

**AMULSAR GOLD MINE
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT
EXECUTIVE SUMMARY,
MAY 2016**

Lydian's proposed Amulsar Gold Project comprises the extraction, via blasting and excavation, of ore from three open pits on Amulsar Mountain; crushing of the ore and transportation via conveyor to a heap leach facility (HLF) where gold and silver are leached into solution using sodium cyanide; and extraction of the precious metals from the solution at an adsorption-desorption recovery (ADR) plant. Barren rock from the pits will be stored in an engineered barren rock storage facility (BRSF). The Project will have a life of approximately 12 years, including two years of construction.

The Project environmental and social impact assessment (ESIA) has been undertaken in compliance with the standards of the International Finance Corporation and the European Bank for Reconstruction and Development as current shareholders of Lydian. It is designed to meet best international practice as exemplified by the standards of these development banks.

The mine site is in a rural, upland area, with much of the footprint located on meadowland used for animal grazing, except for the HLF and part of the conveyor which are located at lower elevation on private- and community-owned land near to the villages of Gndevaz and Saravan. Some 274 plots of private land totalling 152 ha, mostly belonging to Gndevaz residents, are to be acquired by the Project. Assistance will be provided to one local resident, currently living near the HLF site, to relocate to develop this as a Primary Monitoring Station for measurement of noise, air quality and blasting vibration. There is no requirement for wider physical resettlement, but some cultivated land will be lost resulting in economic displacement. The land will be acquired through a negotiated settlement with each land user and/or owner. Landowners will be offered either land-for-land replacement or cash compensation; land users will be compensated for lost crops. Care will be taken to identify and provide additional assistance to particularly vulnerable households.

Agriculture is the primary source of livelihood in the communities surrounding the Project. The upland areas are used in summer by seasonal animal herders and for foraging. While most agricultural produce is for home consumption, the village of Gndevaz is renowned for its commercial production of apricots. The nearby town of Jermuk is designated as an Armenian "Tourism Centre", has a water bottling facility and is known for its mineral water and spas. As with many rural areas in Armenia, the local communities are experiencing low-level out-migration at present, as residents seek employment opportunities elsewhere.

Approximately 1,300 people will be employed during mine construction, and 657 during operation. The Project will prioritise local recruitment. A comprehensive training programme is being established to support local residents in becoming "employment ready" for the operations phase.

While Project employment is expected to benefit the communities, it will also represent a transition away from traditional lifestyles. Access to areas which are used to graze animals and collect plants and herbs will be partly restricted by the presence of Project infrastructure. The direct and indirect employment opportunities presented by the Project may serve as an attraction to in-migrants, potentially raising the local population and increasing the demand for goods and services. Increased demand, coupled with increased disposable income from mining wages, could in turn generate localised inflation. Lydian will work with local communities and government to minimise and manage the potential negative social impacts of the Project, through regular monitoring, information dissemination and awareness training, stakeholder engagement, and the administration of a community grievance mechanism.

The distances between Project infrastructure and the local communities are such that air pollution, noise, vibration and dust generated by the Project will not significantly affect local people. Nevertheless, these effects can disturb and have impacts on other receptors, such as wildlife. Traffic impacts will be controlled by appropriate

management.

Groundwater within the Project area feeds springs and recharges the main rivers, which include the Vorotan, Arpa and Darb. Spring and river water is used variously for drinking and irrigation supply, in fish farming and for hydroelectric power generation. A fundamental principal of Project design is that discharge of process water – which includes water used in the mining process, contact water and seepage from the barren rock facility – will be minimised and will only take place after passive treatment to comply with Armenian ambient water quality standards. Run-off and non-contact water discharge will also be compliant with all the appropriate standards. A comprehensive monitoring programme will be in place to ensure the efficacy of the treatment system. Modelling shows that the Project's use of Arpa river water will not affect the availability of water for other users. Aquifers will not be significantly impacted by mining operations. Furthermore, a detailed study has shown that there is no physical connection between groundwater beneath the Project site and the source of the mineral water used and bottled at Jermuk.

The majority of the Project will be located on areas of natural vegetation and habitat, the exception being parts of the HLF which are currently cultivated. The natural habitats are host to several rare or threatened animal and plant species. Of particular note are the alpine plant, *Potentilla porphyrantha*, which is listed as "critically endangered" in the Armenian Red Book and is present on the rocky mountain tops of Amulsar; and *Ursus arctos* (Brown Bear), which feeds and hibernates on or around the mountain. The alpine grassland on the lower mountain slopes hosts several migratory bird species, some of which, including Egyptian Vulture and Lesser Kestrel, are key features of the nearby and internationally designated Jermuk and Gorayk Important Bird Areas.

The Project will result in the loss of natural vegetation, including habitat for both *Potentilla porphyrantha* and *Ursus arctos* that, according to international standards, is designated as "critical habitat". Mining will also reduce the quality of habitats as a result of noise and dust deposition, and by blocking animal movement. Potential impacts on biodiversity will be reduced to the extent possible by the implementation of management measures and by post-mining restoration. To compensate for the loss of natural habitat, Lydian will establish a "biodiversity offset" which will aim to ensure that there is no net loss of such habitat as a result of the Project. For *Potentilla porphyrantha* and *Ursus arctos*, Lydian is undertaking research programmes to determine whether additional mitigation measures may be necessary to ensure no net loss in relation to these species.

The Project will result in changes to the landscape that will not be fully restored to its pre-existing condition when mining is finished. All infrastructure and facilities will be removed, and sites will be rehabilitated and returned for community use when possible. However, restrictions on future use of the partially-backfilled mine pits and heap leach site will remain for long term monitoring. These elements will change the local landscape permanently, though not to an extent that is significant within the wider region.

Surveys have identified 81 potential archaeological sites that are likely to be impacted by Project development, although none of these is considered by Armenian and international cultural heritage experts to be of high importance. A "chance finds procedure" will be in place at all times to ensure that any significant new site or artefact discovered during Project implementation can be recorded, investigated and removed or excavated as appropriate.

Stakeholder engagement is a core value of Lydian. During the exploration, pre-feasibility and feasibility phases, the main aim of stakeholder engagement has been to establish two-way communication between Geoteam and stakeholders at national, regional and local levels to ensure stakeholder views are incorporated into the ESIA and Project design. Good relationships with local communities have supported the development of exploration activities.

The Project will implement a comprehensive Environmental and Social Management Plan (ESMP) to govern the implementation, management and monitoring of the mitigation measures that the ESIA has identified as being necessary to control the environmental and social impacts of the Project. A total of 19 discipline-specific

management plans have been developed as part of the ESMP. A comprehensive Environmental and Social Management System (ESMS) is currently under development to implement the commitments made in the ESIA, during construction as well as during operations.