

# 1 Tsagaan Chuluut Project (Licence 4646A)

## 1.1 Introduction

The Tsagaan Chuluut fluorspar project is a recent addition to the company's portfolio of fluorspar projects and was not visited during CSA's site visit in October 2009 (Figure 1.1). The project area is approximately 63km northeast of the Company's Dai-Uul fluorspar project and therefore has a strategic significance to the future of the Company's development strategy. CSA has assessed the technical information provided by the Company regarding the project and considers it of sufficient material significance to be covered by this report. CSA has not undertaken to verify the legal and governmental approval documentation relating to the project.

## 1.2 Project Location and Infrastructure

The Tsagaan Chuluut property is located in the Dornogobi Province in central eastern Mongolia. The property is situated approximately 400 km southeast of the Mongolian capital of Ulaanbaatar, and 170 km east-southeast of the town of Choir. The project area is approximately 63km northeast of Dai-Uul and about 70 km southeast from the town and fluorspar mining centre of Bor-Ondor. It is also 100km northeast from the local town of Airag which is located on the Transmongolian railway line. The geographic centre of the property is situated at 46° 23' 40"N 110° 11' 42.5"E.

A high voltage power source is located two kilometres from the Tsagaan Chuluut mine site. The Tsagaan Chuluut mine site has Skytel and Unitel cell phone coverage.

Mining infrastructure in the region includes two Chinese processing plants one of which is located about 70km due east from the mine and is owned by North Wind LLC and the second processing plant is located 100 km SW from the property near Dalanjargalan soum (town).



*Figure 1.1 General view of the Tsagaan Chuluut project area. Waste rock piles can be seen in the middle ground from the trial mining conducted by the previous owner (courtesy Lotus Resources plc).*

### **1.3 Project Status**

The Tsagaan Chuluut property area comprises one mining license (4646A) and covers a total of 0.33km<sup>2</sup>. The mining license 4646A was originally granted on October 05, 2001 to Guchin Gol LLC as an exploration license (3744X) encompassing an area of 1033 hectares. Exploration license 3744X was subsequently reduced to 33ha and converted to mining license 4646A on July 9, 2002. Thereafter the mining license 4646A was transferred from Guchin Gol LLC to KR LLC.

Since 2002 KR LLC conducted intermittent small scale mining. Approximately 3,000t of fluorspar has been mined to date (Sheldon et al., 2009). A total of 120 tons of sorted fluorite were mined from two small open pits in 2009. Cash flow difficulties caused KR LLC to look for a partner since the beginning of 2008 (Sheldon et al., 2009).

The Mining Licence 4646A was successfully transferred to Lotus Minerals Mongolia on 30 December 2009.

### **1.4 Exploration and Fluorspar Discovery**

The Tsagaan Chuluut project area has had a very similar exploration history to the Dai-Uul area principally because both project areas occur within the wider Bor-Ondor fluorspar district. The region was first mapped geologically at a scale of 1:200,000 in 1956; thereafter was again prospected for fluorspar in 1964 and again mapped and prospected at a scale of 1:50,000 by a Mongolian geological mapping expedition in the first half of the 1970's.

Between 1971-1976 the Choir Geological Expedition team conducted initial exploration survey over the Tsagaan Chuluut deposit. A total of 10 trenches (30m to 70m spaced) were excavated. It was established that the quartz-fluorite vein system had a strike length of about 410m. However no drilling was conducted during this period.

Between 1988-1990 the Mongolian and Russian joint venture company Mongolrosvetmet (operators of the Bor-Ondor and Orgon Fluorspar mines) conducted detailed exploration. The work was conducted along 13 exploration lines spaced about 40 - 45m across strike of the deposit. Nine (9) of these exploration lines (lines 5 to 13) are located within the Tsagaan Chuluut (4646A) tenement area (Figure 1.2). A total of 24 drill holes spaced at 30 - 50m along the drill traverse to a depths varying from 65.0m to 180.0m. In addition, Mongolrosvetmet completed 10 trenches (30-60m in length) the tenement area.

Mongolrosvetmet collected 459 core samples from the entire Tsagaan Chuluut mineralised system and 45 quality control samples. Samples were assayed at the Bor-Ondor mine laboratory or at the Khajuu Ulaan mine laboratory. Silicate, calcite, phosphor and sulphur were analysed Laboratory in Choir (Sheldon et al., 2009).

CSA has not conducted any verification of the reported analytical procedures or reported results. CSA has relied on the truthful representation of information presented in the company's internal technical review document.

### **1.5 Project Geology**

The Tsagaan Chuluut project lies within the Idermeg terrane which is interpreted to represent a remnant of rock formations accumulated in a passive continental margin environment,

which was amalgamated with other continental fragments during the closure of the Palaeo-Asian Ocean during the Palaeozoic to Mesozoic era. The closure zone is a corridor of arcuate east-west-trending lineaments (Figure 1.1) which separate Palaeozoic and older terrane fragments to the north from Palaeozoic and younger terranes to the south. The corridor is marked by intense volcanism and plutonism over a prolonged period.

The geology of the Tsagaan Chuluut area is dominated by a large magmatic intrusion of syenite composition (Figure 1.2).

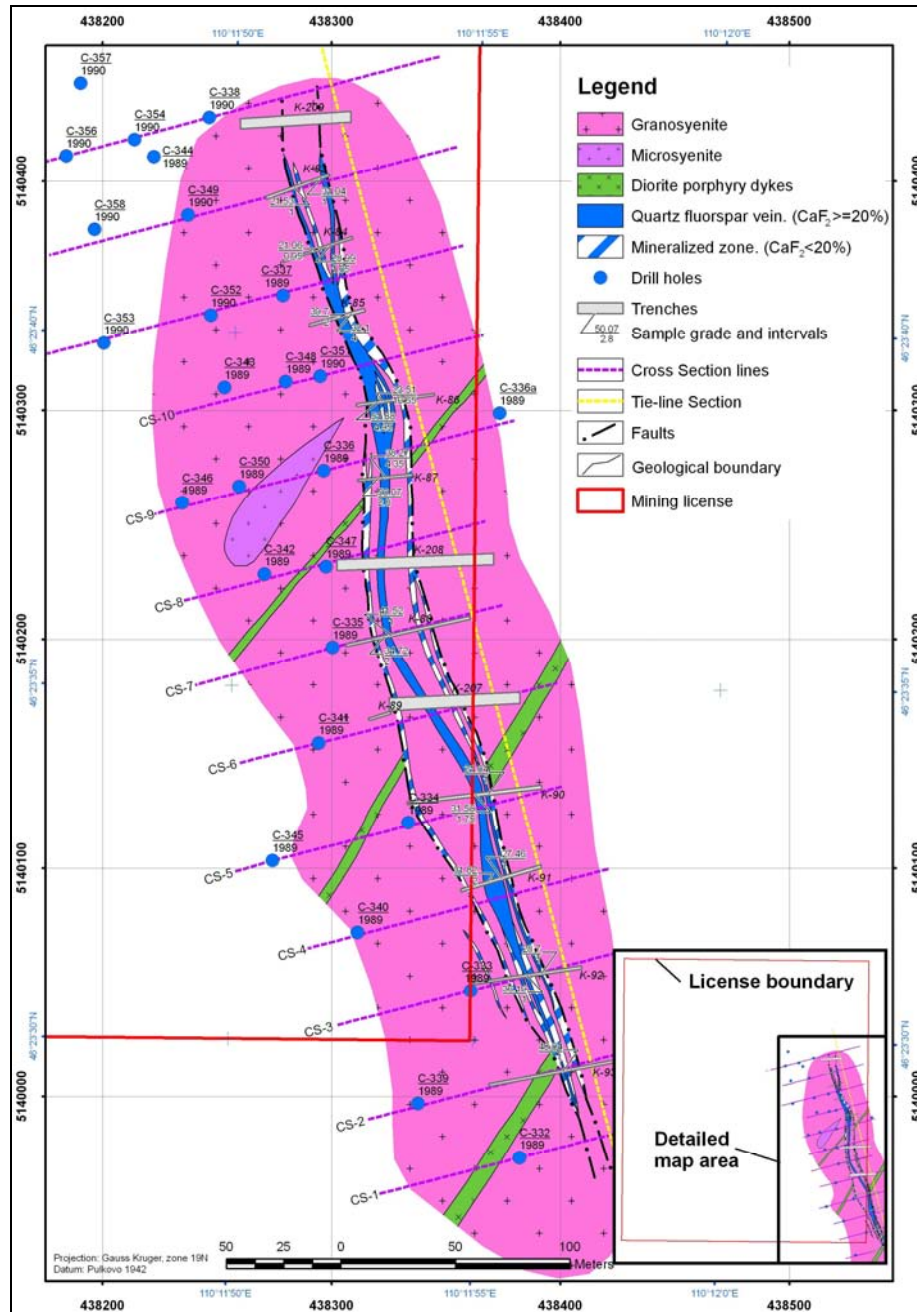


Figure 1.2 Geological map of the Tsagaan Chuluut project area (redrawn from original, courtesy of Lotus Resources plc).

The grano-syenite is mainly reddish pink, locally grey and green, and its mineralogical composition consists broadly of 55-60% potassium feldspar, 15-20% plagioclase, 25% quartz, and 7-10% biotite. Diorite porphyry dykes have intruded the grano-syenite along

north-northwest-trending fault zones. The porphyry dykes have been mapped over a length of up to 260m and are between 5 - 6 m in width (Figure 1.3).

Fluorite mineralisation follows the same crustal weakness zone that accommodates the diorite dykes. The mineralisation occurs as breccia matrix fill and veined fault zone, 1.5 to 4.5m wide dipping approximately 65-70° to the west-southwest and strikes to the north-northwest.

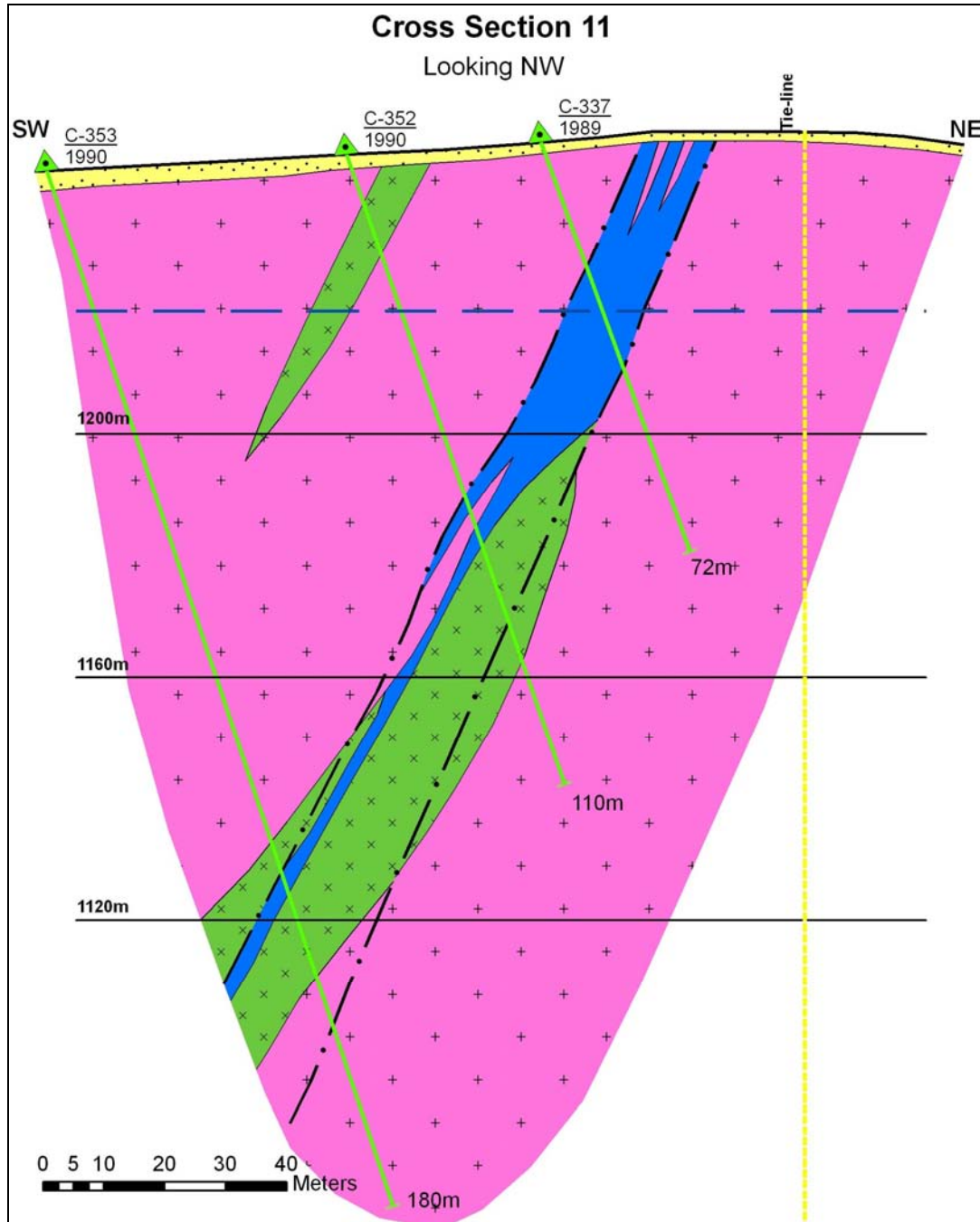


Figure 1.3 Geological cross section CS 11 showing steeply dipping fluorite mineralisation (blue) following the position of a fault (black dashed line). The fault zone is also intruded by a mafic rock (redrawn from original, courtesy of Lotus Resources plc, see geological map for explanation).

## **1.6 Fluorspar Mineralisation**

The Tsagaan Chuluut deposit, the nearby Khamar Us open pit mine, the Nergui occurrence, and some other mineralized showings are fault-controlled hydrothermal vein systems that lie within the 4.5km long, 0.5km wide, and northwest-trending fault zone. The Tsagaan Chuluut mineralised system consists of two en-echelon mineralised zones (Zone 1 and 2). Zone 2 falls within the Tsagaan Chuluut tenement area (4646A) and Zone No 1 of the Baruun Barga Ovoo deposit is located 1.8km south of the company's Tsagaan Chuluut site and is not part of Lotus' project (not shown in Figure 1.2).

Surface exploration and sub-surface drilling has delineated mineralisation in Zone 2 as a composite zone of mineralisation consisting of massive vein of mineralisation (full blue pattern) accompanied by sub-parallel zones of breccia-hosted mineralisation (hatched blue pattern) in the hanging wall and footwall. The mineralisation in the south appears to be pinching out at a depth of about 40m whereas the mineralisation is open at depth in the north. This suggests that the vein plunges to the north. The northern part of the project area indicates potential for the discovery of blind vein of mineralisation. The width of the mineralised Zone 2 is 0.1 to 6m.

Fluorite generally has a purple tint, but is commonly grey in colour in the central part of the mineralised system.

## **1.7 Lotus Work**

Lotus's geological team conducted a one day field visit to the project area together with the project vendor Mr. P.Tsolmon on 26 November 2009. Subsequently the company compiled a technical document that was made available to CSA.

Lotus sourced all available technical reports, commences compilation of geological information in a data base and digitised geological maps and cross sections of the area.

As part of the site visit, Lotus verified the tenement location and corner points and collected two rock chip samples. The samples were sent to the Steward Group Laboratory in Ulaanbaatar for As, Au, Ba, Cu, Fe, P, Pb, S, Zn, CaF<sub>2</sub>, CaCO<sub>3</sub>, and SiO<sub>2</sub> analyses. Sample results are pending.

## **1.8 Historic estimates**

There are currently no Mineral Resources reported in accordance with the 2004 JORC Code within Lotus's Tsagaan Chuluut licence area and no historic estimates pertaining specifically to the Tsagaan Chuluut project area.

An historic Russian resource estimate for the mineralization contained at Tsagaan Chuluut down to 90m depth, is reported to be 167.4Kt at an average grade of 45.79% of CaF<sub>2</sub> ranging from 30.5% to 55.2% CaF<sub>2</sub> and classified as category C2 under the GKZ reporting system (Sheldon et al., 2009). This resource is divided into an upper zone (block-1) ranging from 0-50m depth, and a lower zone (block -2) ranging from 50-90m depth. The average grade of the upper block is 40.68% CaF<sub>2</sub> and the average grade of the lower block is 55.22% CaF<sub>2</sub>.

The sample preparation and chemical analysis were carried out in the Chemical Laboratory of Khajuu Ulaan mine laboratory. Only fluorite and calcite were determined using the titration method of assaying at Khajuu Ulaan.

### **References**

Sheldon, G., Enkhnasan, B., and Erdenebat M., 2009, Report on the Baruun Barga Ovoo (BBO) Fluorspar Deposit (4646A Mining Licence) Dornogobi Province, Mongolia, Lotus Resources PLC, Internal company Report, p. 30.

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