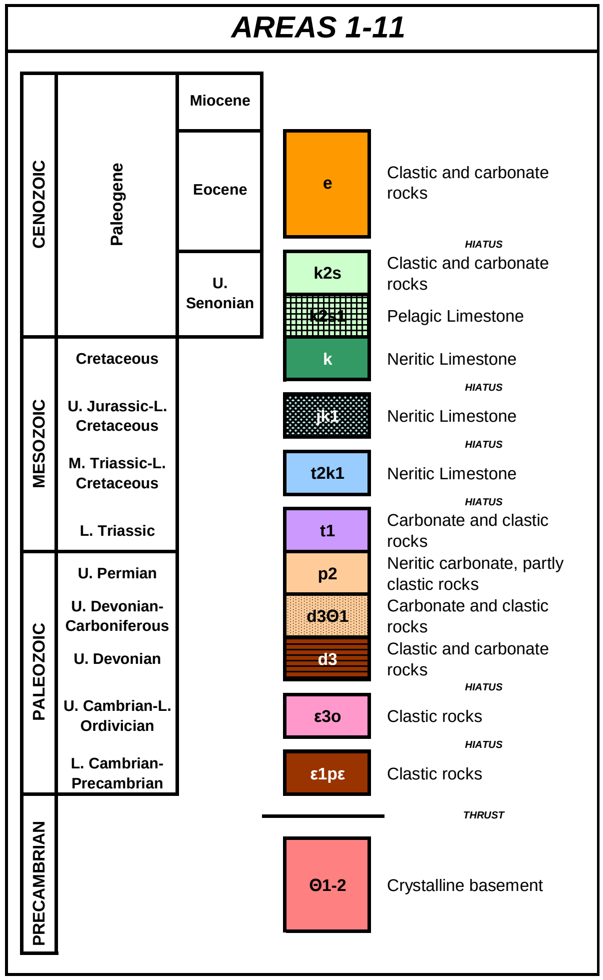


**Figure 7-3**
**Generalised stratigraphy of project area (after Günay and Şenel, 2002)**




Zinc mineralization is generally hosted in a more porous "reef limestone" flanked by cryptocrystalline, and most likely impermeable, dolomite or chert (Figure 7-4). Currently, it has not yet been confirmed whether the host unit is a single stratigraphic horizon or a common lithological unit within the stratigraphic sequence. In License 5, however, this unit is present as a continuous layer mappable for several kilometres. Both the host limestone and cryptocrystalline hanging- and footwalls are usually structurally deformed, with the more competent dolomitic wall rocks typically exhibiting brittle deformation and the mineralized horizon exhibiting ductile to brittle-ductile behaviour (Figure 7-4). Partial dissolution of the mineralized horizon, presumably by the mineralising fluids, is also commonly observed.

Resolution of the property geology forms an integral part of the current and planned exploration activities and is further described in Section 10.2.

**Figure 7-4**
**Brittle fracturing of the dolomite host-rock (left) and possible folding and deformation within the mineralized horizon (right).**

# 8 DEPOSIT TYPES

The age, structural and shallow marine/platform carbonate dominated setting of the project area makes the region an attractive target for Mississippi Valley Type ("MVT") zinc-lead sulphide mineralization.

Some zinc-lead sulphide mineralization has recently been identified in the licenses adjacent to the HZP area. The ongoing exploitation and mining (albeit on a small scale) of high grade zinc (as high as 40%) and lead (as high as 8%) non-sulphide material is already suggestive of the development of either supergene or hypogene zinc oxide mineralization, the former related to a buried sulphide parent.

- Supergene deposits form primarily from the oxidation of sulphide-bearing deposits (often MVT) and are typically dominated by smithsonite ($ZnCO_3$), hydrozincite ($Zn_5(CO_3)_2(OH)_6$ and/or hemimorphite ($Zn_4Si_2O_7(OH)_2.H_2O$)) (Hitzman *et al*, 2003). Three subtypes have been recognized: direct replacement deposits, wall rock replacement deposits and karst fill deposits, of which several combinations have been identified (Hitzman *et al* 2003) (Figure 8-4).
- Hypogene deposits are dominated by zinc silicates and oxides and are divided into two types: structurally controlled deposits comprising of irregular pipes and veins dominated by willemite ($Zn_2SiO_4$) and stratiform deposits comprising Mn rich lenses of franklinite ($(Zn, Fe, Mn)(Fe, Mn)_2O_4$) and willemite (Hitzman *et al* 2003).

An MSc dissertation describing the lead isotope geochemistry of zinc-lead deposits in Turkey was completed by Ceyhan in 2003. Results from this study suggest that the zinc occurrences in the Hakkari area are stratiform and Mesozoic in age, suggesting a syngenetic type of mineralization.

Following field examination of numerous mineralized exposures within the project area (during the Phase 2 site visit), it is concluded that the major style of zinc-lead mineralization comprises supergene alteration of primary MVT-type zinc-lead deposits. An understanding of the characteristics and geological setting of MVT deposits will therefore assist in understanding the distribution of, and extensions to, known non-sulphide zinc-lead deposits and in further exploration targeting within the project area.

The typical characteristics of MVT deposits are described in Paradis *et al* (2007) and are summarised as follows:

- Primary MVT deposits are stratabound, carbonate-hosted sulphide bodies, composed predominantly of zinc and lead, occurring as sphalerite and galena respectively. The deposits occur mainly in dolomite (less frequently limestone) as open-space fillings, breccias (crackle, mosaic, rubble, solution collapse), structures within interconnected paleokarst networks, replacement of the carbonate host rock, and as sulphide and gangue minerals occupying primary carbonate porosity. At the deposit scale, mineralization-controlling features are commonly zones of solution collapse breccias.

- They are located in platform carbonate settings, typically in relatively undeformed orogenic foreland rocks, commonly in foreland thrust belts, and rarely in rift zones. Deposits are commonly located close to a carbonate shelf margin, at the transition into slope and basinal shale facies. MVT deposits account for approximately 25% of the world's known zinc and lead resources.
- Major basement faults influence the alignment of deposits within districts, while subsidiary faults tend to create zones of weakness with subsequent dissolution and karsting.
- Orebodies typically occur in clusters within mineralized districts which can extend to hundreds or thousands of square kilometres. An example is the Cornwallis district in Canada which hosts at least 25 deposits containing 75 orebodies. Individual orebodies are generally <2 Mt, are zinc dominant, with grades seldom exceeding 10% zinc + lead combined (Figure 8-1 and Figure 8-2).
- Individual orebodies vary in geometry and are often interconnected. Host structures are commonly zones of highly brecciated dolomite which range from concordant features controlled by individual strata, to discordant features developed over tens of metres across sedimentary strata (Figure 8-3). MVT orebodies are therefore stratabound on a district scale, but typically discordant on a deposit scale.
- Style of mineralization ranges from zones of massive replacement, to open space filling of breccias and fractures, to disseminated clusters of crystals that occupy pore spaces.

**Figure 8-1**

**Grade-tonnage plot for Canadian and worldwide MVT deposits with contained metal content shown on diagonal lines (after Paradis *et al*, 2007)**

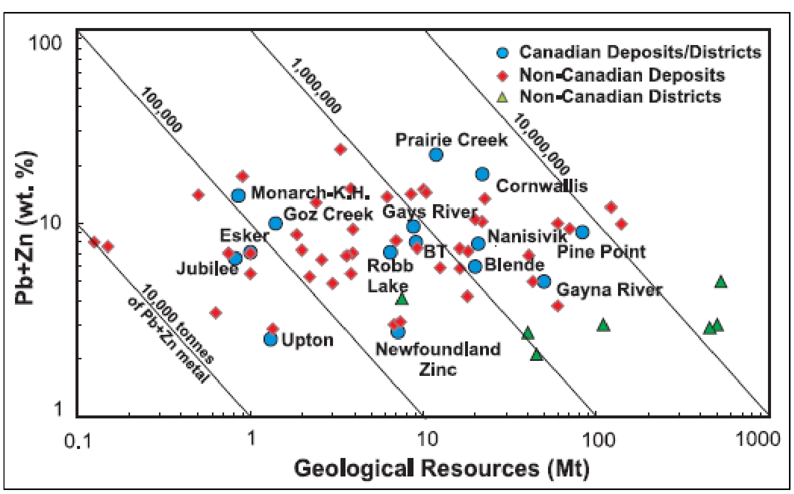


**Figure 8-2**
**Histograms of zinc and lead grades for Canadian and worldwide MVT deposits (after Paradis *et al*, 2007)**

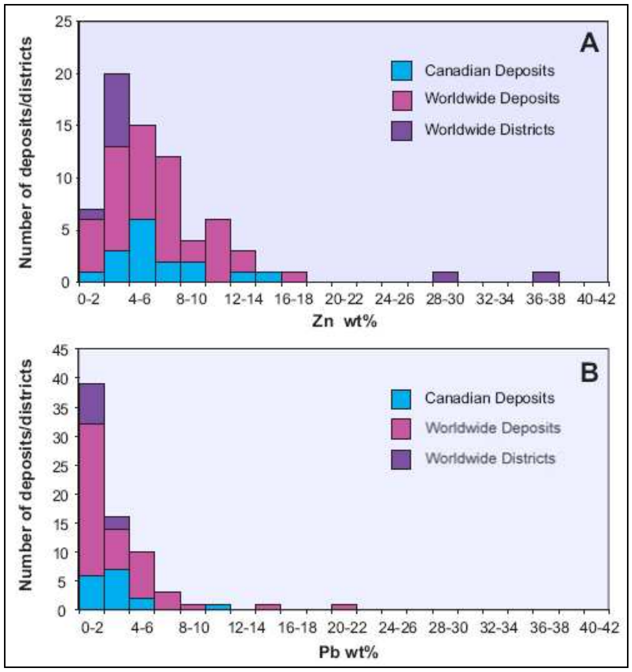
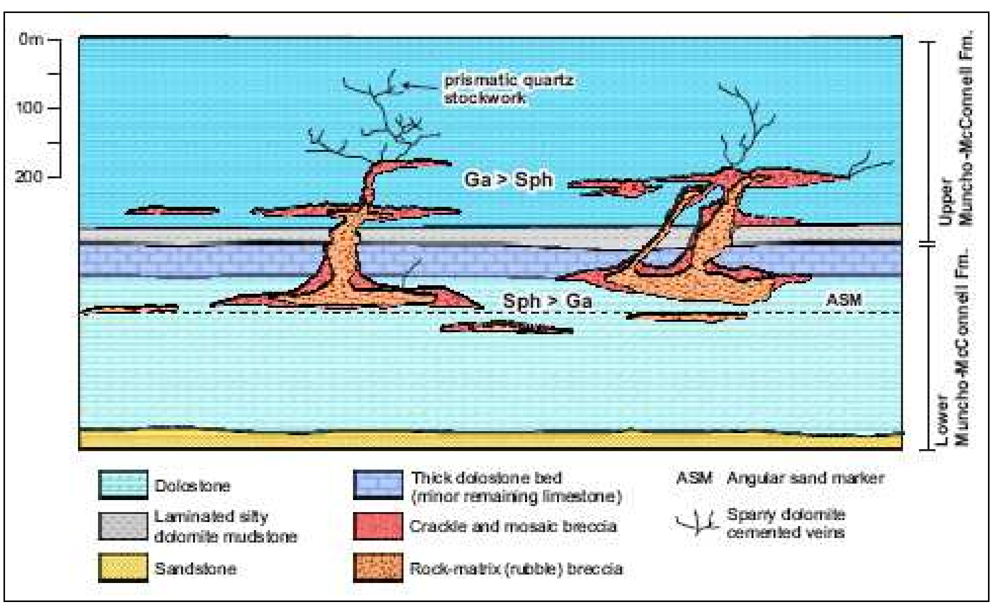



**Figure 8-3**
**Schematic representation of MVT-hosted zinc-lead mineralization (after Paradis *et al*, 2007)**

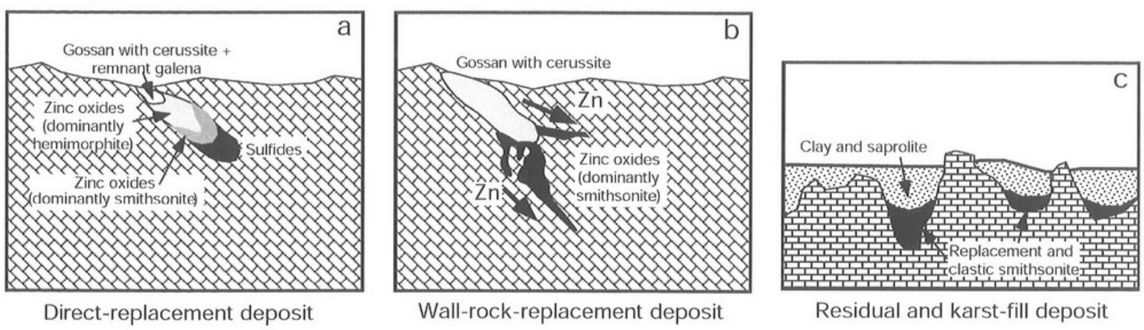


Supergene non-sulphide zinc-lead deposits are formed through the reactivity of acidic, oxidised zinc-lead rich fluids derived from oxidative destruction of zinc-lead bearing sulphide bodies with high reactive carbonate wall rocks (Hitzman *et al* 2003). The formation of these deposits depends on:

- The size and mineralogy of the pre-existing zinc-lead sulphide deposit,
- Exposure of the sulphide deposit to a seasonal fluctuating water table,
- Degree of primary porosity and secondary fault and fracture density, to permit movement of migrating oxidised ground waters,
- A suitable neutralising trap site for deposition of secondary zinc and lead minerals.

Three subtypes of supergene non-sulphide zinc-lead deposits are recognized, namely direct replacement, wall-rock replacement, and residual and karst-fill deposits (Figure 8-4). All three types may be present within a single deposit.

**Figure 8-4**
**Exploration Models – Supergene Zinc Oxide (after Heyl and Bozion, 1962)**




According to Boni and Large (2003) the critical geological features for the oxidation of primary (MVT) sulphides and preservation of the secondary zinc minerals include:

- Tectonic uplift subsequent to primary sulphide mineralization, promoting the oxidation and the development of karst systems.
- Brittle fracture of the host rocks promoting the flux of oxidising fluids and mobilisation to favourable depositories
- The presence of sufficient iron sulphide in the primary mineralization as an important control during oxidation, for the generation of acid required for the leaching and transport of zinc.

Characteristic features of non-sulphide supergene zinc-lead deposits include:

- Features of MVT deposits, as described above, are inherited by supergene deposits.
- Supergene formation through oxidative alteration of a zinc-lead sulphide bearing precursor deposit, typically a MVT deposit.
- The major secondary zinc minerals are smithsonite, hydrozincite, hemimorphite and sauconite, with smithsonite the most stable under atmospheric weathering conditions. Deposits may be mineralogically and metallurgically complex.
- Deposits are preserved in various states. Direct replacement deposits are essentially zinc-lead rich gossans. Original iron sulphide rich deposits may produce enough acid to extensively leach secondary zinc minerals in the near-surface environment.
- Ore textures are varied and often complex and range from massive to brecciated to disseminated, with vuggy to dense mineralization. The most common ore texture is breccia, Several stages of secondary zinc mineralization are normally present, reflecting multi-cyclic oxidation and leaching.
- The grade and tonnage of deposits is a reflection of the primary zinc-lead content; however significant upgrading of parts of these systems is common. A tabular summary of known supergene zinc-lead deposits is contained in Hitzman (2003). Significant deposits in Turkey and the surrounding region are summarized in Table 8-1. The largest known oxide deposit of similar grade characteristics is Angouran in Iran which is hosted in the Zagros fold and thrust belt, an extension of the "Border Folds" belt in southeastern Turkey in which the HZP area lies.

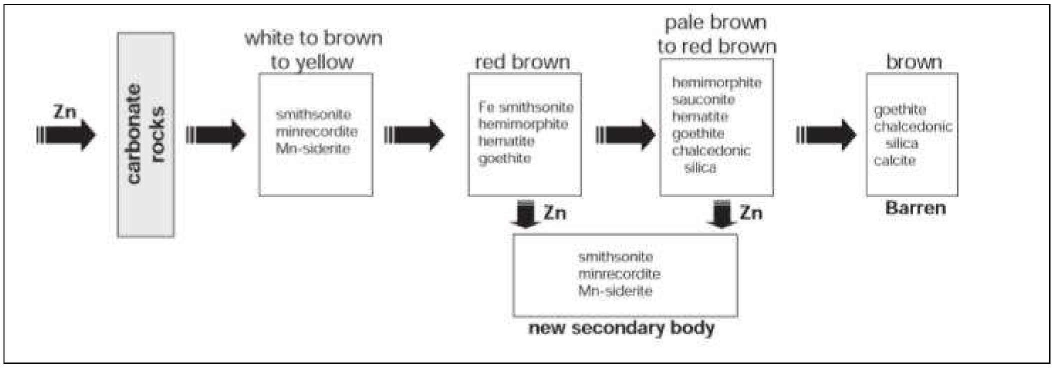
**Table 8-1**

**Grade-tonnage attributes of supergene zinc-lead deposits in Turkey and the surrounding region (non-Code compliant) (source: Hitzman, 2003)**

| Deposit | Location | Sulphide Resource | Mixed Oxide-Sulphide Resource | Oxide Resource |
|---|---|---|---|---|
| Zamanti District | Turkey | | | 6 Mt at 26% Zn |
| Angouran | Iran | 14.5 Mt at 26.6% Zn, 4.6% Pb | 2 Mt at 31% Zn, 4% Pb | 3.2 Mt at 38% Zn, 2% Pb |
| Mehdiabab | Iran | | 218 Mt at 7.2% Zn, 2.3% Pb, 51g/t Ag | |
| Irankuh | Iran | 15 Mt at 4% Zn, 2% Pb | 4 Mt at 7% Zn, 1% Pb | 14 Mt at 12% Zn + Pb |
| Kuh-e-Surmeh | Iran | 2 Mt at 7% Zn, 4% Pb | | 0.8 Mt at 19% Zn, 7% Pb |

As little is known about the mineralogy, structural setting and style of emplacement of the zinc-lead oxide mineralization in the HZP area, it is difficult (at this stage) to define exactly the appropriate mineralization style. However the direct association of significant iron grades (due to the presence of goethite and hematite after iron rich sulphides) with that of zinc and lead (determined from assays carried out on ROM ore produced as well as visually, from photographs), suggest either wall rock replacement or direct replacement of a precursor MVT type sulphide orebody (Figure 8-5).

**Figure 8-5**
**Exploration Models – Mineralogy observed in progressive wall rock replacement (after Hitzman *et al* 2003)**



# 9 MINERALIZATION

## 9.1 History of Zinc mining in the Hakkari area

As discussed in Section 6, small-scale near-surface exploitation of the zinc ores has been occurring for an estimated 2 000 years in the area. No official estimates of historical zinc production from the area exist, although information from local operators suggest hundreds of thousands of tonnes have been extracted at an average grade typically in the region of 25% Zn. This has been officially recorded in recent times, and more specifically in the last four to five years. Here more than 400 000 tonnes of zinc/lead ores have been mined and sold to traders with SGS certification (a typical example of one is attached to this report as Appendix 5).

## 9.2 Style of mineralization

The mineralization at HZP best conforms to Hitzman's (2003) direct-replacement deposit type derived from the oxidation of a MVT deposit. These deposits tend to be mineralogically simple and are dominated by the zinc hydroxides of smithsonite, hemimorphite and hydrozincite.

Many of the attributes and textural features of MVT and non-sulphide zinc-lead deposit models are observed in the sites visited. These observations confirm that the dominant mineralization style is that of large-scale and pervasive supergene alteration of primary MVT style sulphide mineralization on a regional scale, with the formation of supergene non-sulphide zinc-lead deposits.

Zinc-lead mineralized horizons are reportedly traceable for several kilometres within a district of at least 60 km strike length; however individual occurrences display varied geometries as indicated below. Examples of the various mineralization styles observed are indicated below and in Figure 9-1.

- Tabular replacement zones of variable thickness, width and strike extent, conformable with respect to host strata.
- Pods parallel to bedding.
- Crosscutting breccia zones which may be interconnected, with open space filling of mineralization.
- Solution collapse zones and breccias, particularly areas of enhanced solution activity. These may produce mineralized bodies with irregular geometry.
- Disseminated mineralization occupying original pore spaces, primarily within breccias.
- Remobilized mineralization along fracture and joint planes.

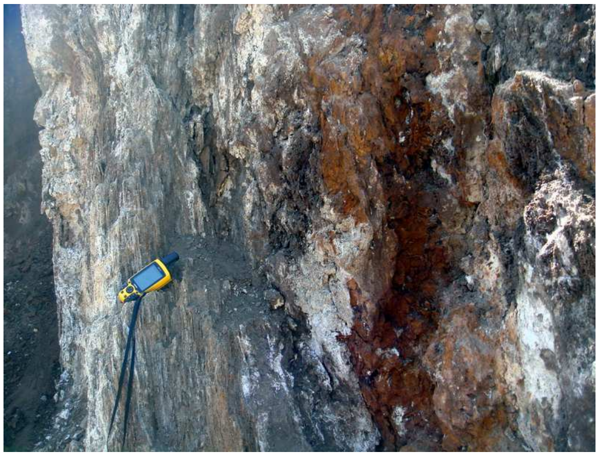
Based on work conducted to date by RCR and on observations from adjacent small-scale mine workings, in general terms a 15 m to 35 m thick zone of multiple oxidized zinc-lead mineralized layers is observed as illustrated in the examples in Figure 9-2. A 2 m to 10 m thick massive mineralized layer is typically present towards the base of this zone, and is overlain by thinner mineralized layers separated by massive to thinly bedded limestone and dolomite, which are in places brecciated and/or vuggy. Discontinuous mineralized stringers and pods as well as remobilized mineralization along fractures and joint planes, are also observed. Small-scale mining in the district has traditionally focused on thick high grade mineralization; the existence of multiple mineralized layers within a potentially bulk mineable zone has only recently been recognized.

Significant variations in iron content are observed between the various non-sulphide zinc-lead deposits. Primary differences in iron content may reflect different pulses of the original mineralizing fluids. In weathered supergene deposits, iron is the most mobile and hence widely distributed element, with zinc intermediate and lead the least mobile. The amount of iron in the system is also a reflection of the original host rock composition, abundance of original iron sulphides, and amount of iron contained in sphalerite (which can vary from yellow through red to brown to black [marmatite] in colour depending on the iron content).

Evidence for several stages of zinc-lead mineralization and leaching are evident, with many sites showing mineralization being more porous and iron-rich in the upper parts (Figure 9-3). For example, the massive smithsonite mineralization is in places partially leached to form porous red-brown smithsonite and hemimorphite. Further leaching in places has resulted in a porous network of hematite-goethite dominated iron oxides.

Although this report is focussed on the RCR zinc portfolio, copper mineralization associated with prominent quartz veining is observed immediately north of license 7. This vein system is reported to extend into license 7.

**Figure 9-1**
**Mineralization styles observed on RCR licenses**

| | |
|---|---|
|  |  |
| **Massive smithsonite+hemimorphite mineralization (with surficial white hydrozincite coatings) and adjacent iron oxide leached zone** | **Pinnacle of massive smithsonite mineralization; note large-scale drag folding along below thrust plane in the background** |
|  |  |
| **Alternating smithsonite+hemimorphite and iron oxide zones** | **High grade smithsonite zone overlain by partially leached iron oxide zone exposed in underground workings** |

| | |
|---|---|
|  |  |
| **High grade smithsonite mineralization overlain by partly leached iron oxide zinc mineralization** | **Thick zone of massive to semi-massive mineralization within a dolomite breccia** |
|  |  |
| **Massive replacement-style mineralization within altered rock after possible (algal) laminated dolomite** | **Disseminated iron oxide zinc mineralization in dolomite breccia** |

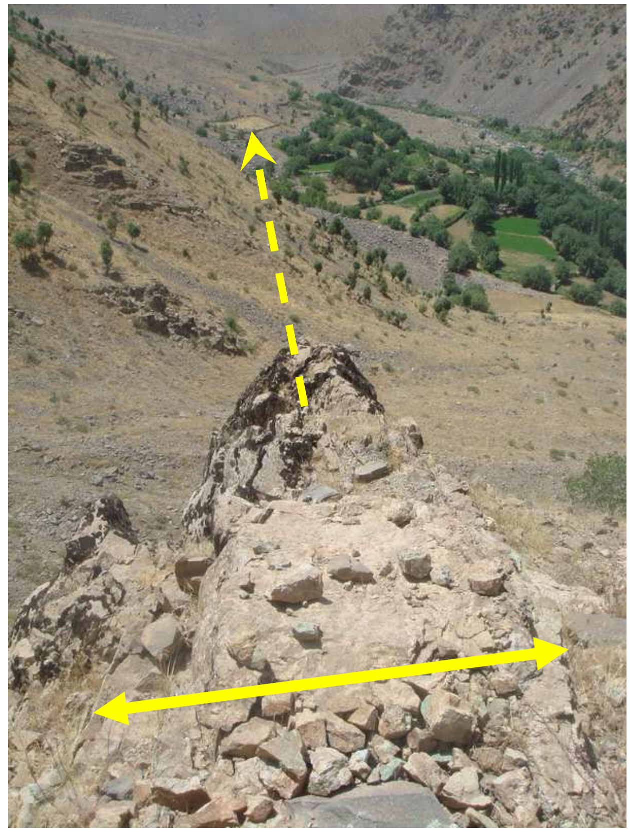
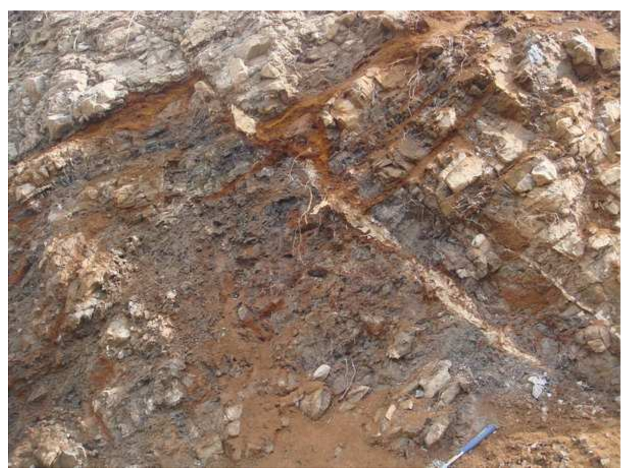
| | |
|---|---|
|  |  |
| **Close-up of copper-bearing (malachite + chrysocolla + chalcopyrite) quartz vein shown in adjacent photo. The quartz vein is approximately 1.5 m thick and is laminated indicating multiphase crack-seal development.** | **Copper-bearing quartz vein, 1.5m wide, 270 m north of License 7; 300 t of material at 5.5 % Cu has been reportedly mined from the eastern extension of this system. The quartz vein reportedly extends to the west in the direction shown.** |
|  |  |
| **Zinc gossan** | **Remobilization of mineralization along joints and fractures** |

**Figure 9-2**

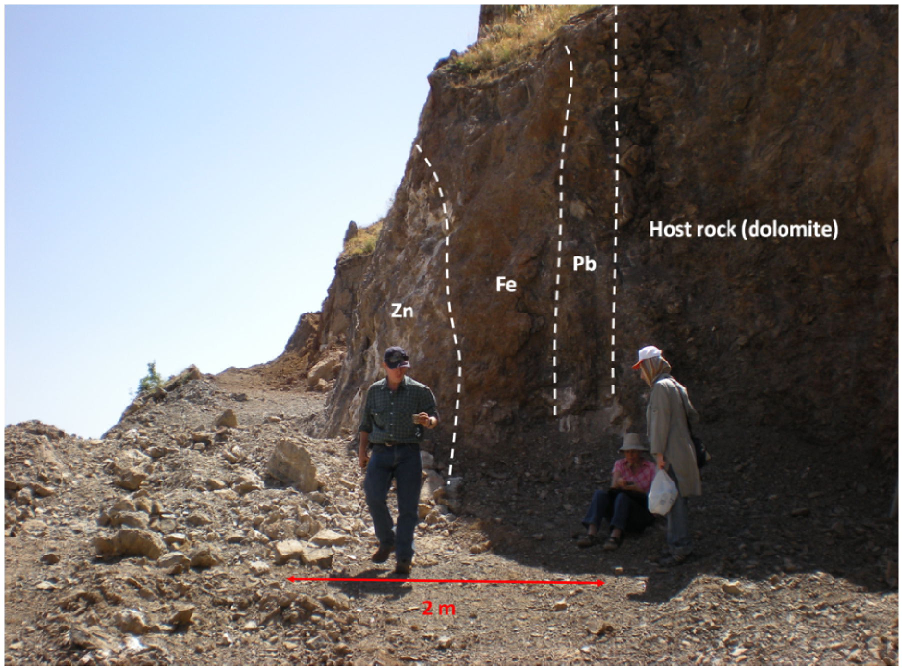
**Multiple mineralized layers/zones of oxidized zinc-lead mineralization**

Massive 5m wide mineralized zone and subparallel hanging wall mineralized layers to the right (close to eastern boundary of license 5)

Multiple mineralized layers in the footwall to the mineralized zone in the photo above (note geologist for scale, mineralized zones indicated by arrows )

**Figure 9-3**

**Cross-sectional view of a subvertical to overturned mineralized zone along a thrust surface. The lowermost (left) portion is dominated by Zn (clearly visible as white smithsonite / hemimorphite), the ore-zone then becomes enriched in Fe and Pb richer higher up (to the right). This location represents the steeply dipping portion of one of the many thrust packages in the area.**



# 10 EXPLORATION

To date, RCR's exploration activities on the license areas have comprised a comprehensive desktop study and limited mapping and sampling activities along the extensive outcropping non-sulphide ore zones within the HZP.

## 10.1 Desktop evaluation and remote sensing exercise

In May 2009, RCR commissioned MSA to undertake a desktop evaluation of 11 of RCR's zinc-lead licenses (Licenses 1-11, excluding 11a and 12). The objective of the desktop study was to integrate as much available data as possible in order to prioritise and define target areas for a follow up field validation visit. Geological maps of varying scales, published papers and reports, high resolution satellite imagery (QuickBird), ASTER satellite data, JERS radar data and Google Earth software were used during the study.

The study was effective in obtaining a high level understanding of the geology, structure and potential to host zinc-lead mineralization in the 11 license areas. Results of this study were reported in Venter and Robertson (2009) and are summarised below.

### 10.1.1 Structural interpretation

Regional-scale structural interpretation was carried out using JERS radar data and available geological maps in conjunction with Google Earth software.

The study confirmed the regional thrust architecture of the license areas, with the dominant deformation style being tilting of near planar bedding surfaces, with the majority of the beds dipping to the north or northeast. The results of the study indicate that dips generally steepen from the western licenses towards the eastern licenses. Field validation of the remotely sensed bedding dips revealed that bedding is often much steeper than interpreted. Folds, with wavelengths of a few hundred metres to a few kilometres, trend predominantly east-southeast and are typically near-upright and gentle. Locally, tighter drag folds are developed adjacent to faults.

On a more regional scale, the bedding traces anastomose about roughly north-south axes with wavelengths in the order of 30 km and dip azimuths between 345° and 30°, probably a result of the effects of the underlying thrust sheet/basement topography (Figure 10-1).

The brittle structural inventory was also captured and interpreted during this study (Figure 10-2 and Figure 10-3). All of the faults indicated on the 1:25 000 scale geology maps were inspected and most were found to be joints. The main thrust and fault planes generally follow the east-west striking bedding traces and fold axes (Figure 10-2 and Figure 10-3). Based on the stratigraphy, fault downthrow is almost always to the north. Jointing is mostly systematic with the recognised principal directions probably related to the main folding stress axes (Figure 10-2 and Figure 10-3). Fractures trending at about 130°, 042° (Licenses 1 to 4) and 060° (Licenses 5-11) form master joint sets that can probably be classified as conjugate shear joints. Near north-south trending master joints are also common and may represent A-C joints. Other less common joint sets trend at about 090° and 170° (Figure 10-2 and Figure 10-3) .Despite the mountainous terrain, the trends of faults and joints seldom deviate across the topography and therefore must always be near to vertical.

**Figure 10-1**

**Bedding measurements over the HZP Area, showing dips calculated from the remote sensing exercise (red) in relation to bedding orientations from the 1:25 000 scale geological maps**

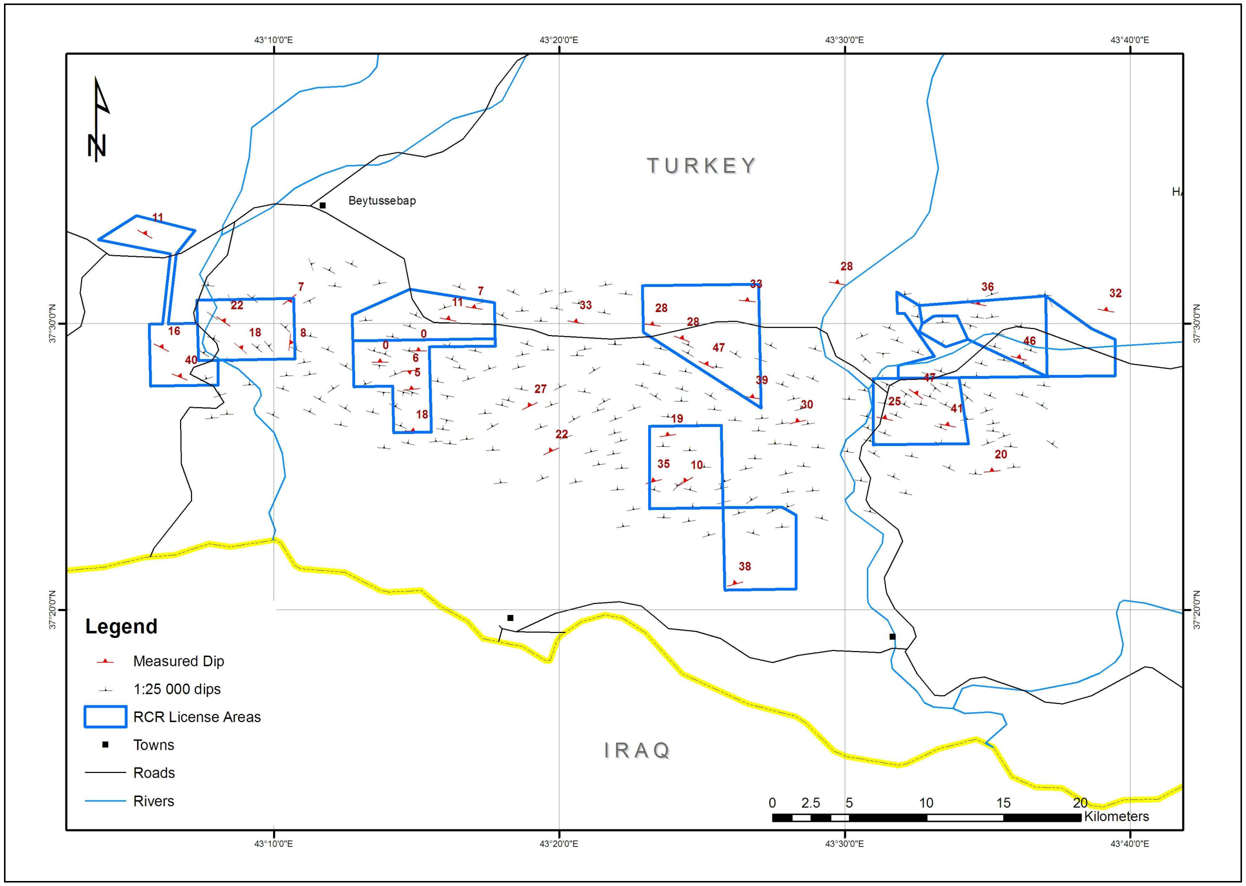


**Figure 10-2**
**Structural elements on Licenses 1 – 4**

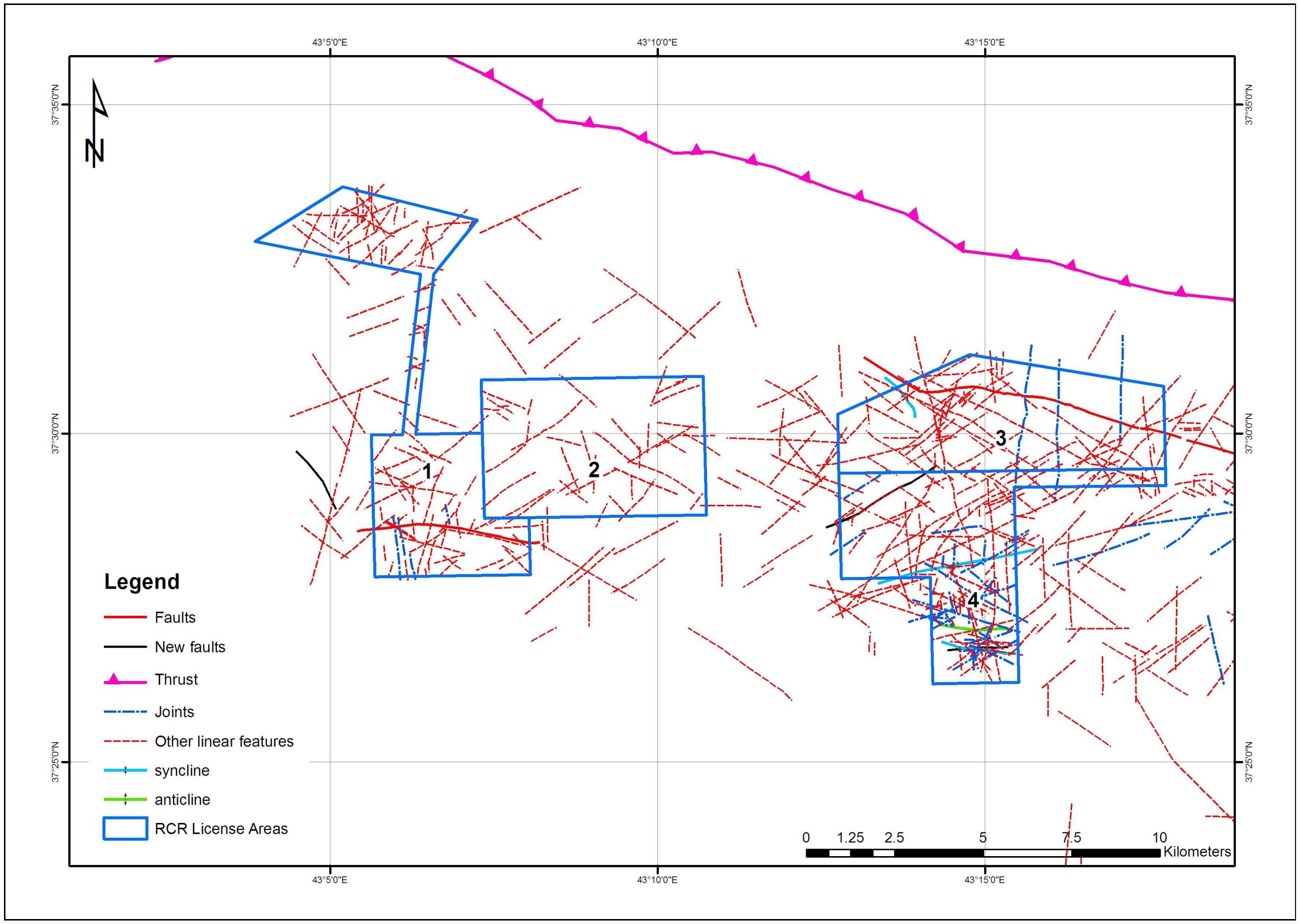
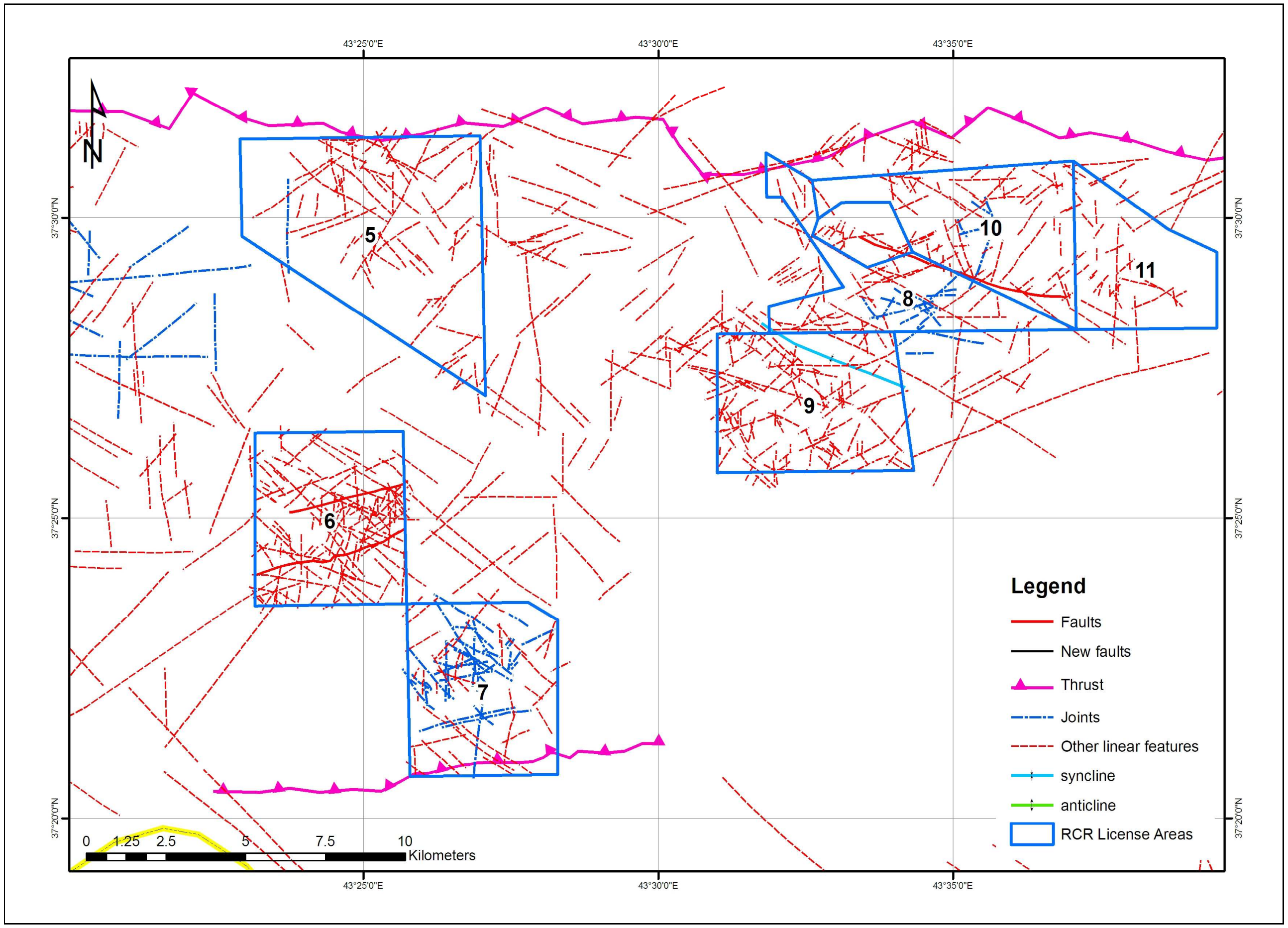


**Figure 10-3**
**Structural elements on Licenses 5 – 11**



### 10.1.2 ASTER interpretation

The ASTER component of the desktop investigation comprised three ASTER scenes covering the License areas, which were processed during June 2009. A range of pre-processing procedures were applied to the ASTER imagery in order to remove or minimise deleterious features such as clouds, cloud shadows, vegetation, human settlements and water bodies. The resulting datasets were used to created band-ratioed images in order to best map mineral potential.

The results from the band ratios and principal component based algorithms were used to create six images, designed to indicate areas with a high probability of mineral occurrences. Each individual map is named after the minerals with the highest probability of being represented by that specific image.

The six mineral maps produced from the Aster imagery data include:

- PyrophAlunite (Red); Minerals included in this group are the aluminium silicates pyrophyllite, dickite and possibly kaolinite; and the hydrous aluminium sulphate alunite. Other elements that may be included are vegetation occurrences. These minerals are characterised by an absorption feature in ASTER Band 5.
- Kandites (Yellow): Maps areas where kaolinite, dickite, Na-rich illites and smectites (clays) occur. This mineral group is characterised by absorption features in both Bands 5 and 6. Most clouds are also surrounded by a halo that may be confused with the kandite minerals.
- Illites (Blue): This image maps areas where there is potential for the following minerals to occur: illites, smectites, muscovite and illite/kaolinite mixtures. Other features that may map due to the effects of "cross-talk" that are present on all Aster scenes include deep valley and cloud shadows. The illites are identified by an absorption feature in Band 6.
- MgOH_Carbonates (Green): This spectral mineral group contains minerals with a dominant absorption feature in ASTER Band 8. Included are carbonates(dolomite and calcite), amphiboles and Mg-Fe rich minerals (i.e. chlorite, talc, epidote, biotite, etc.). This mineral map is also influenced by vegetation and water.
- $SiO_2$ (Magenta): On this image areas with a high potential for the occurrence of quartz are mapped but the product suffers from the noise-to-signal ratio typical of Aster thermal bands. Quartz shows an emissivity minimum in the ASTER Band12. Some hard grasses that occur predominantly in desert areas may also show an absorption feature in this band and it is not possible to separate these grasses from SiO occurrences.
- FeO (Brown): This mineral group is not identifiable by an absorption feature but classification is based on visible colour. Using the standard processing techniques all features with reddish, yellowish or with an orange hue are classed as Fe-oxide. As most Fe-oxides display these colours in outcrop they will be

included in this group. Red- and yellow-coloured vegetation not removed by the masking are however also included. Areas disturbed by human activities may also map into this class.

A strong alteration anomaly, potentially indicating a a sizeable porphyry or epithermal alteration system, was identified and its outline is marked with a dashed red line in Figure 10-4. The centre of the system (referred to as the main alteration system) is marked by SiO occurrences, progressing outward to illite and SiO and peripheral combination of kandites and SiO. Concentrations of pyrophalunite and kandites are evident just north of the main alteration system. These could be associated with hydrothermal systems connected to the main alteration system. Subsequent correlation of this feature with acquired geological information shows that the “main alteration system” referred to above is underlain by more quartz-rich/siliceous sediments; therefore it is possible that no alteration system exists. However field validation is required, especially in the light of a copper occurrence indicated in the southern parts of the License 7 (Figure 10-4), which is located within the “main alteration system”. Ten to twenty kilometres north and south of this zone, high concentrations of MgOH carbonates and iron oxides are evident. These areas are likely the best regions to investigate for potential Zn oxide occurrences (Figure 10-4).

### 10.1.3 High resolution Satellite imagery interpretation

High resolution (QuickBird) imagery was sourced for Licenses 1-11. Apart from assisting with the structural as well as geological interpretations, these data were also used to identify workings and diggings throughout the project area. Each potential working/digging was investigated on the imagery and ranked based on confidence (1 – Low, 3 – high) (Figure 10-5). These occurrences are discussed in more detail below.

## Figure 10-4
## ASTER Interpretation over Licenses 1 - 11

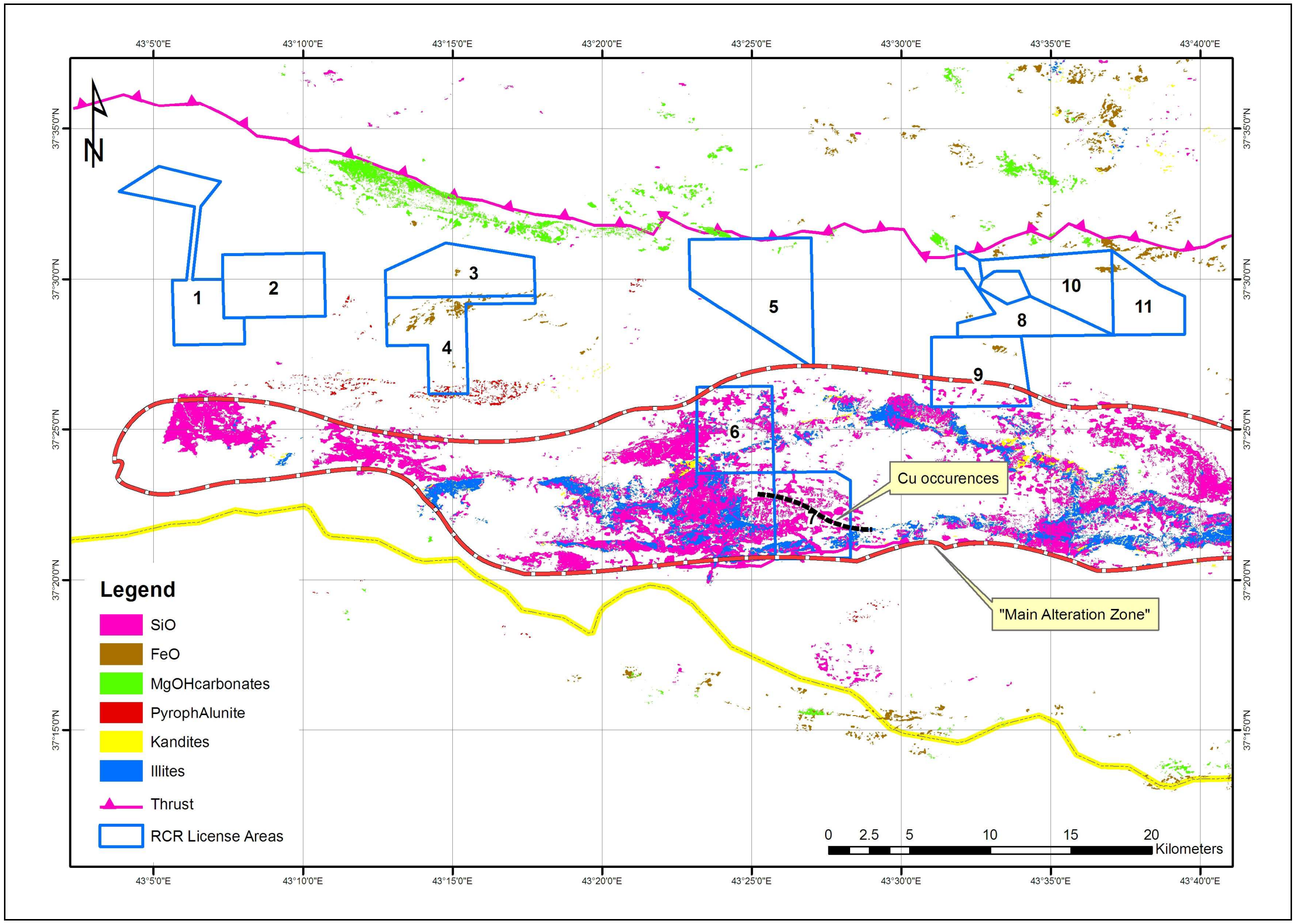
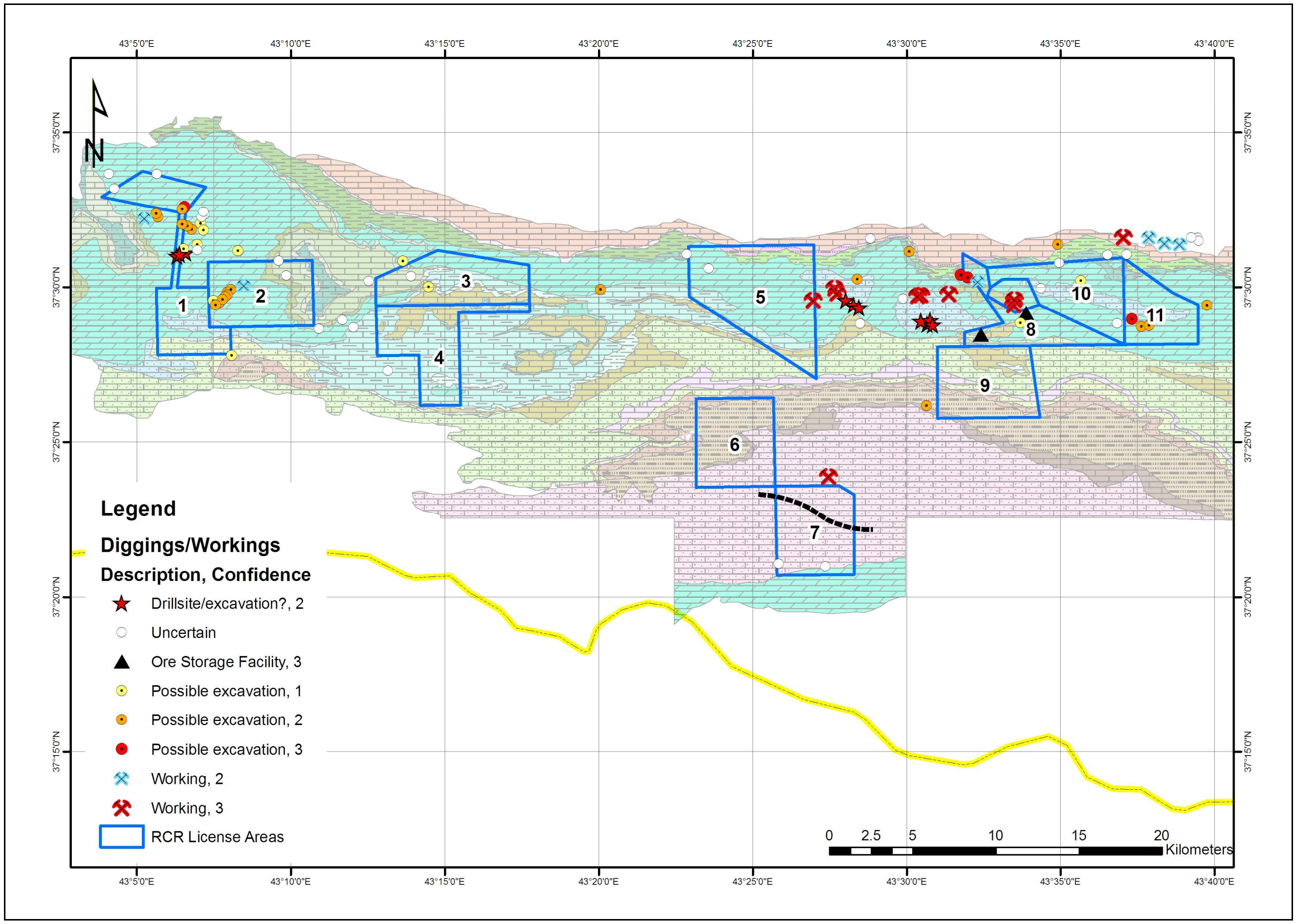


**Figure 10-5**

**Identified diggings/workings over Licenses 1 - 11**



### 10.1.4 License specific interpretation

Each license or groups of contiguous licenses was evaluated in terms of the data collected during the remote sensing study in conjunction with available geological map data, in order for the licenses to be prioritised in terms of mineralization potential. A detailed geological interpretation of each of the license areas was conducted and is portrayed in Figures 10-6 to 10-10. Areas for field validation were identified from the remote sensing.

### 10.1.5 Summary of desktop study and recommendations

The desktop and remote sensing study (Phase 1) was effective in obtaining a high level understanding of the geology and structure of the project area as well as the potential of the area to host zinc-lead mineralization, and to a lesser degree copper mineralization.

It is apparent that the Mid Triassic-Lower Cretaceous dolomitic unit (t2k1) is host to all non-sulphide zinc-lead workings that have been identified to date. The following have been noted and need to be used as exploration aids in delineating mineralization:

- Mineralization (characterised by high confidence workings and excavations) appear to be located towards the base of the dolomitic t2k1 unit. This is supported by the fact that mineralization in classic MVT style deposits tend to form near the base of dolomitic/dolostone horizons.
- There also appears to be a relationship with the younger general northwest-southeast trending joints, lineaments and faulting found through the project area. This is supported by the role of structures acting as a conduit for mineralising fluids.
- The presence of younger and older clastic-dominated sediments that bound the dolomitic t2k1 unit may imply important controls on mineralization due to gross permeability changes.
- Facies changes as well as gentle fold closures within the actual t2k1 dolomitic unit may also act as mineralization traps for Zn/Pb bearing solutions.
- It seems that Zn/Pb mineralization is broadly stratabound (t2k1 dolomite), but may be structurally controlled on smaller, prospect scale.
- The presence of iron rich gossanous material should indicate the presence of mineralization, and here the ASTER interpretation has identified the Cretaceous age k1-7-y unit as being FeO rich.

Recommendations for follow up field validation assessments were provided for each License/License grouping, and a prioritised ranking was given to assist in the planning of the site visit that subsequently took place at the end of July 2009.

*High Priority:* Visit targeted areas within Licenses 5, 8, 10 and 11 to examine existing workings and workings/excavations where possible.

*Medium Priority:* Visit targeted area in License 1 and 2 to visit excavations/diggings identified.

*Low Priority:* Visit targeted areas in Licenses 3 and 7 to validate possible workings/excavations and geological setting.

## Figure 10-6
## Licenses 1 and 2 interpretation

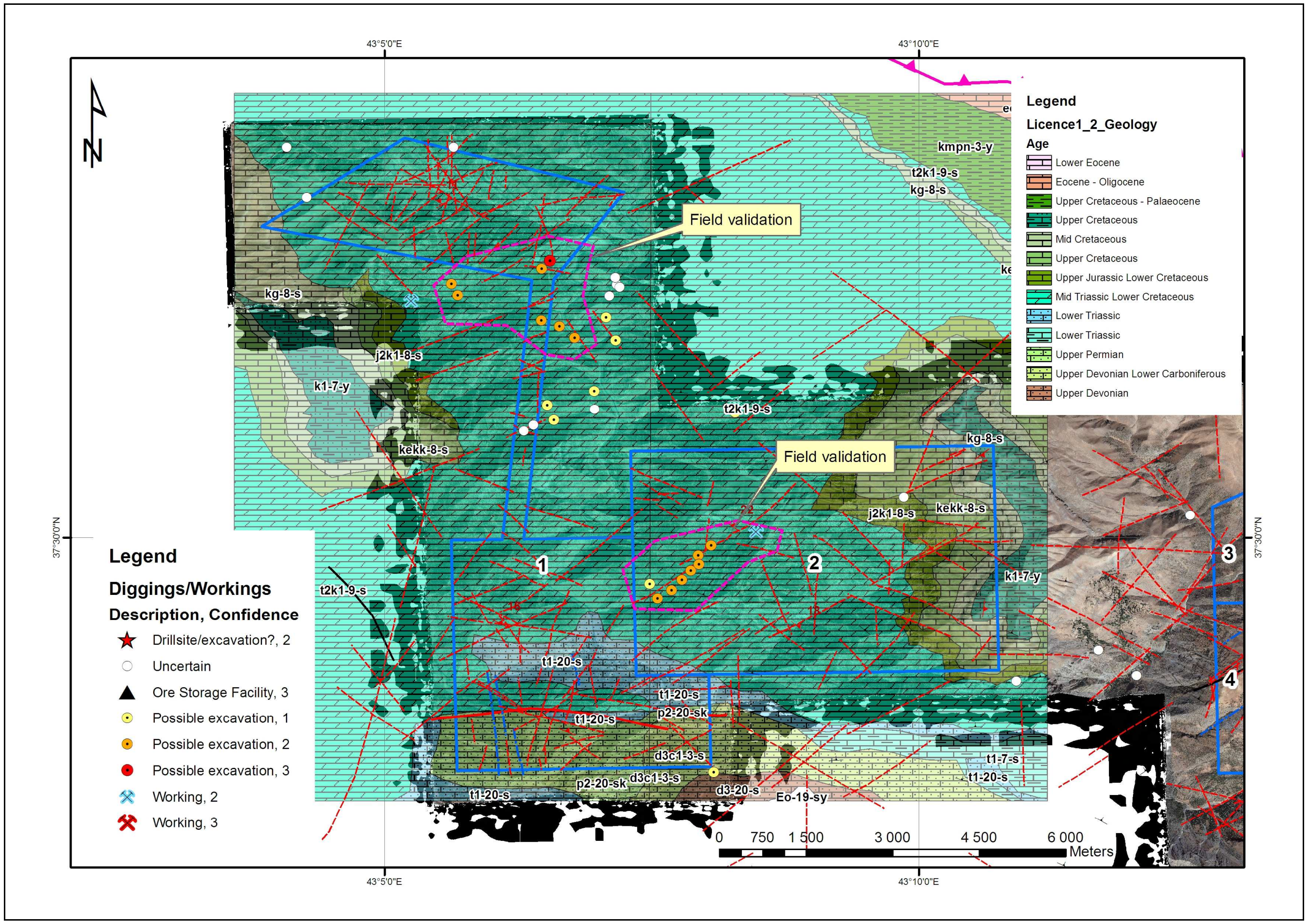


**Figure 10-7**
**Licenses 3 and 4 interpretation**

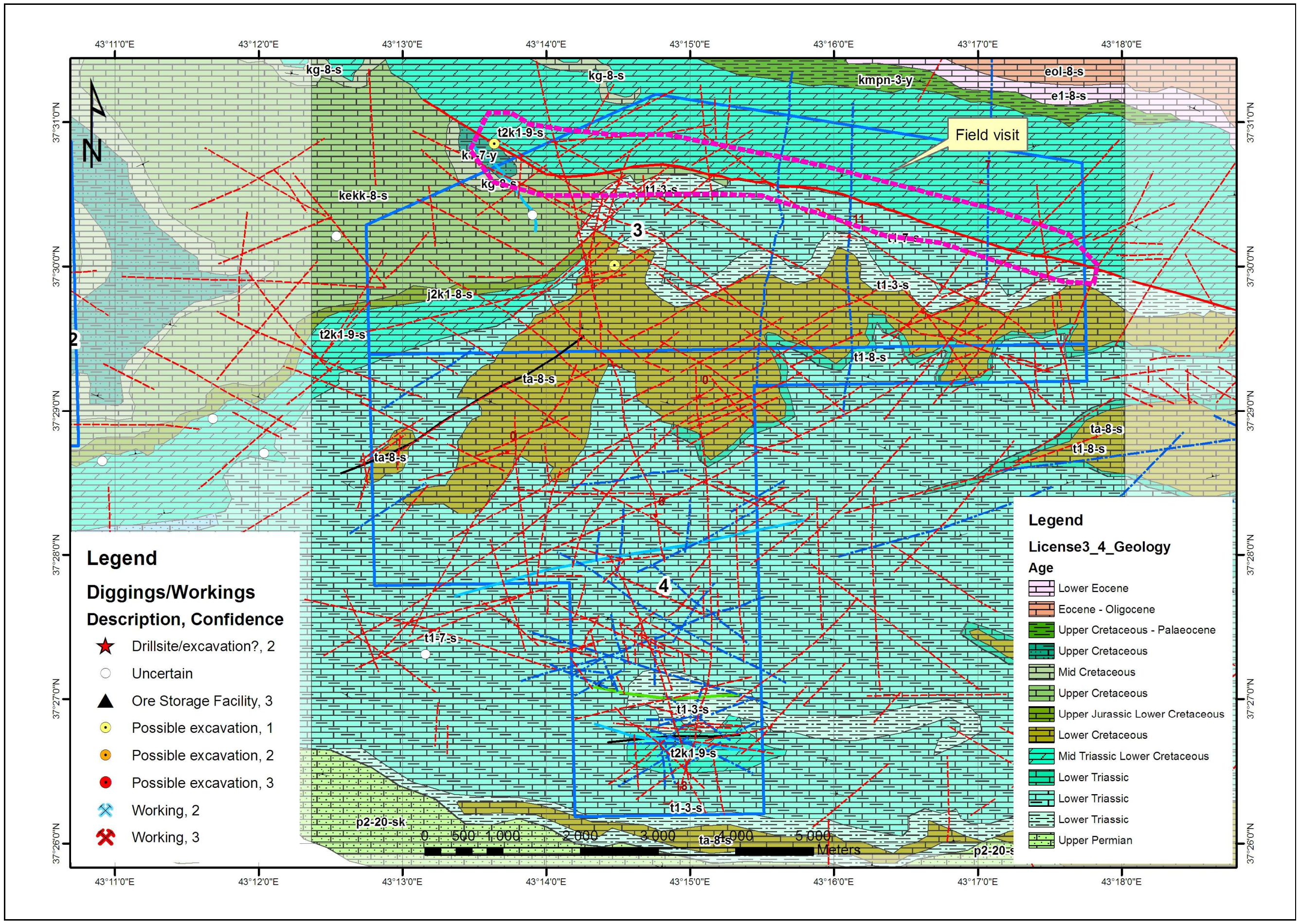
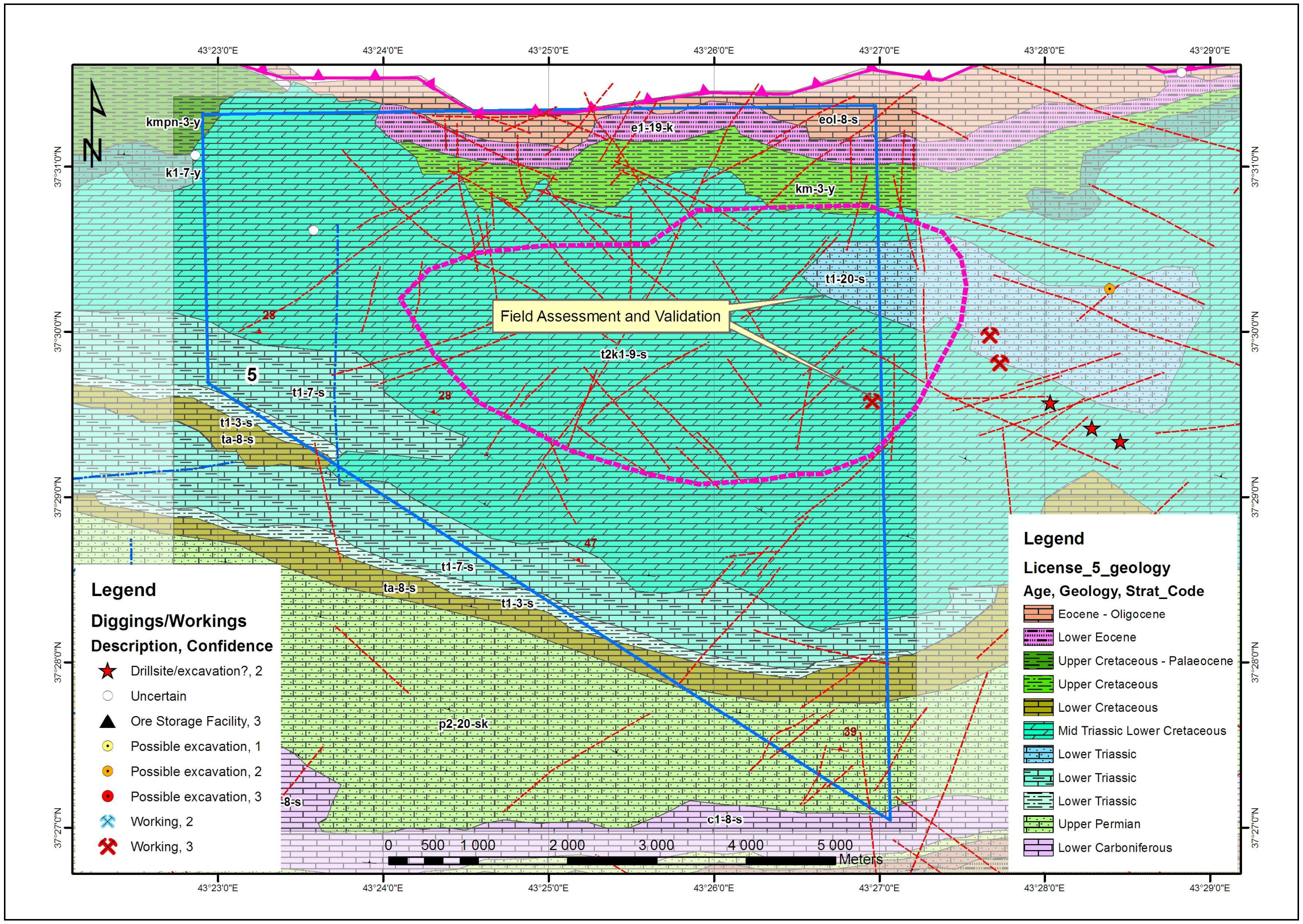


**Figure 10-8**
**License 5 interpretation**



## Figure 10-9
## Licenses 6 and 7 interpretation

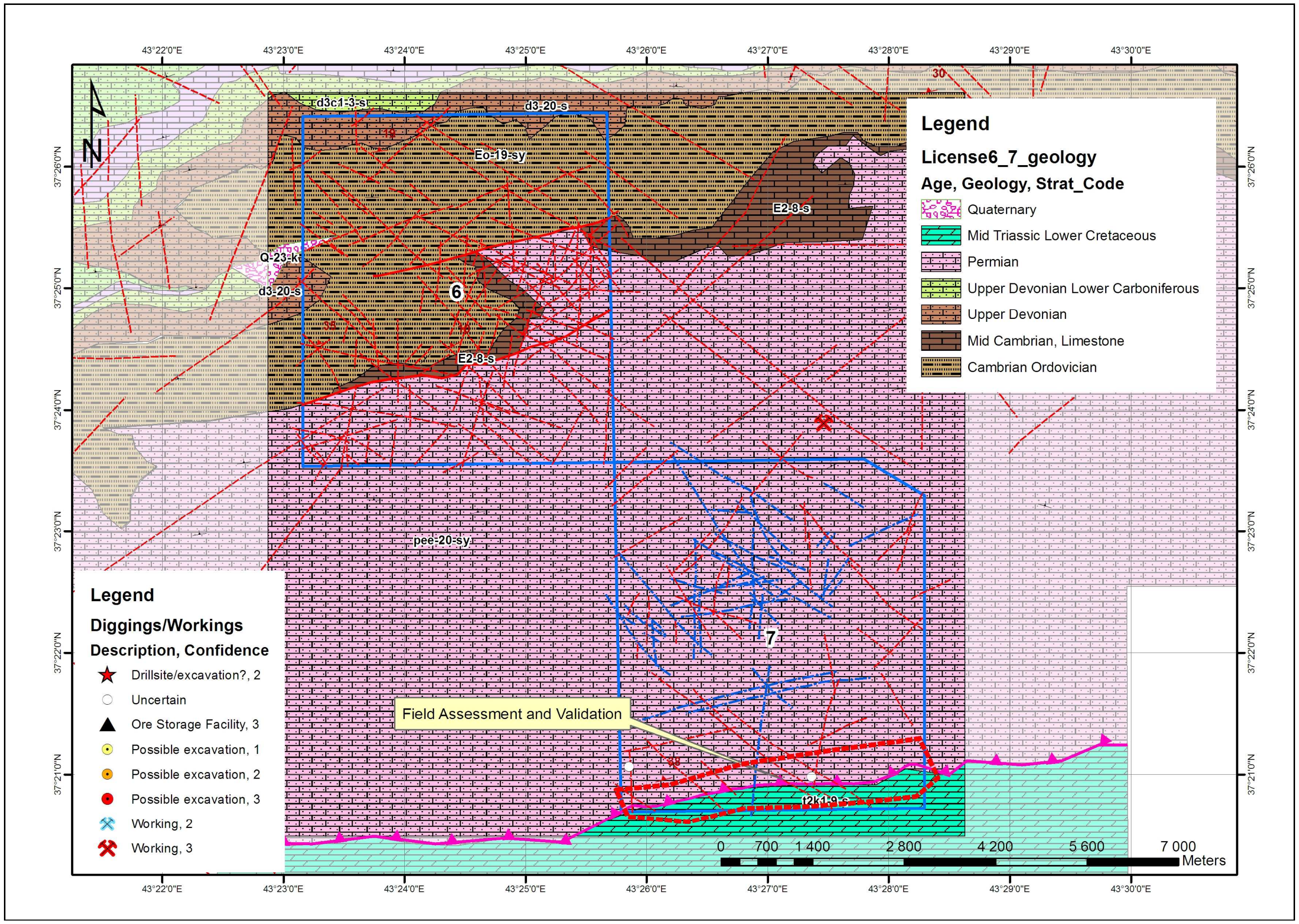
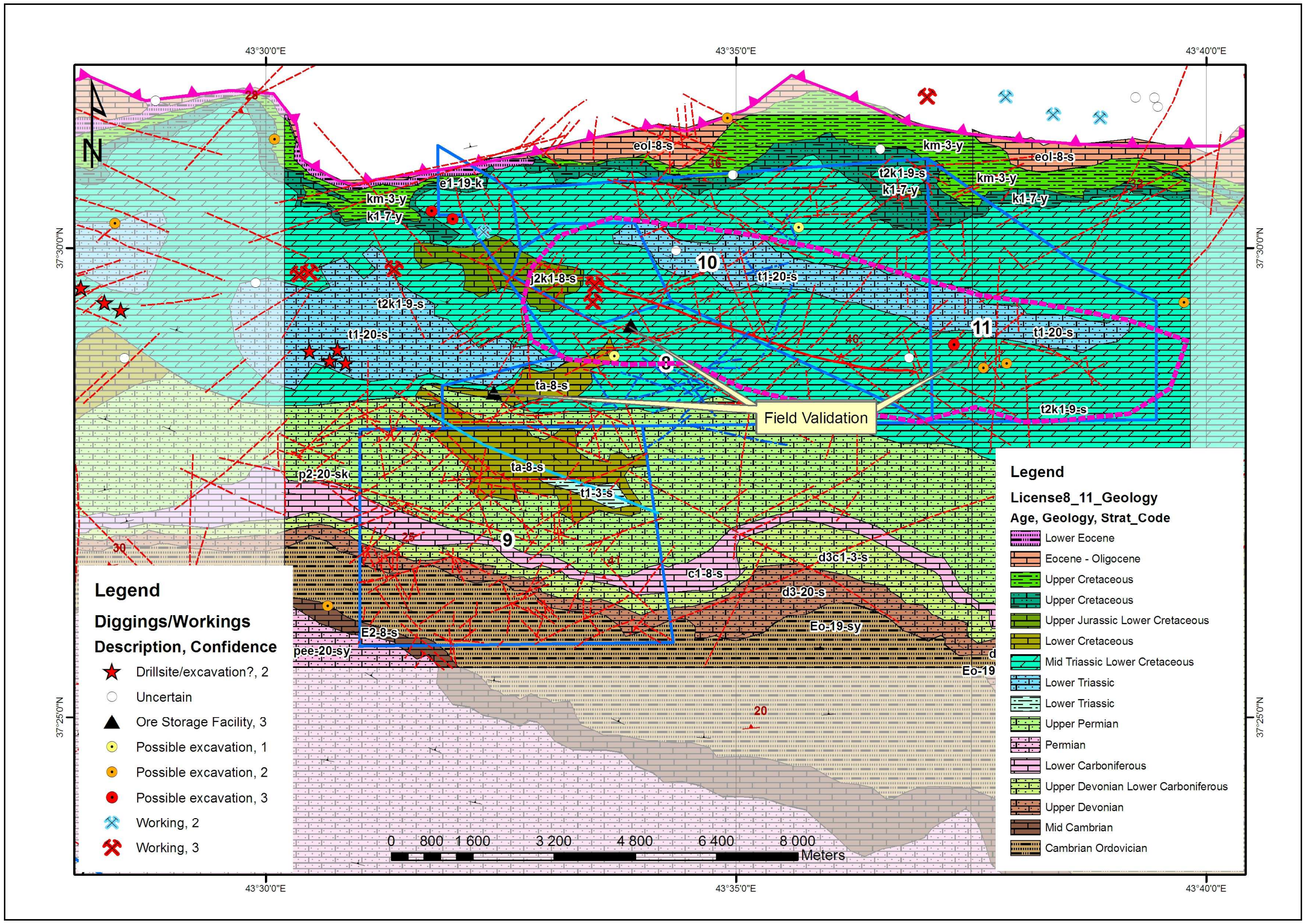


Figure 10-10
Licenses 8 - 11 interpretation



## 10.2 Mapping

Information available to RCR at the onset of exploration activities, coupled with field observations, suggest licenses. 5, 8, 9, 10 and 11 are the most prospective for economic zinc-lead mineralization. These licenses lie within the "Border Folds" terrain, a fold and thrust belt developed at the convergence of the Arabian Plate and the Tauride Mountain Belt along a paleo-subduction zone. This is bounded locally in the North by the regional-scale Biltis Thrust. Features typical of a fold-thrust terrane are developed throughout the license areas (Figure 10-11).

**Figure 10-11**

**Folds and thrust structures on the licenses. Left: west facing view across Licenses 10 and 8 showing a major, southeast-striking thrust with synclinal features formed in the footwall rocks. Right: east-facing view across License 10 from locality point Hak02 (see Figure 10-12) showing panoramic view of thrust surfaces.**

To date, limited mapping of mineralization and country rock have been undertaken and activities have been focussed on Licenses 5 and 10 (Figure 10-12). Interpretation of mapping results suggest a series of thrusts developed oblique to the main Bitlis thrust and potential transcurrent offsets of the mineralized zones (Figure 10-13). In the area of current mining (between licenses 8-10) a series of mineralized zones, spaced about 50 m apart has been found. In the broad-scale investigations conducted to date, the distance between the mapped mineralized zones varies between 300 m and 2 km.

A mineralized anticlinal structure developed on License 5 has a width (i.e. half wavelength) of approximately 2 km. Of significance is the strike extent of the mineralized horizon. Each mapped portion (either major thrust surface or flanks of a fold structure) can be traced for over 1 km. Due to the limited work carried out to date, it is not known how frequently the orebody is duplicated (either by folding or thrusting) within the area.

**Figure 10-12**

**Mineralized points draped on Google Earth images (license number shown in blocks). The initial estimation of mineralized strike length parallel to the Bitlis Thrust and the mapped structural orientations which altered this idea are shown**

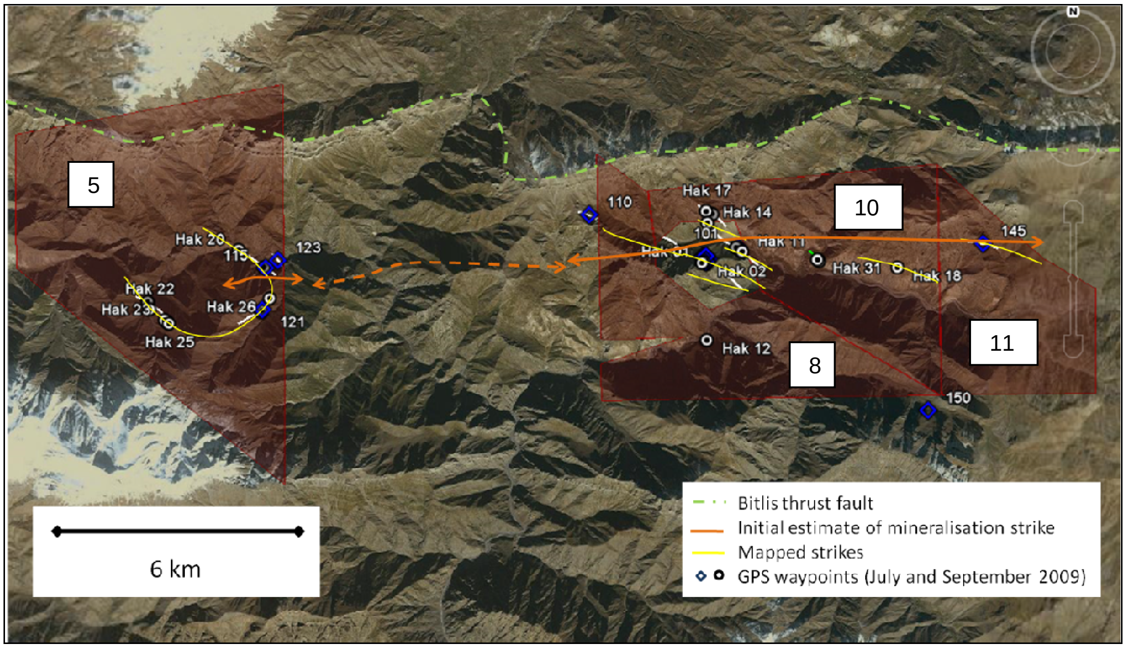
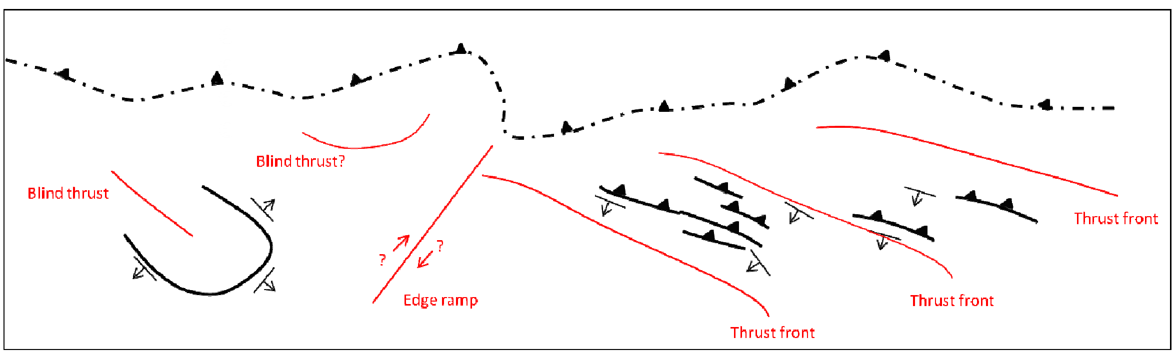



**Figure 10-13**

**Structural interpretation of the image in Figure 10-12, showing the mapped features (black) and the interpretation in red.**




On License 5, reconnaissance mapping by RCR has revealed the presence of a paired west-northwest trending fold system, with a wavelength in the order of 1 km. The fold system is bounded to the north by a major apparent dextral shear system that trends northwest and is therefore oblique to the fold axial traces (Figure 10-14). Although the interpretation is preliminary, the antiformal structure in the south is believed to be overturned to the south, with a southward-directed vergence (Figure

10-15), and is suggestive of potential for major structural duplication of the mineralized horizons. As in most of the other license areas, the mineralized zones tend to weather negatively in relation to the footwall and hangingwall sequences.

**Figure 10-14**
**Schematic reconnaissance structural map of License 5, showing bedding traces (red lines), structural observation points (red dots with associated dip directions) and mineralized zone exposures (orange dots). Note the interpreted fold structures and the section line A-A'. The broad fold structure delineated by the arcuate beds (open to the west) is the fold shown on License 5 in Figure 10-13**

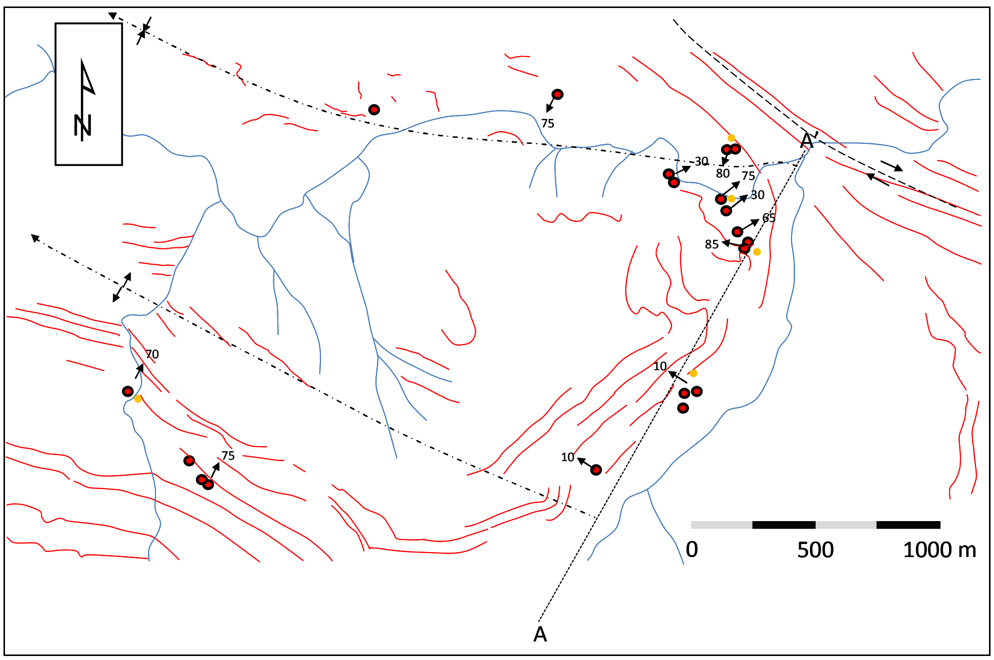



**Figure 10-15**
**Conceptual sketch section along the line A-A' (Figure 10-14) showing southward structural vergence and apparent overturning and duplication of the stratigraphy**

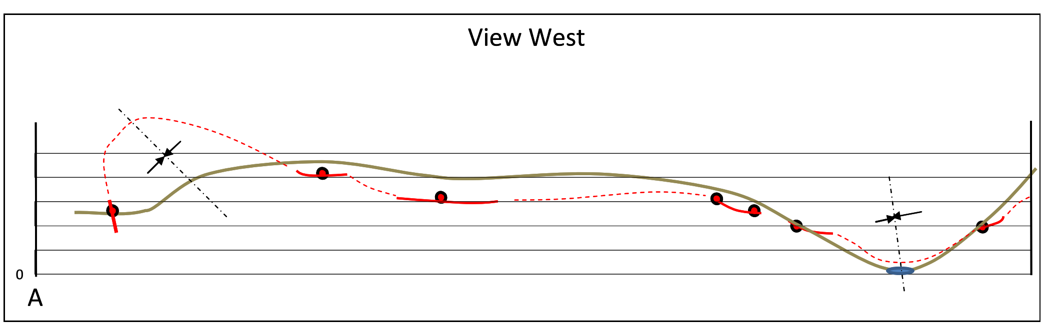


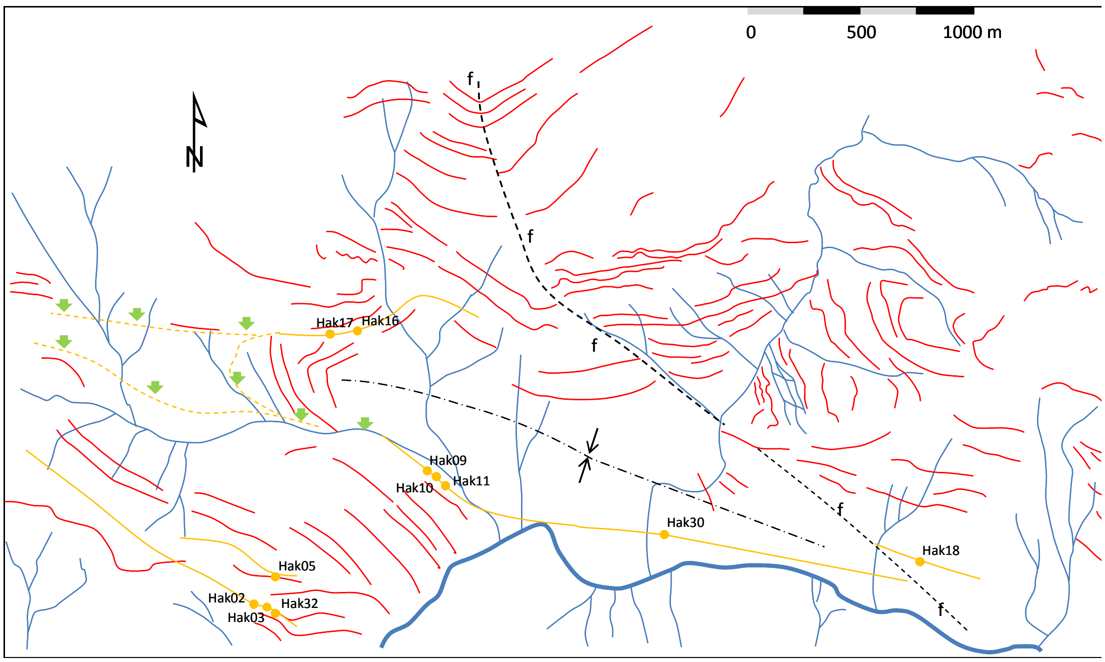
**Figure 10-16**

**Competent, erosion resistant dolomitic hangingwall forming a cliff on License 5. The ore zone weathers negatively and outcrops in the vicinity of the geologists**

A similar structural style is developed on License 10, where apparent duplication of the main mineralized zone is effected by folding about a west-northwest trending synformal axis that is truncated in the southeast by a northwest-striking fault (Figure 10-17). To date, an estimated 4.5 km of mineralized strike length has been confirmed at a reconnaissance level on Licenses 5 and 10.

**Figure 10-17**

**Schematic reconnaissance structural map of License 10, showing bedding traces (red lines), mineralized zone exposures (orange dots) and interpreted strike trends of the mineralized zones (orange lines). Note the interpreted synformal structure that appears to be responsible for duplication of the main mapped mineralized zone.**




## 10.3 Sampling

A total of 51 samples have been collected to date. The sampling inventory comprises 3 "historical" stockpile samples, an additional 3 stockpile samples collected during the current phase of exploration, 10 samples collected from the current mining area (between Licenses 8 and 10) and 35 outcrop samples. None of the samples collected to date are considered representative bulk or channel samples and should be viewed as grab or rock chip samples.

Sampling is discussed more fully under section12.

# 11 DRILLING

No drilling has been undertaken by RCR or to the author's knowledge by previous workers over the HZP, apart from Teck Cominco, who are reported to have drilled two holes in the region. No records or further details are available for the Teck Cominco holes.

# 12 SAMPLING METHOD AND APPROACH

Historical data exists for samples taken to determine the grade of various run of mine stockpiles. An example of an SGS assay certificate for historical stockpile sampling is included in **Appendix 5**. These data are however assigned a low confidence due to a lack of information regarding sampling methodology and the exact source of the stockpile material. These samples are consequently not representative of *in situ* mineralization, but do provide a general indication of grades pertaining to the dominant ore types (high zinc/low iron; iron-rich zinc mineralization) being exploited by informal mining in the region.

Sampling of three stockpiles for bench-scale metallurgical test work was conducted by RCR in August 2009. From each of the three stockpiles, ten sub-samples were collected, blended and coned and quartered to obtain approximately a single 10 kg sample per stockpile which was sealed in a tamper-proof sample bag. An example of a stockpile and sampling methodology are shown in Figures 12-1 and 12-2. The results of the metallurgical test work are discussed in Section 15.

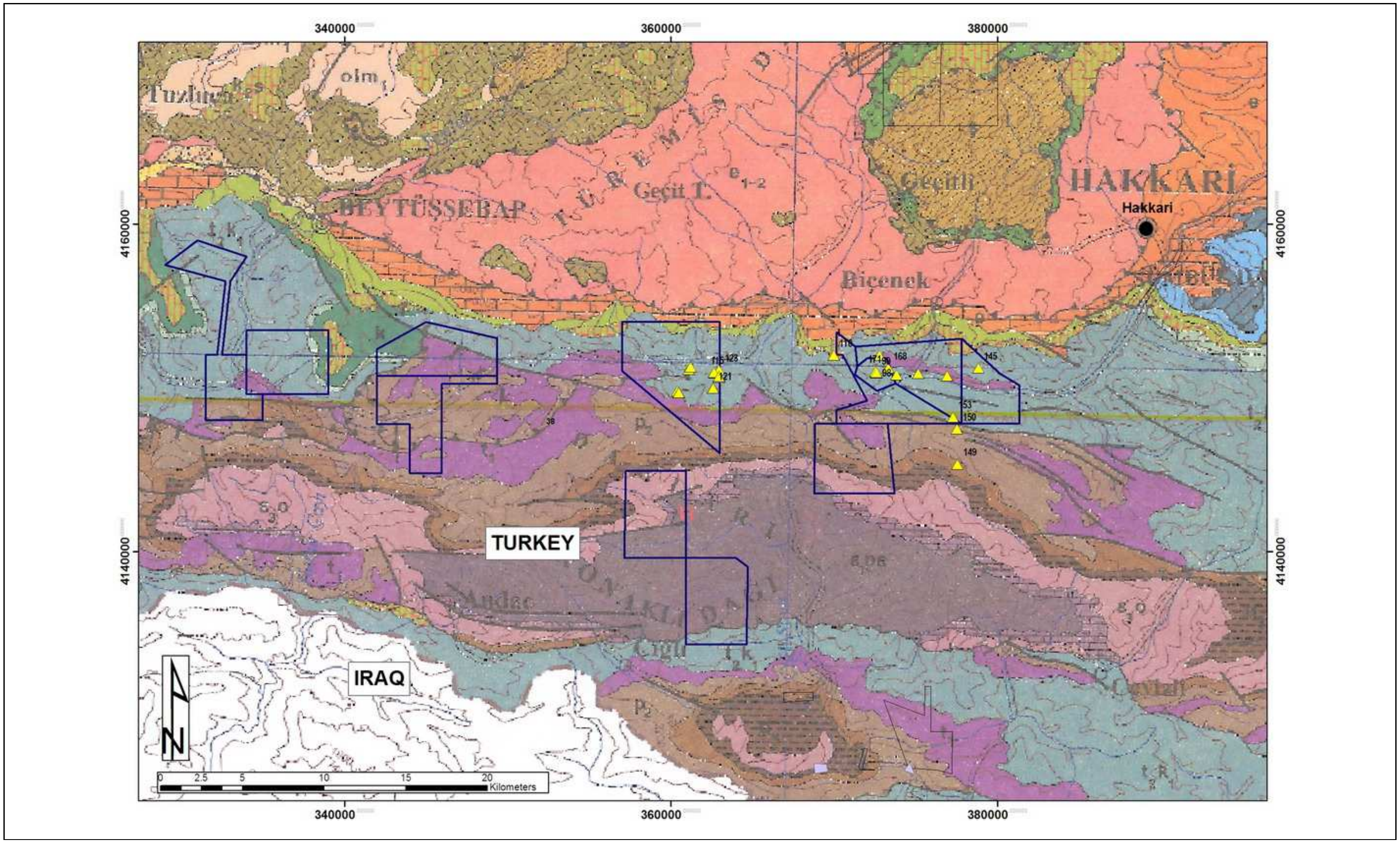
RCR conducted two sampling campaigns from July to November 2009 focussed on the collection of grab samples from mineralized zones both in outcrop and exposed in informal mine workings. The location of these samples is shown in Figure 12-3. Grab samples were collected as composite rock chip samples with an emphasis on being representative. The samples were labelled and sealed in sample bags. The sample positions were recorded by GPS and various attributes described. These attributes and the assay results are presented in **Appendix 6**. Duplicate and blank samples were also included in the material supplied to the laboratory for analysis.

All stockpile and grab samples were couriered to the RCR offices in Ankara, where each sample was split with half being shipped to South Africa for laboratory analysis and the other half being retained at RCR as a reference sample.

**Figure 12-1**
**Example of a roadside zinc ore stockpile between RCR licenses 5 and 8**

**Figure 12-2**
**Sampling of a roadside zinc ore stockpile**

**Figure 12-3**
**Locations of rock chip grab samples collected by MSA and RCR**



# 13 SAMPLE PREPARATION, ANALYSES AND SECURITY

## 13.1 Sample Preparation, Analyses and Security

Procedures for the collection of samples from stockpiles collected for metallurgical test work were discussed with RCR by the primary author. Stockpile sampling was undertaken by the collection of ten subsamples, and by blending, coning and quartering these to produce a final 10 kg sample as representative as possible of each stockpile.

All rock chip samples were split by RCR at their offices in Ankara and the remaining half, averaging 0.5 to 1 kg, retained as a back-up reference sample. The initial batch of rock chip samples was submitted in sealed tamperproof bags to Tangmere R&D in South Africa for chemical analysis of Zn, Cu, Co, Cr, Cd, Ni, Pb and Ag. Subsequent rock chip samples were submitted to ALS Chemex in Istanbul for sample preparation, and ALS Chemex in Izmir for determination of Zn, Pb, Fe, and major element oxides.

Samples received by ALS Chemex were prepared by crushing to 70% <2 mm and pulverising of 1 000 g to 85% passing 75 µm. Analysis for Zn, Pb and Fe were conducted by aqua regia digest with inductively coupled plasma atomic emission spectroscopy finish ("ICP-AES") and for major oxides + ZnO by lithium borate fusion and X-Ray fluorescence ("XRF"). The ALS Chemex method codes are ME-OG46h and ME-XRF13b respectively.

No density determinations have been carried out to date on any of the HZP samples.

## 13.2 Quality Assurance and Quality Control

Appropriate quality assurance and quality control (QAQC) monitoring is a critical aspect of the sampling and assaying process in any exploration program. Monitoring the quality of laboratory analyses is fundamental to ensuring the highest degree of confidence in the analytical data and providing the necessary confidence to make informed decisions when interpreting all the available information. *Quality assurance* may be defined as information collected to demonstrate that the data used further in the project are valid. *Quality control* (QC) comprises procedures designed to maintain a desired level of quality in the assay database. Effectively applied, QC leads to identification and corrections of errors or changes in procedures that improve overall data quality. Appropriate documentation of QC measures and regular scrutiny of quality control data are important as a safeguard for project data and form the basis for the quality assurance program implemented during exploration.

In order to ensure quality standards are met and maintained, planning and implementation of a range of external quality control measures is required. Such measures are essential for minimising uncertainty and improving the integrity of the assay database and are aimed to provide:

- An integrity check on the reliability of the data,
- Quantification of accuracy and precision,
- Confidence in the sample and assay database,
- The necessary documentation to support database validation.

Collection of the initial rock chip and stockpile samples was advised on by the QP, to ensure the collection of representative samples. RCR have since adopted a set of documented standard operating procedures which cover all aspects of the exploration program, and which are designed to ensure best practice and ultimately, integrity of data.

Field duplicates were created by RCR through splitting of rock chip samples. These were submitted to monitor sampling and sample preparation precision, while blank samples were submitted to monitor inadvertent or voluntary contamination of samples.

ALS Chemex inserted blanks, certified standards and duplicate pulps within each batch of samples for assaying.

Given that the RCR exploration campaign is in its early stages, no check assays have yet been performed at an external umpire laboratory.

# 14 DATA VERIFICATION

Apart from stockpile assays, no historical sampling and assay data exist for the HZP project area. The historical stockpile sampling data has not been independently verified as part of this study; however the results obtained are similar to those obtained from recent sampling by RCR of informal mining stockpiles.

In accordance with National Instrument 43-101, the QP visited the Hakkari properties from 26 July 2009 for 12 days and again from 16 March 2010 for 14 days. The purpose of these site visits was to inspect the license areas comprising the HZP project and establish the geological setting of the project and of the zinc mineralization, visit adjacent small-scale mining areas, observe the extent of exploration work conducted by RCR on the properties and assess logistical aspects of operating an exploration program in this region.

During the site visits, the QP was accompanied by RCR personnel and various discussions were held regarding the exploration strategy and field procedures to be followed. Current informal mining sites were visited as were numerous outcrops, in order to observe the various styles and settings of zinc mineralization.

Assay certificates for rock chip samples submitted to ALS Chemex have been viewed by the primary author, as have examples of SGS certificates of analyses of stockpile samples.

The RCR exploration program is currently in its early stages, but is planned to be fast tracked as recommended in Section 19. RCR has made allowance for continued independent involvement of the QP through periodic site visits and reviews of the exploration program and ongoing results.

# 15 ADJACENT PROPERTIES

Informal small-scale mechanised mining of zinc ore has taken place in the Hakkari district over the last 5 to 10 years. This mining has been conducted with excavators and dump trucks from a number of mining sites, with stockpiling of ore at various sites along the main road to Hakkari. Historical mining, as evidenced by archaeological finds, dates back to Roman and Babylonian times and was focused on mining of lead which typically occurs towards the top of the zinc mineralized zones. Roman mining galleries have been observed at several localities in the Hakkari area.

Of importance to RCR are a number of small-scale mining sites between licenses 5 and 8 and licenses 8 and 10 (Figure 15-1). These represent mainly open cut workings with some exploratory shallow underground development, both of which have exploited high grade zinc mineralization. The workings are regarded as “informal” as they are not based on a modern exploration program, Mineral Resource/Reserve base, or mine plan and have not been professionally surveyed to accurately record tonnages mined. Tonnages and grades are as reported to MSA by the operators and have not been independently verified. However, in MSA’s opinion, these workings give an indication of potential orebody dimensions and grades that may be expected in the RCR license areas.

Five mining sites were visited by MSA in the area between licenses 5 and 8 and three in the hexagonal area between licenses 8 and 10, as indicated in Figure 15-1 and in the photographs in Figure 15-2.

The area between licenses 5 and 8 is held by Meskan Ölmez Madencilik and Ekin Madencilik. At localities 1 to 3 in Figure 15-1, up to 3 prominent non-sulphide zinc mineralized units are recognized, which dip to the north-northeast at approximately 20°. The upper two layers vary in thickness from 0.2 to 1 m with an overall grade of approximately 30% Zn, with the lowermost layer 7 to 13 m in thickness at an overall reported grade of approximately 35% Zn. The latter zone is reportedly underlain by a variable 2 m thick zinc sulphide layer; however this was not observed by MSA as the open cut has been partially infilled. Fine-grained sulphide mineralization was however observed on a stockpile near the Meskan Ölmez Madencilik offices. A number of other sub-parallel thin discontinuous non-sulphide zinc layers are developed within and overlying this sequence. Some 60 000 tonnes of ROM zinc ore at an average grade of 35% Zn are reported to have produced from the Meskan Ölmez Madencilik license in 2009.

Mining sites 4 and 5 in Figure 15-1 have exploited a steeply dipping to overturned 4 to 5 m thick non-sulphide zinc zone which strikes west-northwest. A steeply dipping mineralized zone is being exploited at sites 6, 7 and 8 within the hexagonal area between RCR licenses 8 and 10. Mining site 8 is owned by the Seyitoğlu family.

The deposits being worked in the district are mined intermittently and have to date produced ‘lumpy’ ore, which is sometimes hand-sorted (Schaffalitzky, 2009). This material has been sold to metal traders, a well-developed business in Turkey. The Seyitoğlu family run of mine ore is crushed and transported by truck to the port at Mersin, some 900 km from Hakkari, at a cost of $185/tonne.

The following conclusions are drawn based on observations made at these workings:

- Non-sulphide zinc mineralization can be traced for substantial distances along strike.
- Potential for sulphide and mixed oxide-sulphide mineralization exists.
- Mineralized zones vary in thickness along strike, at a prospect scale.
- The degree of oxidation of mineralization varies considerably, as does the iron content, often over short distances along strike and across the mineralized zone at individual localities. Variations in zinc, lead and iron contents over short ranges should be expected.
- These observations have implications for trench and drillhole spacing in defining a mineral resource base. Due to the inherent variabilities, it is anticipated that a close drillhole spacing and data density will be required for delineating Indicated and Measured Resources.
- The presence of multiple mineralized layers on RCR licenses 5 and 8 will need to be validated by mapping, trenching and drilling. Drillholes will need to be long enough to intersect multiple mineralized horizons.

**Figure 15-1**
**Informal small-scale mining sites adjacent to RCR licenses 5, 8 and 10**

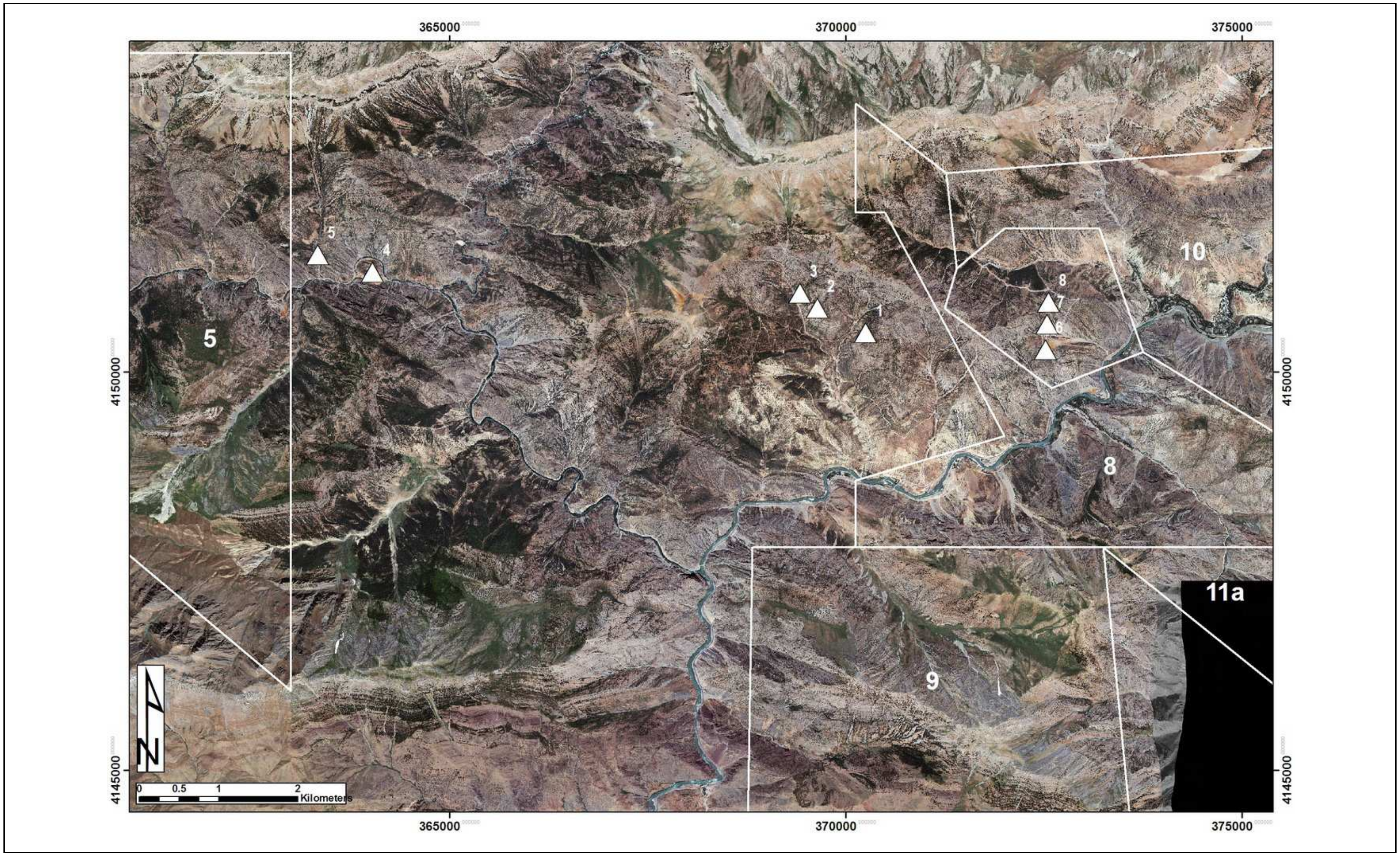


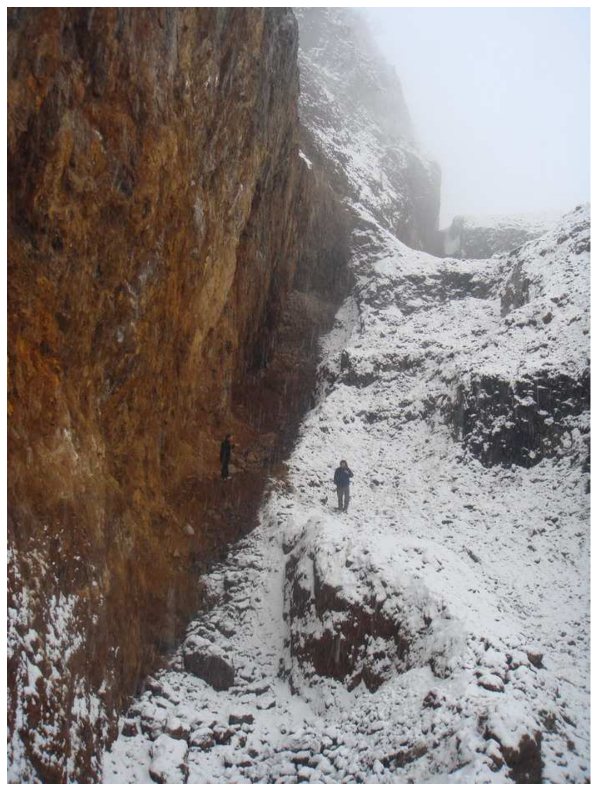
**Figure 15-2**

**Informal mining sites proximal to the RCR licenses (labelled 1-7 in Figure 15-1)**

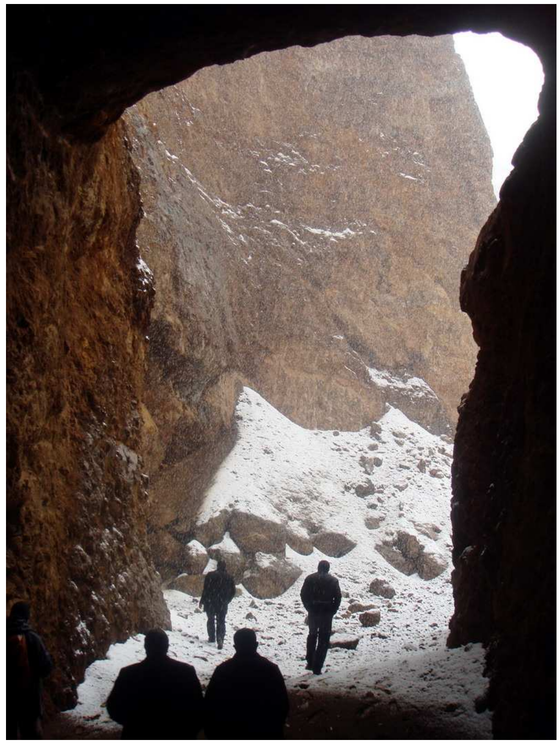
**A. Open cut workings at locality 6 in Figure 15-1**

**B. Close up of workings in A showing old Roman mining galleries**

**C. 4-5 m thick mineralized zone at locality 5. 5000 tonnes of zinc ore at an average grade of 25%Zn, 5%Pb and 15%Fe were reportedly mined from here.**



**D. 4-6 m thick zone exploited at locality 4, along strike from locality 5.**

| | |
|---|---|
|  |  |
| **E. Three mineralized layers which steepen into a possible karst structure, locality 2, Meskan Ölmez Madencilik license.** | **F. Shallow underground workings developed by Meskan Ölmez Madencilik since November 2009, locality 3** |
|  |  |
| **G. Waste dump adjacent to workings at locality 3, Meskan Ölmez Madencilik license.** | **H. Underground workings developed on a 3m thick mineralized layer at locality 2. Note thinly developed zinc mineralization above a hangingwall breccia.** |

# 16 MINERAL PROCESSING AND METALLURGICAL TESTING

Bench scale metallurgical test work was conducted on three 10 kg stockpile samples collected by RCR. The procedure for collection of these samples is discussed in section 12. These stockpiles represent material mined from the vicinity of the RCR license areas and the results therefore provide an *indication* of the likely metallurgical characteristics and parameters that can be expected in the processing of future RCR ROM material. Further test work will be necessary on representative samples collected from the RCR properties.

The test work was undertaken in South Africa under the direction of M.A. Plaskitt, a professional metallurgist, by Tangmere R&D in Uvongo, with chemical analyses by Set Point Laboratories in Johannesburg and mineralogical investigations by SGS Laboratories in Johannesburg. Check analyses were done by UIS Laboratories in Pretoria and by Mintek in Johannesburg. The results are reported in Plaskitt (2010), and an independent review of the results reported on in Meyer (2010). The findings of the test work are reported on below.

The samples comprise extensively oxidised material with the dominant zinc mineral being smithsonite (31% to 55% of sample material) and substantial amounts of hemimorphite also present (12% to 35% of sample material). Neither of these minerals is difficult to process hydrometallurgically. Approximately 6% sphalerite is present in two of the three samples, with lead present as cerrusite (5% to 6% of sample material). The ore samples ranged in grade from 25.9% to 42.9% Zn and 4.7% to 8.0% Pb. The gangue consists of iron oxide minerals, calcite, barite and quartz. The iron content varied from 3.8% to 18.8% and comprises essentially goethite and siderite weathered to limonite. Chemical analyses were conducted by XRF and ICP (OES/MS?) methods.

Smithsonite, hemi-morphite and cerrusite are relatively coarse grained and liberate between 220 and 380 µm. The goethite/limonite liberates at around 120 µm and the remaining gangue at about 200 µm.

The iron minerals showed no response to magnetic separation attempts. Oxide flotation was rejected due to the high grade of the samples, inherent inefficiencies in oxide flotation as well as likely cost. Further, the minerals liberate at too fine a size for efficient gravity separation. Cyclones and spirals were deemed to have some potential as pre-concentrators and future work should be carried out on these options.

The results of calcining test work conducted on the samples are reported as not too useful. In the latter regard it may be more productive to fume the material in Waelz kilns.

Direct acid leaching produced the following results:

- As the feed ore is fairly soft it leaches very easily in weak sulphuric acid (10 to 15%); zinc dissolution was in excess of 90% within one hour under ambient conditions. Optimisation of these leaching conditions as well as some heating should push these dissolutions into the mid-nineties. Very pleasing is the ready dissolution of hemimorphite without any silica gelling indications. Sphalerite will, however, not leach under such conditions.
- Caustic soda leach conducted on the ores gave very poor dissolution results (30%).
- The "weak" acid solution (15-20% sulphuric acid) is the favoured option as less iron will be dissolved than if stronger acid solutions are used. This fits well with the spent electrolyte, usually, obtained in zinc electrowinning operations.
- Leaching performed satisfactorily at ambient conditions; the stringent winter temperatures in Hakkari should, however, be taken into account. Steam should be made available to the leach and the purification plants.
- The study calculated the acid consumption to be about 30kg per tonne of ore treated. Lower ore grades could influence this estimate significantly.
- Although no filtration problems were experienced it will be prudent to conduct the necessary settling and filtration tests in future test work especially when higher silica containing ores are leached.
- Purification test work is not complete but should pose no serious problems. The technology is standard practise in the zinc electrowinning industry. It is important to oxidise the iron to the ferric state prior to neutralization. The ferric iron can then be removed in a variety of ways. Iron removal will assist in removing deleterious elements from the prospective electrolyte. It will, however, be necessary to check the purified solution for Cu, Co, Ni, Cd, Ge, As and Sb as these elements can seriously influence the plating of zinc. If detected these elements can be readily removed by cementation with zinc dust. Ion exchange is also a possibility for total solution purification but would have to be extensively tested especially for iron fouling of the resin. Whichever option is selected, good quality electrolyte is a prerequisite for optimum electrowinning performance.
- Impurities such as Ca, Cd, Co, Mn, Ge and As are all very low and will be removed during zinc sulphate solutions purification by ion-exchange and /or precipitation techniques. Iron (Fe) will be precipitated and filtered off by PH control which is a well-known practice.
- In addition to iron precipitation, the silica/silicate content as well as the calcium/magnesium sulphate (±60%) and barium sulphate (±3,0%) can be separately precipitated and by-products barium (Ba) and lead (Pb) further extracted.

- The environmental situation regarding the storage of acidic leach residues in Turkey is not known and needs to be clarified.

The advantages of direct acid leaching include:

- No or possibly little pre-concentration is required for this high grade feed material.
- Proven technology can be used throughout the design.
- The capacity of the plant can easily be up-scaled to treat far larger tonnages.

The risks associated with direct acid leaching include:

- Ore variability due to increased gangue material. This could result in higher acid consumption in the leach and create potential filtration issues. Stringent grade control measures will be required on the mining side. Ore blending in the plant should also be part of the design.

# 17 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

No code compliant mineral resource has been declared on any of the Hakkari licenses, nor does the current level of exploration allow for calculation of a code-compliant resource. Several reasonable potential resource scenarios have been estimated by RCR, based on limited mapping and sampling information. However, these scenarios do not at this stage have any systematic sampling data attached to them, nor any depth information available to constrain the third dimension.

# 18 OTHER RELEVANT DATA AND INFORMATION

According to Doug Taylor, CEO of RCR and a Mining Engineer by profession, it is envisaged that, pending the results of the exploration program, initial mining within the HZP will be via a number of small open pits (estimated at 5). This is likely to account for only a relatively small proportion of the ultimate resource base on the HZP. Alternatives for cost effective ore transfer from the open pits to the elevation of the valley/road will be addressed in a pre-feasibility/bankable feasibility study ("PFS/BFS"). The open pit stripping ratio cut off is estimated to be approximately 10 to 1. The bulk of the ore will in future be mined via suitable underground mining methods based on the dip, orebody thickness, and other factors.

Given the rugged terrain and mineralization outcropping at higher elevations, access to orebodies will probably be via numerous adits from suitable positions. Both the hanging-wall and footwall to mineralization on the licenses comprise very competent strata which should result in favourable mining conditions. However, the orebody itself appears to be weathered and incompetent and this will be factored into the mine planning. Observed thicknesses of zinc-lead mineralization are in the order of 2 m. However, based on information obtained from surrounding small-scale mines, the orebody width could increase to 10 m in areas. This will positively impact on the cost of mining. In shallow dipping areas the ore can be mined via mechanical bord and pillar type mining or extraction with alternative support options (including possible cemented fill). Steeply dipping orebodies i.e. +55 degrees could be mined via various mining methods relatively easily. The most appropriate mining methods will be identified during the PFS/BFS.

The Licenses transferred to the RCR-Seyitoğlu JV also include 4 Exploration Licenses with promising potential for copper, one for manganese and a number of PL's with intermittent chrome outcrops. These properties remain to be studied in detail. Exploration will be conducted on these licenses according to priority over the next two years. RCR envisage the HZP to serve as a springboard to other project advancement, including the copper and manganese interests.

Over and above these additional licenses, a copper-bearing vein system developed immediately north of license 7 is reported to extend onto license 7. Exploration potential other than zinc plays therefore exists on the HZP, and should be investigated through systematic exploration.

# 19 INTERPRETATION AND CONCLUSIONS

The non-sulphide zinc-lead deposits and occurrences within the Hakkari project area are considered to represent supergene weathered derivatives of primary Mississippi Valley Type (MVT) zinc-lead sulphide deposits. These deposits and occurrences extend intermittently over an east-west strike distance of approximately 60 km, and are hosted within a platform carbonate sequence preserved on the northern margin of the Arabian Platform within a fold and thrust belt known as the Border Folds.

In comparison, a series of carbonate-hosted mixed oxide-sulphide zinc-lead deposits are known from the 1 600 km long Zagros fold and thrust belt located in adjacent Iran. The Zagros belt represents the lateral extension of the Border Folds terrane in south-eastern Turkey. The most notable deposit within the Zagros belt is the high grade oxide-sulphide Angouran operation. The existence of this zinc-lead belt represents further evidence for the potential to define a number of potentially significant and economic oxide and mixed oxide-sulphide zinc-lead deposits in south-eastern and southern Turkey.

Although stratabound on a regional scale, deposit-scale mineralization in the Hakkari area is localized by geological features such as reef complexes, breccias, paleokarsts, depositional margins near carbonate-shale contacts, and faults. Within these settings, mineralization ranges from zones of massive replacement, to open space filling of breccias and fractures, to disseminated clusters that occupy primary pore space (Figure 5-1). Mineralization occurs as both stratabound and cross-cutting highly irregular zones with consequent complex geometries. High grade smithsonite, hemimorphite and hydrozincite dominant zones can be distinguished from more iron-rich and variably leached lower grade zones. The iron content varies significantly both within the district and on a deposit scale, ranging from iron-poor zinc gossans, to low-Fe high-Zn smithsonite dominant zones to leached and high-Fe gossanous zones.

Recent small-scale mining has focussed on high-grade mineralization, as was confirmed by an SGS inspection in December 2007 of 3 stockpiles comprising 12 400 tonnes at grades between 20-27% Zn and 4.5-7.3% Pb. According to RCR and the Seyitoğlu family, at least 400 000 tonnes of non-sulphide zinc ore at an approximate average grade of 25% Zn and 4% Pb has been mined from the area between Licenses 5 and 8, 9, 10 over the past 5 years, and sold in an un-beneficiated state. Of this tonnage, approximately 85 000 tonnes was mined from five small operations in 2009 (Schaffalitzky, 2009).

Although the region is known for small-scale mining, there has to date been little to no modern systematic exploration on a larger scale aimed at defining code-compliant Mineral Resources and Reserves. Minor investigations, including drilling of two holes, was undertaken by Teck Cominco, however no records are currently available.

The potential for defining a new and modern zinc mining district within the region is regarded as significant. This is concluded on the basis of several small-scale informal mining operations in the Hakkari area which are exploiting high grade non-sulphide zinc deposits, as well as numerous mineralized exposures observed by MSA within the RCR licenses.

Based on adjacent small-scale mining activities and on RCR exploration results to date, Licenses 5 and 8 present the best opportunities for delineating zinc mineralized zones and for fast tracking parts of these zones towards compliant mineral resource estimates.

Owing to the distribution of high grade zones within an overall east-west striking mineralized unit, future formal mining operations may take the form of multiple variably sized operations with a centralised processing facility. The various licenses in which RCR has an interest contain numerous zinc-lead opportunities, and represent a sizeable land position covering approximately 15 000 ha.

Potential also exists for discovery of porphyry copper ± gold ± molybdenum deposits in south-eastern Turkey and within other licenses held by RCR. The Tethyan belt within Pakistan, Iran and Turkey contains a number of porphyry deposits of variable size and grade. The key identifiers for porphyry deposits are the presence of felsic to intermediate intrusions and associated large-scale alteration systems.

# 20 RECOMMENDATIONS

The license areas in which RCR has an interest contain significant potential for the delineation of mineral resources through the exploration and evaluation of known zinc-lead mineralization. A phased and prioritized exploration program is recommended in order to identify and delineate the best zinc opportunities and to confirm the geometry, size and grade of these deposits. RCR wishes to delineate an initial resource of 3 000 000 tonnes to be mined at an initial rate of 150 000 tpa.

Continuing exploration should be carried out with the objective of:

- Priority 1: Immediate follow-up exploration work programs on Licenses 5 and 8 focused on delineating the known zinc-lead mineralization and the dip and strike extensions to this.
- Priority 2: Ongoing regional exploration focused on delineating additional zinc-lead opportunities within the district, for future testing.

The recommended work program and budget is in line with that part of the RCR Business Plan and Budget outlined in **Appendix 3** that relates to exploration.

### 20.1.1 Priority 1: Delineation and evaluation of known zinc-lead mineralization on Licenses 5 and 8

Of the various license areas visited, it is clear that licenses 5 and 8 (and continuation immediately east of 8) represent the best current opportunities for immediate follow up exploration. This conclusion is largely based on the presence of existing small-scale high grade workings on these properties. License 5 is regarded as the higher priority as zinc mineralization has been traced intermittently over several kilometres. It is therefore recommended that an accelerated exploration program be conducted on licenses 5 and 8, with an initial focus on license 5, in order to delineate a mineral resource base within the shortest time frame.

The following approach is recommended to fully define and evaluate these opportunities.

**Phase 1:**

- Set up a standardized and auditable project **database** to accommodate mapping, sampling and assay data. Integrate these data into a geospatial (GIS) database. Update standard operating procedures (SOPs) for the project.

- Field **mapping** using high resolution QuickBird satellite imagery as a base map. Emphasis on mapping lithology, sedimentary facies, mineralization, and structure.
- Prospecting/identification of zinc bearing horizons and extensions to known mineralization. Disseminated mineralization may indicate proximity to potential orebodies. Use should be made of "zinc zap" and portable XRF technology such as NITON or Innov-X, to provide an initial indication of the presence and qualitative grade of zinc mineralization.
- **Trenching** of mapped target horizons:
    - 50 m spaced trenches across existing workings and immediate extensions to these, with trench spacing opening up to 100 m away from these zones.
    - Trenches orthogonal to strike and extending 10 m into hanging wall and footwall.
    - Detailed mapping and sampling of trenches.
- **Sample analysis** and integration of results.
- Ongoing capture and integration of all data and results into the database and GIS.
- Interpretation of results and identification of drill targets.
- Planning of a **drilling program** on defined section lines, in order to test depth continuity, orebody geometry, and potential for mixed oxide-sulphide and sulphide mineralization at depth.
- Execution of drilling, sampling, assay and QAQC program.
- Integration and assessment of data and results.
- Geological model and initial Mineral Resource estimate.

Following receipt of Phase 1 results, RCR plan to undertake a pre-feasibility study (PFS). Table 20-1 summarises the cost estimates for the exploration program and does not include PFS or BFS study costs. These are reflected in the RCR Business Plan and Budget contained in Appendix 3.

**Phase 2:**

- The extent of the Phase 2 work program will be dependent on the results of Phase 1. The cost estimate below presents a likely scenario based on assumed positive results for Phase 1.
- Infill drilling to upgrade Mineral Resource category; extension drilling to broaden Mineral Resource base.

- Sampling, assay and QAQC program.
- Integration and assessment of data and results.
- Update geological model and Mineral Resource estimates.

It is important that the exploration process follows a phased approach, is results-driven and is designed to create value. The triggering of Phase 2 is contingent on receiving positive results for Phase 1. Adoption of best practice procedures through a documented standard procedures manual is essential, to ensure that all work is executed correctly and is auditable.

### 20.1.2 Priority 2: Regional target generation

Ongoing regional exploration should take place in parallel with the Priority 1 work program outlined above:

- Lithological and structural mapping to define target stratigraphy and target facies. Identification of mineralization controls such as reef complex, breccia, paleokarst features, depositional margins near carbonate-shale contacts, faulting and basement highs, and overlying hydrothermal seals (e.g. shale horizon).
- Identification and preliminary "mapping" by GPS of zinc-bearing horizons and their strike extent through reconnaissance prospecting.
- Identification and securing of additional ground, with an emphasis on east-west extensions and on the southern belt towards Iraq, which has been duplicated by thrusting.
- Stream sediment survey(s) in new areas, as required.
- Identification of targets for detailed follow-up exploration.

The proposed work program and cost estimate is summarized in Table 20-1.

**Table 20-1**
**Recommended Work Program Cost Estimate**

**PRIORITY 1: LICENSES 5 AND 8 WORK PROGRAMS (2010 - 2011)**

| **Phase 1 (10 months)** | **USD** |
|---|---|
| Database and GIS design; best practise procedures manual | 20,000 |
| Field mapping and zinc "prospecting" | 60,000 |
| Trenching and channel sampling | 40,000 |
| Trench sample assays + QAQC | 84,000 |
| Database management | 20,000 |
| Core drilling, logging and sampling program (8,000 m) | 1,600,000 |
| Assay program | 115,000 |
| Database management | 30,000 |
| Geological model | 40,000 |
| Initial Mineral Resource estimate | 30,000 |
| ***Subtotal*** | ***2,039,000*** |
| **Phase 2 (11 months)** | |
| Mapping, trenching, channel sampling, assay | 100,000 |
| Core drilling, logging and sampling program (12,000 m) | 2,400,000 |
| Assay program | 180,000 |
| Database management | 40,000 |
| Updated geological model | 40,000 |
| Updated Mineral Resource estimate | 30,000 |
| ***Subtotal*** | ***2,790,000*** |
| **TOTAL** | **4,829,000** |

**PRIORITY 2: REGIONAL TARGET GENERATION (2010 - 2011)**

| **Regional Target Generation** | **USD** |
|---|---|
| Reconnaissance mapping and prospecting | 60,000 |
| Sampling and assay | 60,000 |
| Interpretation and target identification | 50,000 |
| **TOTAL** | **170,000** |

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## 22 DATE AND SIGNATURE PAGE

This report titled "NI43-101 Technical Report on the Hakkari Zinc Project" with an effective date of March 28, 2010; prepared by The MSA Group on behalf of NiCo Mining Limited dated March 28, 2010, was prepared and signed by the following author:

Dated at Johannesburg, South Africa
March 28, 2010

Mike Robertson
MSc; PrSciNat; MSAIMM
Principal Consultant
The MSA Group

## APPENDIX 1:

### Glossary and Definitions of Terms Used

| | |
|---|---|
| Alpine Himalyan Orogenic Belt (AHOB) | The major Mesozoic to Cenozoic orogenic belt stretching from Spain in the West to Southeast Asia in the East |
| Alteration | Changes in the mineralogical composition of a rock as a result of physical or chemical processes such as weathering or penetration by hydrothermal fluids |
| Anastomose/ing | (of bedding) Changes in strike direction imparting a wavy appearance to mapped units in plan view |
| Anatolides | A domain of the AHOB bounded in the north by the Pontides and in the south by the Taurides |
| Antiform | A fold structure which is convex upwards |
| Arabian Platform | The northern extent of the Arabian-Nubian shield, comprising predominantly platform (shallow marine) carbonates |
| Artisanal | Exploited at a local level, generally by manual labour |
| ASTER | ASTER (Advanced Spaceborne Thermal Emission and Reflection Radiometer) is one of five remote sensory devices on board the Terra satellite launched into Earth orbit by NASA in 1999. The instrument has been collecting surficial data since February 2000, and provides high-resolution images of the Earth in 15 bands. ASTER data are used to used primarily in geology to map alteration patterns and elevation. |
| Beneficiation | The process by which material is upgraded to achieve higher concentrations |
| BFS | Bankable Feasibility Study: a comprehensive financial assessment of a planned mining operation, carried out to levels required to obtain financing for the operation |
| Bitlis thrust | A major thrust structure that juxtaposes the Taurides in the north and the Border Folds region in the south |
| Border Fold region | The deformed northern margin of the Arabian Platform |
| Bass | A zinc-copper ± tin alloy |
| Breccia | A rock composed of angular rock fragments cemented within a fine-grained matrix |
| Ca | Calcium |
| Cu | Copper |
| Cakmak Avukatlik (Cakmak) | A legal firm in Ankara, Turkey |
| Clamine | French for non-sulphide zinc ore |
| Chalcopyrite | A bronze coloured copper iron sulphide mineral ($CuFeS_2$) |
| Chert | A silica-rich, fine-grained, crypotcrystalline sedimentary rock |
| Clastic | Composed of mineral grains or fragments derived from pre-exisiting rock and transported from their place of origin |
| Conjugate | (of geological structures) In which both sets of structures show the same strike but opposite dip. |
| Cretaceous | The geological period dating 145.5 ± 4 to 65.5 ± 0.3 million years ago. The end of the Cretaceous marks the end of the Mesozoic era and the commencement of the Cenozoic era |
| Cryptocrystalline | Cryptocrystalline is a rock texture which is so finely crystalline, being made up of such minute crystals, that its crystalline nature is only vaguely revealed even at microscopic scales |
| Dextral | Inclined or shifted to the right |
| Diachronous | (refers to a sedimentary rock formation) In which apparently similar material varies in age from place to place |
| Dolomitic | Comprising the mineral dolomite, which is a magnesium-calcium carbonate |
| Epithermal | (refers to deposits) That form in the near-surface environment, from hydrothermal systems typically within 1.5 km of the Earth's surface |
| Facies | A distinctive rock unit that forms under certain conditions of sedimentation, reflecting a particular process or environment. |
| Fault | A planar rock fracture which shows evidence of relative movement |
| Fe | Iron |
| Fissile | (refers to rocks) That split readily into thin sheets |
| Fold | When originally flat and planar surfaces, such as sedimentary strata, are bent or curved as a result of plastic (ductile) deformation |

| | |
|---|---|
| Footwall | The rockmass underlying a mineralised horizon |
| Franklinite | A Zn, Fe and Mn oxide with variable proportions of Zn, Fe and Mn: $(Zn, Fe, Mn)(Fe, Mn)_2O4$ |
| Galena | Lead-sulphide (PbS) |
| Galman | Polish for non-sulphide zinc ore |
| Galmei | German for non-sulphide zinc ore |
| GDEM | Global Digital Elevation Model, derived from ASTER imagery |
| GIS | Geographic Information System (a computer-based system for managing and displaying geographical data) |
| Goethite | An iron-bearing hydroxide mineral, typical of soil and low temperature environments: FeO(OH) |
| Gossan | Intensely oxidized, weathered or decomposed rock, usually the upper and exposed part of an ore deposit or mineral vein. |
| Hangingwall | The rockmass underlying a mineralised horizon |
| Hematite | A deep red or steel grey iron oxide ($Fe_2O_3$) |
| Hemimorphite | A hydrous zinc-silicate with the formula $Zn_4Si2O_7(OH)_2.H2O$ |
| Hiatus/es | A period of non-deposition within a sedimentary sequence/s |
| Hydrothermal | Relating to or caused by a hot watery fluid |
| Hydrozincite | A zinc-carbonate-hydroxide compound with the formula $Zn_5(CO_3)_2(OH)_6$ |
| Hypogene | The original (primary) sulphide mineralisation |
| HZP | Hakkari Zinc Project |
| ICP-AES | Inductively coupled plasma atomic emission spectroscopy (ICP-AES), also referred to as inductively coupled plasma optical emission spectrometry (ICP-OES), is an analytical technique used for the detection of trace metals |
| JERS | Japanese Earth Resources satellite, used to map topography and structure of the Earth's surface |
| Joint | A fracture in a rock across which there has been no apparent movement |
| Jurassic | The period in geological time spanning 208 to 146 million years ago |
| Karst | Dissolution of carbonate bedrock by circulating waters (meteoric and ground) to create cavitities and irregularities in the bedrock |
| Lapis calaminarius | Latin for non-sulphide zinc ore |
| Massive | (refers to rocks) without internal structure or layers and homogeneous in composition |
| Mesozoic | A period of geological history dating from about 225 to 65 million years ago |
| Mineralization | The process by which minerals are introduced into a rock resulting in the formation a mineral deposit |
| Mississippi Valley Type (MVT) | Carbonate-hosted lead-zinc deposits, named after the Mississippi River Valley where many such deposits are found |
| Mt | Million tonnes |
| Neritic | As in neritic zone, also called the Coastal Ocean and Sublittoral zone, is the part of the ocean extending from the low tide mark to the edge of the continental shelf, with a relatively shallow depth extending to about 200 meters |
| Orogenic | Relating to the formation of structures such as folds and thrusts during a period of mountain-building |
| Oxidation | The process of combining with oxygen ions. A mineral that is exposed to air may undergo oxidation as a form of chemical weathering. |
| Oxide | A mineral comprising oxygen and additional, usually metallic, element/s |
| Paleogene | The geological period that began 65.5 ± 0.3 and ended 23.03 ± 0.05 million years ago and comprises the first part of the Cenozoic Era |
| Paleokarst | Ancient karst phenomena that existed at the time of mineralisation or deposition (see *karst* above) |
| Paleotopography | Topography that existed at the time of sedimentation/mineralisation |
| Pb | Lead |
| PFS | Prefeasibility study: investigation of several scenarios to investigate the potential financial return of a planned mine |

| | |
|---|---|
| Platform carbonates | A carbonate deposit that was formed through the accumulation of calcareous material through the skeletons of animals or through microbial organisms that induce carbonate precipitation through their metabolism |
| Pontides | The northernmost orogenic domain of the AHOB |
| Porphyry | (as in porphyry systems) are potential (usually copper) orebodies which are associated with porphyritic intrusive rocks and the fluids that accompany them during the transition and cooling from magma to rock. Circulating surface water or underground fluids may interact with the plutonic fluids. Successive envelopes of hydrothermal alteration typically enclose a core of ore minerals disseminated in often stockwork-forming hairline fractures and veins. |
| Precambrian-Cambrian boundary | The major geological boundary indicating the appearance of the first complex life-forms on Earth (dated to approximately 542 million years before present) |
| QAQC | Quality Assurance, Quality Control |
| RCRZ | Red Crescent Resources Zinc, formally known as RCR Seyitoğlu Cinko Madencilik A.S |
| ROM | Run-of-mine i.e. the unbeneficiated ore extracted from a mine |
| Sauconite | a zinc-bearing clay mineral belonging to the smectite group |
| Sedimentary | (refers to sedimentary rock) - a type of rock that is formed by sedimentation of material at the Earth's surface and within bodies of water. Sedimentation is the collective name for processes that cause mineral and/or organic particles (detritus) to settle and accumulate or minerals to precipitate from a solution. |
| Shear | Deformation resulting from stresses that cause surfaces to slide against each other parallel to their plane of contact |
| Smithsonite | Znc carbonate: $ZnCO_3$ |
| Sphalerite | Zinc sulphide: ZnS |
| Stratiform | (referring to a deposit) a deposit that occurs within a specific geological horizon i.e. is stratigraphically controlled |
| Stratigraphy | The layering of successive rock units due to sedimentary or volcanic processes |
| Subduction | The process that takes place at convergent boundaries by which one tectonic plate moves under another tectonic plate, sinking into the Earth's crust, as the plates converge |
| Sulphide | A mineral containing sulphur with a metal or semi-metal, e.g. pyrite |
| Supergene | The alteration (and frequent enrichment) of a mineral deposit due to the infiltration of meteoric waters and associated oxidation and chemical weathering |
| Synform | A fold structure which is concave upwards |
| Syngenetic | Mineralisation occurred simultaneously to the rock-forming process |
| Taurides | A domain of the AHOB, bounded to the north by the Anatolides and to the south by the Border folds region |
| Tectonic | Relating to forces involved in or features resulting from deformation on a large scale |
| Tethyan | The orogenic belt formed when the Cimmerian Plate was subducting under eastern Laurasia, around 200 million years ago, in the Early Jurassic. The Tethyan Trench extended at its greatest during Late Cretaceous to Paleocene, from what is now Greece to the Western Pacific Ocean. |
| Thrust/ed | A shallow-dipping reverse fault, where the hangingwall is transported over the footwall due to compressional tectonic forces |
| Transcurrent | (fault) a steeply dipping fault characterised by horizontal displacement only |
| Triassic | The geologic period that extended from about 250 to 200 million years ago and was the first period of the Mesozoic Era |
| Vein | A filled fracture in a rock, resulting from the precipitation of quartz or carbonate minerals from a fluid |
| Vergence | Structural asymmetry that indicates the direction of thrusting |
| Willemite | A zinc silicate with the formula $Zn_2SiO_4$ |
| XRF | X-ray flourescence, a technique widely used for elemental determinations |
| Zagros fold and thrust belt | A major Mesozoic to Cenozoic orogenic belt extending from Turkey in the West to the UAE in the East |
| Zinc zap | An indicator solution that is sprayed on a rock as a qualitative colorimetric test for zinc concentration |
| Zn | Zinc |

# APPENDIX 2:

## Certificate of Qualified Person

## CERTIFICATE of QUALIFIED PERSON

I, Michael James Robertson, PrSciNat; MSAIMM do hereby certify that:

1. I am Principal Consulting Geologist of:

   The MSA Group
   20B Rothesay Avenue,
   Craighall Park,
   Johannesburg,
   2196.

2. I graduated with a degree in BSc Eng (Mining Geology) from the University of the Witwatersrand in 1985. In addition, I obtained an MSc in Structural Geology from the University of the Witwatersrand in 1989.
3. I am a member of the South African Institute of Mining and Metallurgy, the Geological Society of South Africa, the Society of Economic Geologists and a Professional Natural Scientist (PrSciNat) registered with the South African Council for Natural Scientific Professions.
4. I have worked as a geologist for a total of 22 years since my graduation from university.
5. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
6. I am responsible for the preparation of all sections of the technical report titled “NI43-101 Technical Report on the Hakkari Zinc Project” and dated March 28, 2010 (the “Technical Report”) relating to the Hakkari properties. I visited the Hakkari properties between 26 July and 7 August 2009 for 12 days and between 16 and 29 March 2010 for 13 days.
7. I have not had prior involvement with the property that is the subject of the Technical Report.
8. I am independent of the issuer applying all of the tests in section 1.4 of National Instrument 43-101.
9. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
10. As of the date of this certificate, to the best of my knowledge, information and belief, the technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.
11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.[1]

Dated this 28th Day of March, 2010.

Michael James Robertson

## APPENDIX 3:

### RCR Business Plan and Budget

| SUMMARY IN US $ X 1000 | | | | |
|---|---|---|---|---|
| | 2010 | 2011 | 2012 | Total |
| Start-up CAPEX | 1069 | | | 1069 |
| Personnel cost | 1565 | 1929 | 1952 | 5446 |
| Operating costs | 713 | 784 | 790 | 2287 |
| Exploration | 2765 | 5076 | 3485 | 11326 |
| Met PFS & BFS | 1900 | 4800 | 6000 | 12700 |
| Business development | 2000 | 2100 | 2500 | 6600 |
| **GRAND TOTAL** | **10012** | **14689** | **14727** | **39428** |

**Notes**

**1) No allowance made for Capital for project construction**

**2) Budget assumes an aggressive growth strategy and can be adjusted downwards**

**3) Budget assumes that the Cu opportunities identified are top quality and will be progressed agressively up the value curve**

**4) Budget assumes that the Maras Mn opportunity will yeild additional resources via exploration to justify a small scale gravity seperation plant as the initial phase**

**5) Business development budget included that we continuously evaluate and secure TOP quality opportunities**

| Start-up CAPEX in US $ X 1000 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | APRIL | MAY | JUNE | JULY | AUG | SEPT | OCT | NOV | DEC | TOTAL 2010 |
| **Toronto office** | | | | 15 | | | | | | 15 |
| **Field office (Hakkari)** | 15 | | | | | | | | | 15 |
| **Ankara office** | 15 | | | | | | | | | 15 |
| **Twin-cab 4 x 4 (3)** | 120 | 60 | | | | | | | | 180 |
| **Computers, phones, fax etc** | 10 | 10 | | | 5 | 5 | | | | 30 |
| **Field equipment** | 5 | | 2 | | | | | | | 7 |
| **Geological modelling software** | | 25 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 32 |
| **Geological database software** | 10 | | | | | | | | | 10 |
| **Financial accounting** | | 10 | | | | | | | | 10 |
| **Software (SAP)** | | 20 | | | | | | | | 20 |
| **Server** | | 25 | | | | | | | | 25 |
| **Core-shed** | 20 | 40 | | | | | | | | 60 |
| **Purchase Licence 5** | 600 | | | | | | | | | 600 |
| **Miscellaneous** | 40 | 10 | | | | | | | | 50 |
| | | | | | | | | | | |
| **TOTAL** | **835** | **200** | **3** | **16** | **6** | **6** | **1** | **1** | **1** | **1069** |

THE MSA GROUP

| Personnel (TCC) in US $ X 1000 | | | | | | | | | | | 2010 | | | | | 2011 | | | 2012 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ** | APRIL | MAY | JUNE | JULY | AUG | SEPT | OCT | NOV | DEC | TOTAL | 1stQ | 2ndQ | 3rd Q | 4thQ | TOTAL | 1st H | 2nd H | TOTAL | GRAND TOTAL |
| **Chairman** | 40 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 130 | 30 | 30 | 30 | 30 | 120 | 60 | 60 | 120 | 370 |
| **CEO** | 60 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 195 | 45 | 45 | 45 | 45 | 180 | 90 | 90 | 180 | 555 |
| **CFO** | | | | | 10 | 10 | 10 | 10 | 10 | 10 | 60 | | | | | | | | | |
| **RCR non exec directors (2)** | | | | | 20 | 20 | 20 | 20 | 20 | 20 | 120 | | | | | | | | | |
| **RCR/Seyit exec directors (2)** | | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 90 | 30 | 30 | 30 | 30 | 120 | 60 | 60 | 120 | 330 |
| **Chief Geologist** | 36 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 144 | 36 | 36 | 36 | 36 | 144 | 72 | 72 | 144 | 432 |
| **Project Managers (4)** | | | 9 | 18 | 18 | 18 | 18 | 18 | 27 | 27 | 153 | 81 | 108 | 108 | 108 | 405 | 216 | 216 | 432 | 990 |
| **Financial manager** | | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 72 | 27 | 27 | 27 | 27 | 108 | 54 | 54 | 108 | 288 |
| **Accountants (2)** | | 3 | 3 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 48 | 18 | 18 | 18 | 18 | 72 | 36 | 36 | 72 | 192 |
| **PA's (2)** | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 27 | 9 | 9 | 9 | 9 | 36 | 18 | 18 | 36 | 99 |
| **Geologists (4)** | | 8 | 24 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 256 | 96 | 96 | 96 | 96 | 384 | 192 | 192 | 384 | 1024 |
| **Geological scouts / general workers (10)** | | 5 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 85 | 30 | 30 | 30 | 30 | 120 | 60 | 60 | 120 | 325 |
| **Drivers (3)** | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 27 | 9 | 9 | 9 | 9 | 36 | 18 | 18 | 36 | 99 |
| **Cleaner / cook (2)** | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 18 | 6 | 6 | 6 | 6 | 24 | 12 | 12 | 24 | 66 |
| **Consulting metallurgist** | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 72 | 24 | 24 | 24 | 24 | 96 | 48 | 48 | 96 | 264 |
| **Contingency 5%** | | 4 | 6 | 7 | 9 | 8 | 8 | 8 | 9 | 9 | 68 | 20 | 20 | 22 | 22 | 84 | 40 | 40 | 80 | 232 |
| | | | | | | | | | | | | | | | | | | | | |
| **TOTAL** | **136** | **83** | **124** | **145** | **177** | **176** | **176** | **176** | **186** | **186** | **1565** | **461** | **488** | **490** | **490** | **1929** | **976** | **976** | **1952** | **5446** |

** Salary payments due for CEO and Chairman for past 4 months and for Chief Geologist for past 3 months

| Operating costs in US $ X 1000 | | | | | | | | | | 2010 | | | | | 2011 | | | 2012 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | APRIL | MAY | JUNE | JULY | AUG | SEPT | OCT | NOV | DEC | TOTAL | 1stQ | 2ndQ | 3rd Q | 4thQ | TOTAL | 1st H | 2nd H | TOTAL | GRAND TOTAL |
| **Office rental / utilities / others Ankara** | 3 | 3 | 33 | 3 | 3 | 3 | 3 | 3 | 3 | 57 | 9 | 9 | 9 | 9 | 36 | 18 | 18 | 36 | 129 |
| **Office rental / utilities / others Hakkari** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 18 | 7 | 7 | 7 | 7 | 28 | 15 | 15 | 30 | 76 |
| **Toronto office **** | | | | 27 | 27 | 27 | 27 | 27 | 27 | 162 | 81 | 81 | 81 | 81 | 324 | 162 | 162 | 324 | 810 |
| **Food / maintainence (field)** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 27 | 9 | 9 | 9 | 9 | 36 | 18 | 18 | 36 | 99 |
| **Communications (cell etc)** | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 16 | 6 | 6 | 6 | 6 | 24 | 12 | 14 | 26 | 66 |
| **Stationary and office** | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 16 | 6 | 6 | 6 | 6 | 24 | 12 | 14 | 26 | 66 |
| **Legal, IPO, listing** | | 60 | 60 | | | | | | | 120 | | | | | | | | | |
| **Other** | | | | 3 | 3 | 3 | 3 | 3 | 3 | 18 | 9 | 9 | 9 | 9 | 36 | 18 | 18 | 36 | 90 |
| **Shared services** | 8 | 8 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 37 | | | | | | | | | |
| **Flights - international** | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 72 | 24 | 24 | 24 | 24 | 96 | 48 | 48 | 96 | 264 |
| **Flights - domestic** | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 45 | 20 | 20 | 20 | 20 | 80 | 40 | 40 | 80 | 205 |
| **Travel and sustinence** | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 32 | 10 | 10 | 10 | 10 | 40 | 20 | 20 | 40 | 112 |
| **Audit** | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 63 | 6 | 6 | 6 | 6 | 24 | 12 | 12 | 24 | 111 |
| **Contingency 5%** | 2 | 5 | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 30 | 9 | 9 | 9 | 9 | 36 | 18 | 18 | 36 | 102 |
| | | | | | | | | | | | | | | | | | | | |
| **TOTAL** | **44** | **107** | **134** | **72** | **72** | **71** | **71** | **71** | **71** | **713** | **196** | **196** | **196** | **196** | **784** | **393** | **397** | **790** | **2130** |

| EXPLORATION COST IN US $ X1000 | | | | | | | | | | 2010 | | | | | 2011 | | | 2012 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | APRIL | MAY | JUNE | JULY | AUG | SEPT | OCT | NOV | DEC | TOTAL | 1stQ | 2ndQ | 3rd Q | 4thQ | TOTAL | 1st H | 2nd H | TOTAL | GRAND TOTAL |
| | | | | | | | | | | | | | | | | | | | |
| **HAKKARI ZINC** | | | | | | | | | | | | | | | | | | | |
| **DRILLING (12 holes, 2010; 20 holes 2011 and 25 holes 2012)** | | | | | | | | | | | | | | | | | | | |
| **Mobilisation** | | 5 | | 10 | | | | | | 15 | | 40 | | | 40 | 40 | | 40 | 95 |
| **Hole to hole move** | | 1 | 1 | 3 | 3 | 3 | 3 | 3 | | 16.1 | | 15 | 15 | | 30 | 15 | 15 | 30 | 76 |
| **Drilling @ US$150 per m** | | 45 | 45 | 90 | 135 | 135 | 135 | 135 | | 720 | | 600 | 600 | | 1200 | 650 | 650 | 1300 | 3220 |
| **Downhole survey cost** | | | 4 | 8 | 10 | 10 | 10 | 10 | | 50.7 | | 45 | 45 | | 90 | 50 | 50 | 100 | 241 |
| **Demobalisation** | | | | | | | | 12 | | 12 | | | 40 | | 40 | | 40 | 40 | 92 |
| | | | | | | | | | | | | | | | | | | | |
| **Exploration sampling** | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | 35 | | 30 | 30 | | 60 | 10 | 5 | 15 | 110 |
| **Trenching sampling** | | | 5 | 5 | 5 | 5 | 5 | 5 | | 30 | | 25 | 25 | | 50 | 15 | 15 | 30 | 110 |
| **Drill-core sampling** | | | 15 | 20 | 20 | 25 | 25 | 25 | | 130 | | 150 | 150 | | 300 | 160 | 160 | 320 | 750 |
| | | | | | | | | | | | | | | | | | | | |
| **Access road development** | 50 | 100 | 100 | 100 | 100 | 100 | | | | 550 | 100 | 400 | 400 | | 900 | 500 | 300 | 800 | 2250 |
| **Licence maintanence** | 8 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 56 | 15 | 15 | 15 | 15 | 60 | 35 | 35 | 70 | 186 |
| **Fuel** | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 34 | 15 | 15 | 15 | 15 | 60 | 20 | 20 | 40 | 134 |
| **Other** | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 90 | 30 | 40 | 40 | 40 | 150 | 50 | 50 | 100 | 340 |
| **SUB TOTAL** | 71 | 175 | 195 | 261 | 298 | 303 | 203 | 215 | 20 | 1739 | 160 | 1375 | 1375 | 70 | 2980 | 1545 | 1340 | 2885 | 7604 |
| | | | | | | | | | | | | | | | | | | | |
| **MANGANESE OPPORTUNITIES** | | | | | | | | | | | | | | | | | | | |
| **Field mapping** | 4 | 6 | 6 | 8 | 8 | 8 | 8 | 8 | 5 | 61 | 25 | 25 | 25 | 25 | 100 | 30 | 30 | 60 | 221 |
| **Exploration sampling** | 1 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 18.5 | 10 | 10 | 20 | 20 | 60 | 30 | 30 | 60 | 139 |
| **Drilling** | | | 50 | 50 | 75 | 75 | 100 | 100 | 50 | 500 | 50 | 50 | 50 | 50 | 200 | 50 | 50 | 100 | 800 |
| **Drill-core sampling** | | | 2 | 2 | 3 | 3 | 4 | 4 | 2 | 20 | | | | | | | | | 20 |
| **SUB TOTAL** | 5 | 8 | 60 | 63 | 89 | 89 | 115 | 115 | 59 | 600 | 85 | 85 | 95 | 95 | 360 | 110 | 110 | 220 | 1180 |
| | | | | | | | | | | | | | | | | | | | |
| **COPPER OPPORTUNITIES** | | | | | | | | | | | | | | | | | | | |
| **Consultant** | | | 20 | 20 | | | | | | 40 | 40 | | | | | 40 | | | 40 |
| **Remote sensing** | | | 50 | 20 | | 20 | | | | 90 | | | | | | | | | 90 |
| **Trenching sampling** | | | 3 | 3 | 3 | 3 | 3 | 3 | | 15 | 5 | 5 | 5 | 5 | 20 | 10 | 10 | 20 | 55 |
| **Exploration sampling** | | | 3 | 3 | 3 | 3 | 3 | 3 | | 18 | 2 | 2 | 2 | 2 | 8 | 5 | 5 | 10 | 36 |
| **Drilling** | | | | | | | 50 | 50 | | 100 | | 150 | | 150 | 300 | 200 | 50 | 250 | 650 |
| **Drill-core sampling** | | | | | | | 7 | 7 | | 14 | | 30 | | 30 | 60 | 40 | 10 | 50 | 124 |
| **Modelling** | | | | | | | 50 | 50 | 50 | 150 | | | 50 | | 300 | 50 | | 50 | 500 |
| **SUB TOTAL** | | | 76 | 46 | 6 | 26 | 113 | 113 | 50 | 427 | 47 | 187 | 57 | 187 | 688 | 345 | 75 | 380 | 1495 |
| | | | | | | | | | | | | | | | | | | | |
| **TOTAL** | 76 | 182 | 330 | 369 | 392 | 417 | 430 | 442 | 129 | 2765 | 424 | 1919 | 1679 | 634 | 5076 | 2000 | 1525 | 3485 | 20557 |

| **Project** | December 2010 | 2011 |
|---|---|---|
| **Hakkari Zinc** | 3 mt, 10% measured, 20% indicated | 7 mt, 15% measured, 30% indicated |
| **Manganese** | Exploitation of existing mines 7 target generated | 300 kt by July 2011; 1mt by Dec 2011 |
| **Copper** | Target generation and prioritisation | Detailed exploration |

| PFS and BFS Metallurgical Studies in US$ X 1000 | | | | 2010 | | | | | 2011 | | | 2012 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2ndQ | 3rd Q | 4thQ | TOTAL | 1stQ | 2ndQ | 3rd Q | 4thQ | TOTAL | 1st H | 2nd H | TOTAL | GRAND TOTAL |
| **HAKKARI ZINC** | | | | | | | | | | | | | |
| **PFS Pilot plant test work** | 50 | 250 | | 300 | | | | | 0 | | | 0 | |
| **PFS studies** | 200 | 400 | 600 | 1200 | | | | | 0 | | | 0 | |
| **BFS Pilot plant test work** | | | | | 200 | | | | 200 | | | 0 | |
| **BFS for 35 ktpa & then 100ktpa LME Zn** | | | | | 500 | 1000 | 1000 | 1500 | 4000 | 2000 | 2500 | 4500 | |
| | | | | | | | | | | | | | |
| **SUB TOTAL** | 250 | 650 | 600 | 1500 | 700 | 1000 | 1000 | 1500 | 4200 | 2000 | 2500 | 4500 | 10200 |
| | | | | | | | | | | | | | |
| **MANGANESE OPPORTUNITIES** | | | | | | | | | | | | | |
| **Mining, 100 ktpa gravity plant, ramp-up to 300 ktpa** | 100 | 300 | | 400 | 300 | 300 | | | 600 | | | 0 | 1000 |
| | | | | | | | | | | | | | |
| **COPPER OPPORTUNITIES** | | | | | | | | | | | | | |
| **PFS estimate** | | | | | | | | | | 500 | 1000 | 1500 | 1500 |
| | | | | | | | | | | | | | |
| **TOTAL** | 350 | 950 | 600 | 1900 | 1000 | 1300 | 1000 | 1500 | 4800 | 2500 | 3500 | 6000 | 12700 |

**NOTES**

**1) Hakkari zinc - PFS/BFS for 35ktpa LME direct leach SXEW plant. Will also evaluate interim phase of producing Zn sinter product via fuming with 55% Zn contained.**

**2) Manganese -Feasibility (not bankable) for a small scale simple gravity seperation plant processing 100ktpa Mn rom ore building up to a capacity to treat 300ktpa**

**3) Copper - assume PFS commences in 1ST H 2011**

**4) Board approval will be obtained prior to the commencement of PFS and BFS**

| BUSINESS DEVELOPMENT IN US $ X 1000 | | | | 2010 | | | 2011 | | 2012 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2nd Q | 3rd Q | 4thQ | TOTAL | 1st H | 2nd H | TOTAL | | TOTAL | GRAND TOTAL |
| **Purchase of Mining Licence No 5 incl VAT (Zn)** | 600 | | | 600 | | | | | | 600 |
| **Payment to Axel Boutros as per DA (Mn)** | | 400 | | 400 | | | | | | 400 |
| | | | | | | | | | | |
| **2 additonal Zn & 2 Cu opportunities** | | | | | | | | | | |
| **Exclusive Option Fee** | 100 | 100 | | 200 | 100 | | 100 | | 200 | 500 |
| **Phased payments** | | | 500 | 500 | 500 | 1000 | 1500 | | 1500 | 3500 |
| | | | | | | | | | | |
| **Additional opportunities** | | 100 | 200 | 300 | 500 | | 500 | | 1000 | 1800 |
| | | | | | | | | | | |
| **TOTAL** | 700 | 600 | 700 | 2000 | 1100 | 1000 | 2100 | | 2500 | 6600 |

# APPENDIX 4:

## Independent Legal Opinion on RCR rights and title to HZP Tenements

## APPENDIX 5:

**Typical SGS Certificate of ores mined & sold from the HZP area**

# APPENDIX 6:

## Sampling Results from Outcrop and Informal Small-Scale Mine Workings

| GPS Waypoint | X_UTM | Y_UTM | Z_UTM | License No. | Location | Sample No. | Thickness (m) | %Zn | %Fe | %Pb | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Stockpiles | SGS 080125016c - S1 | | 27.80 | | | Historical data |
| | | | | | Stockpiles | SGS 080125016c - S2 | | 20.24 | | | Historical data |
| | | | | | Stockpiles | SGS 080125016c - S3 | | 25.38 | | | Historical data |
| 98 | 372576 | 4150881 | 1645 | Mining Area | Outcrop | 98 | | 27.94 | 1.90 | 1.15 | Contact between dolomite and smithsonite-rich zone (latter weathered positively and forms "pinnacles") |
| 99 | 372566 | 4150875 | 1653 | Mining Area | Outcrop | 99 | | 22.64 | 8.70 | 2.16 | Adjacent high-grade smithsonite zone. |
| 110 | 369961 | 4151970 | 2013 | Out Of Licences | Outcrop | 110 | | 0.17 | 8.80 | 0.03 | "Barite" exposure at head of valley; minor disseminated Zn mineralization in breccia observed in 6762. |
| 115 | 362659 | 4150890 | 1209 | 5 | Outcrop | 115 | | 4.67 | 45.20 | 0.07 | Excavation; FeOX dominated mineralization - Zn mostly leached. |
| 121 | 362571 | 4149957 | 1514 | 5 | Outcrop | 121 | 5.00 | 41.05 | 6.90 | 4.32 | Disseminated mineralization in brecciated dolomite in several zones over a total 5-10m thickness |
| 123 | 362936 | 4151058 | 1198 | 5 | Outcrop | 123 | | 3.19 | 50.10 | 0.45 | Crinkle (algal) laminated / stromatolitic dolomite; Zn (smithsonite) rich lower part; FeOX dominant upper |
| 145 | 378817 | 4151184 | 1797 | 11 | Outcrop | 145 | | 0.01 | 10.90 | 0.06 | Disseminated FeOX mineralization in dolomite breccia; developed along strike. |
| 149 | 377542 | 4145311 | 2035 | Out Of Licences | Outcrop | 149 | | 0.43 | 3.80 | 4.56 | Secondary Zn mineralization becoming more disseminated upwards |
| 150 | 377514 | 4147461 | 1830 | Out Of Licences | Outcrop | 150 | | 0.12 | 3.00 | 20.52 | Old collapsed Roman galleries - exploited Pb mostly - carbonate cemented slope talus material. |
| 153 | 377247 | 4148198 | - | | Outcrop | 153 | | 22.18 | 2.40 | 3.40 | Disseminated secondary Zn mineralization in dolomite breccia. |
| 168 | 373296 | 4151184 | 1284 | Polygon (Not Mining Area) | Outcrop | 168 | | 0.01 | 3.10 | 0.00 | Low Fe zinc gossan zone in highly weathered dolomite; smithsonite veinlets and vug lining |
| 171 | 372507 | 4150985 | 1585 | Mining Area | Outcrop | 171 | | 1.82 | 13.50 | 0.07 | 10m wide Zn mineralised zone in road cutting;small-scale botryoidal smithsonite |
| | | | | | Stockpiles | Hakkari 1 | | 42.90 | 3.80 | 8.00 | Road-side stock-pile |
| | | | | 8 | Stockpiles | Hakkari 2 | | 25.90 | 18.80 | 4.70 | Stock-pile in Licence Area 8 |
| | | | | 5 | Stockpiles | Hakkari 3 | | 37.90 | 9.80 | 4.70 | Stock-pile in Licence Area 5 |
| | | | | | Stockpiles | *REP-Hakkari 1 | | 42.90 | | | Road-side stock-pile |
| 1M1 | - | - | - | Mining Area | Mine | 1M1 | | 0.17 | 0.44 | 0.03 | Mining area - footwall adjacent to orebody - between Hak 02 and Hak 03 |
| 1M2 | - | - | - | Mining Area | Mine | 1M2 | | 0.33 | 1.98 | 0.14 | Mining area - footwall adjacent to orebody - between Hak 02 and Hak 03 |
| 1M3 | - | - | - | Mining Area | Mine | 1M3 | | 0.58 | 0.87 | 0.06 | Currently mined orebody - between Hak 02 and Hak 03 |
| 1M4 | - | - | - | Mining Area | Mine | 1M4 | | 0.06 | 0.19 | 0.04 | Currently mined orebody - between Hak 02 and Hak 03 |
| 1M5 | - | - | - | Mining Area | Mine | 1M5 | | 34.50 | 0.15 | 0.96 | Currently mined orebody - between Hak 02 and Hak 03 |
| 1M6 | - | - | - | Mining Area | Mine | 1M6 | | 0.28 | 0.37 | 0.02 | Currently mined orebody - between Hak 02 and Hak 03 |
| 1M6A | - | - | - | Mining Area | Mine | 1M6A | | 2.50 | 1.2 | 0.15 | Currently mined orebody - between Hak 02 and Hak 03 |
| 1M7 | - | - | - | Mining Area | Mine | 1M7 | | 4.47 | 1.14 | 0.28 | Currently mined orebody - between Hak 02 and Hak 03 |
| 1M8 | - | - | - | Mining Area | Mine | 1M8 | | 1.53 | 5.98 | 0.29 | Currently mined orebody - between Hak 02 and Hak 03 |
| 1M9 | - | - | - | Mining Area | Mine | 1M9 | | 30.90 | 17 | 1.78 | Currently mined orebody - between Hak 02 and Hak 03 |
| HAK 05 | 372586 | 4150907 | 1662 | Mining Area | Mine | 1OC01 | | 0.10 | 1.58 | 0.04 | Zone at Zn oxide |
| HAK 08 | 373286 | 4151201 | 1299 | Mining Area | Outcrop | 1OC02 | | 16.70 | 8.94 | 0.12 | Along strike of highly oxidised porous zinc mineralization |
| Village | 373793 | 4150763 | 1119 | Village(Licence 10) | Outcrop | 1OC3 | | 0.05 | 1.32 | 0.03 | Sub-outcrop of younger river sediments on top of steep dipping (thrusted?) mineralised beds |
| HAK 16 | 372746 | 4151960 | 1723 | 10 | Outcrop | 2OC1 | 5.00 | 2.47 | 0.63 | 0.5 | 5 m wide ore zone, with Fe-rich layer above Zn-rich layer - most likely overturned |
| HAK 18 | 376890 | 4150699 | 1483 | 10 | Outcrop | 3OC1 | 0.40 | 0.41 | 5.17 | 0.01 | Alternating layers of dolomite + limestone, dolomite is about 40 cm, lm is 10 cm |
| HAK 18 | 376890 | 4150699 | 1483 | 10 | Outcrop | 3OC2 | | 0.11 | 7.11 | 0.05 | Duplicate of 19HAK002 |
| HAK 23 | 360381 | 4149776 | 1749 | 5 | Outcrop | 3OC3 | | 37.10 | 6.52 | 0.85 | Up steep hill, orientation 180/80, centre of mineralized zone |
| HAK 24 | 360450 | 4149716 | 1788 | 5 | Outcrop | 3OC4 | | 2.80 | 33.1 | 0.56 | Altitude 1788, weathered material exposed on surface, high iron, edge of mineralized zone |
| HAK 25 | 360477 | 4149698 | 1814 | 5 | Outcrop | 3OC5 | | 39.10 | 1.7 | 14.1 | Good outcrop, appears to be less Fe in mineralized zone |
| HAK 25 | 360477 | 4149698 | 1814 | 5 | Outcrop | 3OC6 | | 40.90 | 5.01 | 3.72 | Dublicate of Hak 25 |
| HAK 27 | 362580 | 4149959 | 1518 | 5 | Outcrop | 4OC1 | | 41.30 | 8.26 | 4.21 | Near vertical 2 m wide mineralized zone, orientation 010/85 |
| HAK 27 | 362580 | 4149959 | 1518 | 5 | Outcrop | 4OC2 | | 40.90 | 10.2 | 1.92 | Near vertical 2 m wide mineralized zone, orientation 010/85 |
| HAK 27 | 362580 | 4149959 | 1518 | 5 | Outcrop | 4OC3 | | 0.08 | 0.55 | 0.02 | Near vertical 2 m wide mineralized zone, orientation 010/85 - footwall dolomite - unmineralised |
| HAK 29 | 362635 | 4150928 | 1190 | 5 | Outcrop | 4OC4 | | 33.80 | 1.34 | 5.81 | Collapsed gallery, iron oxides clearly visible, also some smithsonite |
| HAK 30 | 375131 | 4150867 | 1240 | 10 | Outcrop | 6OC1 | 0.20 | 0.04 | 1.61 | 0.02 | Highly weathered exposure, khaki clay, app well developed sones of mineralisation - actually calcite |
| HAK 30 | 375131 | 4150867 | 1240 | 10 | Outcrop | 6OC2 | | 0.05 | 1.46 | 0.01 | Highly weathered exposure, khaki clay, app well developed sones of mineralisation - actually calcite |
| Rn 3 | 361053 | 4151092 | | 5 | Outcrop | Rn3 | 1.00 | 2.10 | 53.40 | 3.20 | Highly wheathered, orange - brown, fractured vein, dolomite fw+hw |
| Rn 4 | 361177 | 4151259 | | 5 | Outcrop | Rn4 | 1.00 | 3.00 | 52.80 | 0.90 | |
| Rn 5 | 362931 | 4150607 | 1361 | 5 | Outcrop | Rn5 | 1.00 | 1.30 | 10.10 | 0.80 | Fractured dolomite |
| Rn 8 | 362923 | 4150681 | 1299 | 5 | Outcrop | Rn8a | 1.50 | 1.00 | 11.10 | 0.10 | Botryoidal smithsonite mineralization |
| Rn 8 | 362923 | 4150681 | 1299 | 5 | Outcrop | Rn8b | 1.50 | 2.50 | 41.00 | 0.10 | Botryoidal smithsonite mineralization |
| Rn 8 | 362923 | 4150681 | 1299 | 5 | Outcrop | Rn8c | 1.50 | 0.30 | 1.70 | 0.10 | Botryoidal smithsonite mineralization |

# APPENDIX 7:

## Metallurgical Test Work Reports

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**The Hakkari Zinc Deposit - A Review**

- **Introduction**

The author was requested by Mr D J Taylor, the CEO of Red Crescent Resources ( RCR ) to give a review of their desk top study which has been compiled for the Hakkari zinc mineral occurrence in SE Turkey.

- **The Study**

The study was conducted on four batches of samples sent to South Africa for evaluation and test work. The assaying was done by Set-Point and UIS Laboratories; the mineralogical investigations were carried out by SGS Laboratories and the test work was done by Tangmere R&D and Mintek. Mike Plaskitt, a professional metallurgist, coordinated all the work and compiled the reports.

- **Comments**

1. **Ore Quality and Variability**

Ore samples varied from 16.7% to 42.95% Zn and 0.96% to 14.1% Pb. The dominant zinc mineral was smithsonite with substantial amounts of hemi-morphite present as well. Sphalerite content was minor. The lead mineral was cerrusite.

2. **Gangue**

The gangue consists of oxidised iron minerals, calcite, barite and quartz. The iron content varied from 0.15% to 18.8% and is essentially goethite and siderite weathered into limonite.

## 3. Mineral Liberation Sizes

Smithsonite, hemi-morphite and cerrusite are relatively coarse grained and liberate between 220 and 380 micron. The goethite/limonite liberates at around 120 micron and the remaining gangue at about 200 micron.

## 4. Treatment Options Considered

Oxide flotation was rejected due to the high ore grade, inherent inefficiencies in oxide flotation as well as likely cost. Gravity concentration techniques considered were cyclone classification, spirals and shaking tables. Of these cyclone and spirals were deemed to have some potential as pre-concentrators and future work should be carried out. One may add dense medium separation techniques to this list. There is potential is such technologies but one should not be too optimistic in this regard. On the plus side they are relative inexpensive options.

The iron minerals showed no response to magnetic separation attempts and calcining test work conducted was not very useful. In the latter regard it may be more productive to fume the material in Waelz kilns. Waelz kiln fuming was at one stage very popular in Eastern European Countries, Russia and even Japan. In these operations zinc/lead oxides, slags and tailings were successfully treated. The fume was sold to zinc refineries.

The RCR study decided that the direct leaching option, with diluted sulphuric acid, was the best option for treating the high grade Hakkari ore.

## 5. The Direct Acid Leach

Some detailed test work showed the following results:

- Zinc dissolution was in excess of 90% with fast kinetics even in relatively weak acid solutions. Optimisation of these leaching conditions as well as some heating should push these dissolutions into the mid nineties. Very pleasing is the ready dissolution of hemi-morphite without any silica gelling indications! Sphalerite will, however, not leach under such conditions.

- The “weak” acid solution ( 15-20% sulphuric acid ) is the favoured option as less iron will be dissolved than if stronger acid solutions are used. This fits well with the spent electrolyte, usually, obtained in zinc electrowinning operations.

- Leaching performed satisfactorily at ambient conditions; the stringent winter temperatures in Hakkari should, however, be taken into account. Steam should be made available to the leach and the purification plants.

- The Study calculated the acid consumption to be about 30kg's per ton of ore treated. Lower ore grades could influence this estimate significantly.

- Although no filtration problems were experienced it will be prudent to conduct the necessary settling and filtration tests in future test work specially when higher silica containing ores are leached.

- It was surprising that the caustic soda leach conducted on the ores gave very poor dissolution results (30%). The caustic leach would have circumvented the iron removal problem.

- Purification test work is not complete but should pose no serious problems. The technology is standard practise in the zinc electrowinning industry. It is important to oxidise the iron to the ferric state prior to neutralization. The ferric iron can then be removed in a variety of ways. Jarosite may be RCR's best option. The iron removal will assist in removing deleterious elements from the prospective electrolyte. It will, however, be necessary to check the purified solution for Cu, Co, Ni, Cd, Ge, As and Sb as these elements can seriously influence the plating of zinc. If detected these elements can be readily removed by cementation with zinc dust.
  Ion exchange is also a possibility for total solution purification but would have to be extensively tested specially for iron fouling of the resin. Whatever option is chosen good quality electrolyte is a prerequisite for decent electrowinning performance.

- The environmental situation with the storage of acidic leach residues in Turkey is not known to the author but should be clarified.

## 6. Advantages of the Direct Leach Option

- No or possibly little pre-concentration is required for this high grade ore.
- Proven technology can be used throughout the design.
- The capacity of the plant can easily be up-scaled to treat far larger tonnages.

## 7. Risks with the Direct Leach Option

- Ore variability due to increased gangue. This could result in higher acid consumption in the leach and create potential filtration issues. Ore grade control in the mining division should be considered. Ore blending in the plant should also be part of the design.

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## 8.Piloting

- The Study conclusions are based on laboratory scale test work which will have to be verified in a pilot plant of a suitable size. This should be part of the feasibility study.

### 9. Capex, Opex and Financials

- The Capex and Opex for the 150000 tpa ROM case are based on likely Rand costs in South Africa and a specific plant, equipment and process point-of-view. Desk top studies of this type probably carry a 30% contingency. The Turkish equivalent costing model is not known to the author.
  It should be understood that the technology can easily be up-scaled from a throughput point-of-view. Usage would then be made of economies of scale and fixed costs lowered accordingly.

  Any by-product revenue, at this stage of the project, should be ignored.

### 10. Project Options

- In evaluating this project it should be kept in mind that it may be financially advantageous to phase the project and to implement technology in stages. The following are possibilities:

1. Mine and sell ROM ore now. Approach ISF smelters in this regard.
2. Treat the ROM ore in a Waelz Kiln in Turkey or elsewhere and sell the zinc/lead fume to zinc refineries or Zn/Pb smelters.
3. Produce LME grade zinc cathode and sell into the market. This would eliminate expensive melting and casting equipment.

### 11. Conclusions and Recommendations

- The work carried by RCR under the supervision of Mike Plaskitt is of a high standard and although some detail and refinements need attention the correct choice of the direct leach option has been made. The direct leach includes conventional solution purification and electrowinning. Melting and casting into ingots would be the preferred choice if cathode cannot be sold directly.
- The project has much appeal and potential and deserves more development. The focus should be on ore resource establishment and on ways of mining the deposit in the best possible way. Grade control is of the utmost importance to the direct leaching option.

E H O Meyer.