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LYDIAN INTERNATIONAL

Amulsar Gold Mine

Greenhouse Gas Emissions Reporting – 2016

March 2017

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1 INTRODUCTION

1.1.1 This report provides an assessment and review of the GHG emissions associated with the activities carried out at Amulsar gold mine (referred to as the 'Project') between January and December 2016. The reporting of GHG emissions also considers the emissions associated with the activities being carried out by the contractors engaged by Lydian during the reporting period. Since this is the first year of construction for Amulsar gold mine, no baseline data is available for comparison and this year's data will be used as a benchmark for the future construction phase.

2 PROJECT PROGRESS

2.1.1 The project is currently in its construction phase with site preparation and earthworks underway. The construction phase is anticipated to last for a further year, following which the mining operations at the Amulsar gold mine will commence.

2.1.2 The following contractors have been engaged on site during 2016 as part of the ongoing construction activities on site:

- Racke LLC – Drilling contractor;
- Nor Geo LLC – Drilling contractor;
- Renco LLC – Construction contractor;
- Arpa Sevan CJSC – Construction and earthworks contractors;
- Chanaparh LLC – Construction and earthworks contractors; and
- EnergyNet Construction LLC – Electrical supply system implementing and earthworks

3 METHODOLOGY

3.1.1 The GHG reporting for the Project has been carried out in accordance with the World Business Council for Sustainable Development (WBCSD) and the World Resource Institute (WRI) 'Greenhouse Gas Protocol' (2013). A Corporate Accounting and Reporting Standard¹.

3.1.2 The direct and indirect greenhouse gas emissions associated with the mine site have been identified and classified into the following two scopes (known as Scopes):

- **Direct GHG emissions (also termed as "Scope 1 emissions"):** Direct GHG emissions

¹ WBCSD and WRI (2004) *GHG Protocol: Corporate Accounting and Reporting Standard 2004*. Available from the URL: <http://www.wri.org/sites/default/files/pdf/measuring-to-manage.pdf> (accessed April 2016)

that occur from sources that are owned or controlled by the company, for example, emissions from company owned or controlled diesel generator sets, vehicles and emissions from production in owned or controlled process equipment. The following direct emissions have been considered for the Amulsar Project:

- Emissions from use of fuel for onsite power generation and for construction equipment and machinery;
- Emissions from use of explosives (if used).
- **Indirect GHG emissions (also termed as “Scope 2 emissions”):** Indirect emissions arise from the generation of purchased electricity consumed by the company. Purchased electricity is defined as electricity that is purchased or otherwise brought into the organisational boundary of the project, usually taken from a local connection onto the national electricity grid.

3.1.3 In addition, the GHG emissions that are not directly controlled by the project, but occur in the value chain, including both upstream and downstream emissions also need to be considered where appropriate. These emissions are termed as Scope 3 emissions. The reporting of Scope 3 emissions is discretionary as these emissions are a consequence of the activities of the project, but occur from sources not owned or controlled by the company responsible for the project.

- **Emissions not controlled by the Company (also termed as “Scope 3 emissions”):** For the Amulsar project, the following Scope 3 emissions have been considered:
 - Emissions from transportation of raw materials to the site;
 - Emissions from employee commuting to and from the site; and
 - Emissions associated with the use of electricity by the construction workers residing in rented accommodation/hotels.

Reporting period

3.1.4 This report provides an estimate of the GHG emissions for the 1st January 2016 to 31st December 2016.

3.2 Calculation Approach

3.2.1 The GHG reporting for the project is based on the methodology detailed in the WBCSD and WRI GHG protocol. The GHG emissions have been estimated using the activity data, i.e. information relating to combustion and other processes such as units of electricity consumed or fuel used for plant machinery and the emission factors

provided by IPCC/WRI for each activity.

$$\text{GHG emissions} = \text{Activity Data} \times \text{Emission Factor}$$

3.2.2 There are several greenhouse gases including carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O), however, it is standard practice to report GHG emissions in tonnes of CO₂ equivalents (CO₂e)². This approach accounts for the varying global warming potential of different greenhouse gases, which is a measure of the amount of infrared radiation captured by a gas in comparison to an equivalent mass of CO₂ over a fixed lifetime.

3.3 Activity Data

3.3.1 An overview of the assumptions made in the preparation of the GHG assessment are outlined in Table 1.

| Table 1 : Assumptions for emission related activities | | |
|--|---|---|
| | Emission related activity | Source of Information |
| SCOPE 1 – DIRECT EMISSIONS | | |
| a | Onsite Fuel usage | Fuel receipts from Lydian International and all its contractors |
| b | Use of explosives | No blasting has been carried out on site this year as it is in construction phase and therefore no explosives have been used. |
| SCOPE 2 – INDIRECT EMISSIONS | | |
| 2 | Electricity used | Based on electricity bills provided by Lydian International for the reporting period |
| SCOPE 3 - EMISSIONS NOT CONTROLLED BY THE COMPANY | | |
| a | Transportation of raw materials | The emissions from transportation of raw materials has been estimated based on the total quantity of material to be transported over the total distance. <i>Fuel (Diesel & Petrol)</i> - Emissions estimated considering the total quantity of fuel used onsite and an average distance of 200km for diesel and 180km for petrol from supplier's location to delivery at site/contractor's office(one-way). <i>Cement/Construction Materials</i> – Emissions estimated based on the total quantity of cement/construction material used onsite and an average distance of 160km for cement and 180km for construction materials from supplier's location. |
| b | Employee Commuting | Based on travel receipts provided by Lydian International |
| c | Electricity used for workers' accommodation | Based on electricity bills for hotels/rented accommodation provided by Lydian International |

3.4 Emission Factors

² A universal unit of measurement used to indicate the global warming potential of a greenhouse gas, expressed in terms of the global warming potential of one unit of carbon dioxide

3.4.1 The IPCC GHG conversion factors have been considered for the reporting of GHG emissions. Where an emission factor was not available in the IPCC database, appropriate emission factors from other government sources have been adopted.

4 GHG EMISSIONS FOR THE PROJECT FOR 2016

The summary of the Scope 1, Scope 2 and Scope 3 emissions for the Project in 2016 has been provided in Table 2.

| Emission | | Total Quantity | Unit | tCO ₂ e | Unit | GHG Emissions |
|--|---|----------------|-----------|--------------------|--|----------------|
| 1 | SCOPE 1 EMISSIONS (DIRECT EMISSIONS) | | | | | |
| 1.1 | Emissions from combustion of fuel | | | | | |
| a | Use of diesel | 467,183 | litres | 0.002685486 | tonnes of CO ₂ e/litre | 1254.61 |
| b | Use of petrol | 111,766 | litres | 0.002279955 | tonnes of CO ₂ e/litre | 254.82 |
| 1.2 | Emissions from use of explosives | | | | | |
| a | ANFO | 0 | tonnes | | | 0.00 |
| b | Emulsion | 0 | tonnes | | | 0.00 |
| 2 | SCOPE 2 EMISSIONS (INDIRECT EMISSIONS) | | | | | |
| 2.1 | Energy imported from grid | 63,138.23 | kWh | 0.000123392 | tonnes of CO ₂ e/kWh | 7.79 |
| Total Scope 1 & 2 Emissions | | | | | | 1517.23 |
| 3 | SCOPE 3 EMISSIONS | | | | | |
| 3.1 | Transportation and Distribution | | | | | |
| | <i>Transportation of raw materials</i> | | | | | |
| a | Diesel | 78,386 | tonnes.km | 0.0001143 | tonnes of CO ₂ e/tonnes.km | 0.14 |
| b | Petrol | 14,706 | tonnes.km | 0.0001143 | tonnes of CO ₂ e/tonnes.km | 0.03 |
| c | Cement | 5600 | tonnes.km | 0.0001143 | tonnes of CO ₂ e/tonnes.km | 0.01 |
| d | Construction Materials | 811,170 | tonnes.km | 0.0001143 | tonnes of CO ₂ e/tonnes.km | 1.44 |
| 3.2 | Staff Commuting | | | | | |
| | Overseas staff travel | 29 | trips | 7.9935 | tonnes of CO ₂ e/landing - take off cycle | 231.81 |
| | Staff travel - Home | 170,500 | km | 0.00018695 | tonnes of CO ₂ e/km | 31.87 |
| 3.3 | Energy imported for worker's accommodation | 144,000 | kWh | 0.000123392 | tonnes of CO ₂ e/kWh | 17.77 |
| | | | | | | |

Total Scope 3 Emissions

283.07

4.1.2 The Project resulted in a total of 1,517 tonnes of CO₂e direct and indirect GHG emissions during the year 2016. The emissions from the use of fuel for onsite power generation and for construction plant and machinery constituted 99.5% of the total scope 1 and scope 2 emissions. The Scope 3 emissions associated with the project are 283 tonnes of CO₂e.

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