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<tr>
<td>ADR</td>
<td>Adsorption Desorption and Recovery.</td>
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<td>AIC</td>
<td>Amulsar Information Centre.</td>
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<td>AIDS</td>
<td>Acquired Immune Deficiency Syndrome.</td>
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<tr>
<td>BRSF</td>
<td>Barren Rock Storage Facility.</td>
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<tr>
<td>CBG</td>
<td>Cambridge Botanical Gardens.</td>
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<tr>
<td>CEO</td>
<td>Chief Executive Officer.</td>
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<tr>
<td>CLC</td>
<td>Community Liaison Committee.</td>
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<tr>
<td>E&amp;S</td>
<td>Environmental and Social.</td>
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<td>EBRD</td>
<td>European Bank for Reconstruction and Development.</td>
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<td>EHS</td>
<td>Environmental, Health and Safety.</td>
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<td>EIA</td>
<td>Environmental Impact Assessment.</td>
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<td>EITI</td>
<td>Extractive Industries Transparency Initiative.</td>
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<td>EMP</td>
<td>Environmental Monitoring Plan.</td>
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<td>EPC</td>
<td>Engineering, Procurement and Construction.</td>
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<td>ESAP</td>
<td>Environmental and Social Action Plan.</td>
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<td>ESIA</td>
<td>Environmental and Social Impact Assessment.</td>
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<td>ESMP</td>
<td>Environmental and Social Management Plan.</td>
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<tr>
<td>FEED</td>
<td>Front End Engineering Design.</td>
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<tr>
<td>FS</td>
<td>Feasibility Study.</td>
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<tr>
<td>H&amp;S</td>
<td>Health and Safety.</td>
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<td>HCS</td>
<td>Hazardous chemical substances.</td>
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<td>HIV</td>
<td>Human Immunodeficiency Virus.</td>
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<td>HLF</td>
<td>Heap Leach Facility.</td>
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<td>HSEC</td>
<td>Health, Safety Environmental and Community/Social.</td>
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<td>ICMC</td>
<td>International Cyanide Management Code.</td>
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<tr>
<td>IESC</td>
<td>Independent Environmental and Social Consultant.</td>
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<tr>
<td>IFC</td>
<td>International Finance Corporation.</td>
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<tr>
<td>IFI</td>
<td>International Financing Institution.</td>
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<td>LOM</td>
<td>Life of Mine.</td>
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<tr>
<td>LTI</td>
<td>Lost Time Injury.</td>
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<tr>
<td>MENR</td>
<td>Ministry of Energy and Natural Resources (of Republic of Armenia).</td>
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<tr>
<td>MF</td>
<td>Management Framework.</td>
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MNP

MTAES
Minister of Territorial Administration and Emergency
Situations (of Republic of Armenia).

MTPA
Millions of tonnes per annum

MUD
Ministry of Urban Development (of Republic of Armenia).

PAG
Potentially Acid-Generating.

PEP
Project Execution Plan.

PMS
Project Master Schedule.

PPE
Personal Protective Equipment.

PVA
Project Value Assessment.

RoA
Republic of Armenia.

ROM
Run of Mine.

SCG
Social Capital Group.

SEP
Stakeholder Engagement Plan.

STI
Sexually transmitted infections.

TEC
Treweek Environmental Consultants.

VPS
Vice President for Sustainability

VPSHR
Voluntary Principles on Security and Human Rights.
8 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

8.1 Introduction

The Environmental and Social Management Plan (ESMP) has been prepared for the construction, operation and closure (including rehabilitation and aftercare) of the Amulsar Gold Project, to be carried out by Lydian International Ltd (Lydian) and its fully owned subsidiary Geoteam CJSC (Geoteam). The ESMP was prepared based on the environmental and social issues identified during the environmental and social evaluation.

The ESMP contains plans, programmes, specifications and guidelines designed to control and manage the potential environmental and social impacts that were identified in the ESIA. The geographical, social, cultural and environmental dynamics have been taken into consideration. The ESMP is an integral part of the ESIA as it is a policy setting document for Lydian and its contractors. This document represents a commitment by Lydian to environmental and social sustainability, and applies to the Project’s entire life cycle.

The ESMP establishes the Lydian policies, commitments, and resources that are needed to allow effective implementation and continuation of the programmes and procedures to manage and mitigate the predicted impacts of the Project. Implementation of the ESMP will fulfil the requirements established by the environmental laws and regulations of Armenia, governed by the MNP, MUD, MTAES and MENR, as well as other technical and legal instruments that apply. The Project will also comply with World Bank Group EHS Guidelines, IFC Performance Standards and EBRD Performance Requirements.

The implementation of the ESMP’s commitments will be subject to supervision and internal and external auditing. Supervision of the implementation of, and compliance with, commitments set in the ESMP will be overseen permanently by RA Environmental Inspection and an Independent Engineer appointed by Lenders during the life of the loans.

In mid-2015, a Value Engineering (VE) and Optimization process was initiated, with Lydian commissioning Samuel Engineering Inc. (Samuel) and other consultants to develop engineering design on several identified VE and Optimization concepts. The objective was to reduce capital expenditure without increasing operating costs with no net change on environmental and social impacts. The results from this work done in 2015, which were published in the NI “43-101 Technical Report: Amulsar Value Engineering and Optimization” in November 2015, included reduced capital and operational costs, making the Project more
viable in a challenging economic environment. Based on the Technical Report, this version of the ESIA (v10) is the basis against which the ESMP monitors and continuously improves. The Project Execution Plan (PEP) is being developed and is to be implemented in accordance with this ESMP.

8.2 Objectives

The principal objective of the ESMP is to “operationalise” the commitments to environmental and social (as well as occupational health and safety) management and mitigation as identified by the ESIA. This should ensure that the Project (including construction, operation, closure and post-closure phases) is undertaken in a manner which maximizes the benefits to, and minimises the negative impacts on, the physical, biological, social and archaeological environments in the Project-affected area.

Specific objectives include:

- Achieving zero lost time injuries (LTI’s) during construction and operation;
- Establishing upfront during construction a culture for safety, productivity, efficiency and flexibility to be subsequently maintained by Amulsar operations;
- Implementing appropriate prevention and mitigation measures to reduce the incidence of negative environmental impacts and promote favourable conditions during the construction, operation and closure phases;
- Creating an effective environmental monitoring and supervision plan that allows for the monitoring of the proposed activities and environmental variables during the Project;
- Establishing participation mechanisms for the Project stakeholders to keep them informed about Project activities and how they may affect their daily activities;
- Elaborating procedures that will allow effective and timely response to emergencies, and enable the reporting of events that may arise;
- Safeguarding biodiversity and ecosystems and making special provision for habitats and species of conservation importance at the national and international levels;
- Performing adequate management of solid residues as required by applicable laws and IFC/EBRD requirements;
- Monitoring the ongoing land acquisition and economic displacement activities;
- Restoring livelihoods impacted by economic displacement caused by the Project;
- Preserving the archaeological heritage identified in the Project’s area of influence as defined by applicable laws;
- Establishing and maintaining communication channels among Lydian, the appropriate...
authorities and stakeholders associated with the Project;

- Having zero equipment loss or damage during importation, transportation and storage, installation, commissioning and ramp-up phases; and
- Ensuring that the high level commitments made by Lydian (EITI, ICMC & VPSHR) are met.

8.3 Project Overview

The Amulsar project consists of the mine and the processing facilities, including the open pits, the barren rock storage facility (BRSF), the crushing and screening plant, the overland conveyor and truck load-out facility, the heap leach pad and solution ponds, the Adsorption, Desorption and Recovery (ADR) Plant, and the infrastructure that supports the mining and processing facilities. The non-processing infrastructure components include, but are not limited to, a 110kV main electrical substation & 35kV secondary power distribution network, mine workshop and warehouse facilities, administration and ancillary buildings, surface water control structures (ponds, piping, etc.) for contact and non-contact surface water management, raw water make-up system from the Arpa River, site access and haul roads, and temporary construction infrastructure.

The Project’s construction phase will last for two years. During the 10 years of operations (including pre-production during the construction phase), the Artavazdes, Tigranes and Erato ore bodies will be mined using conventional open pit mining methods. Precious metals will be recovered from low-grade material by heap leaching. To prepare the ore for leaching, a 10.5 million tons per annum (MTPA) crushing and screening plant will reduce the ore to a nominal 19 mm size. The crushed ore will be conveyed approximately 5.6 km with a covered overland conveyor and discharged to a crushed ore stockpile. Crushed ore will be loaded into trucks and stacked on the heap in 8 m lifts. The ore will be leached with a dilute cyanide solution in the conventional manner. Precious metals will be recovered from the leach solution by adsorption on activated carbon. The precious metals will be periodically desorbed from the activated carbon and the stripped carbon will be acid washed and reactivated. Precious metals will be recovered from the strip solution using a Merrill-Crowe zinc precipitation process. The precipitate will be dried, retorted for removal of any mercury and smelted to produce doré bullion that will be shipped from the site to refiners.

The primary objective of the Project is to design, construct, and operate the gold and silver production facilities with due consideration for the economic, social, environmental, health and safety (occupational as well as community) risks of the Project and with a strong
commitment to the sustainable development of Project-affected communities and the environment.

The physical footprint of the Project’s facilities will cover 599 ha, and a further 323 ha in areas that are likely to be disturbed by the mining operations. The total disturbed area will be 922 ha. Further buffer zones will experience effects of noise, dust deposition, and limits to access resulting from fencing, or proximity to Project infrastructure. These buffer zones amount to an additional 854 ha.

Of this overall total of approximately 1,767 ha, about 152 ha comprise 274 privately-owned plots that Lydian will gain access to through a land acquisition process (see Appendix 8.23):

- Heap leach facility (HLF) area: 252 private land plots consisting of approximately 139 ha of arable land, 22 ha of orchards and 14 ha of pasture/hay land, to be acquired permanently for the Project; and
- Conveyor and haul roads: 22 private land plots to be rented for the construction and operation phases, covering a total surface under the conveyor of 13 ha.

The closure and rehabilitation phase of the mine is an important component of the Project that will take place when the economic resource is exhausted and mining and processing completed. Further details are provided in the plan prepared to that effect (see Appendix 8.18).

**8.3.1 Project Execution**

The Environmental Impact Assessment (EIA) approval for the Project was received by Lydian in October 2014, and the Mining Right (MR) in November 2014. Changes to the Project design as a result of the VE and Optimization work have resulted in the need to prepare a revision to the EIA and amend the ESIA completed and disclosed in April 2015. Lydian is in the process of preparing a new EIA and applying to government for a new MR. The granting of the amended MR, anticipated by mid 2016, will allow full construction to start within the parameters of the Mining Code and the EIA Law. Some early works that are consistent with the already granted permits may take place from June 2016 onwards. In parallel a number of permits required for the construction and operation phase by Armenian regulations will be determined during Q1 and Q2 of 2016.
The preliminary Project Execution Plan (PEP) has been produced. The PEP describes the execution of required optimization studies, Basic and Detail Engineering, procurement and construction, commissioning, operations planning and initial operations through to project completion. The Project milestones include:

- Early Works construction to start in Q2/Q3 2016;
- Land acquisition to be completed by end of Q2 2016;
- Detailed engineering design to be completed by end 2016;
- Start of mining Q4 2017;
- First gold in Q1 2018; and
- Commercial production by end of Q2 2018.

8.3.2 Project Design

For the Project design phase, the PEP envisages a “mixed contract” strategy, whereby specialist international companies will be employed to design process facilities, the HLF, the Barren Rock Storage Facility (BRSF) and high/medium power supply infrastructure; and Armenian engineering and construction firms will be employed for other infrastructure including roads, the construction camp, potable and wastewater treatment, power supply and distribution, storm water impoundment structures and water pumping systems, as well as for completing the requisite in-country process for obtaining construction permits.

8.3.3 Construction

The PEP envisages a “mixed contract” approach to construction of the Project, using a combination of Project Construction Management (PCM) contracts, Construction Contracts, Engineering/Supply and Engineer-Procure-Construct (EPC) contracts for the majority of the work. The “mixed contract” approach presents challenges in terms of the integration and coordination of contractors, in particular on Health, Safety, Environmental and Community/Social HSEC management; and this challenge will also apply with regard to the implementation of the ESMP. The implications for ESMP implementation are discussed further in Section 8.10. The provisional construction schedule is provided in Figure 8.1.

The Early Works activities are permitting, engineering and weather dependent. Site elevation differences enable work to continue efficiently at lower elevations, but work at or above 2600 m above sea level may be suspended if extreme weather conditions prevail. The focus will be on critical path activities to the extent possible as early as possible in the 2016 earthworks construction season; this focus will generally be in the HLF and ADR plant areas,
although pioneer earthworks will be made at higher elevations, weather permitting.

Early Works currently planned include:

- Critical sedimentation and drainage control structures to capture runoff from initial earthworks;
- Upgrade or development of access roads into Project work areas;
- Establishment of a platform for construction offices, temporary warehouse, equipment parking and servicing near the proposed ADR facility;
- Temporary construction utilities for water, power and sewage;
- Installation of access control guard stations to Project work areas;
- Temporary water intake at the Arpa for early construction activities; mainly dust suppression and compaction at the HLF site;
- Tentatively in the spring, relocation of the irrigation pipeline that runs across the bottom of the HLF site (tie-in, install vales and install new pipe), and removal of the power line; and
- Initial archaeological clearances including excavations in the HLF area.

The facilities and infrastructure to be developed during the main construction phase includes:

- Open pits;
- BRSF;
- Crushing and screening plant;
- Run of mine (ROM) ore stockpile;
- Topsoil stockpiles;
- Surface water management network;
- Temporary construction infrastructure;
- Haul and access roads;
- Overland conveyor and truck load-out area;
- HLF including:
  - Heap leach pad;
  - Process pond and storm ponds;
  - Contact water pond and surface water diversion channel;
  - ADR plant; and
  - Administration offices;
- Passive Water Treatment System (PWTS);
- Maintenance workshops and offices;
• Domestic waste water treatment facilities;
• Landfill for non-hazardous waste;
• Contained storage cell for transfer of hazardous wastes
• Electrical power and water supply infrastructure;
• Explosives magazine;
• Reagents storage facility;
• Cyanide storage facility;
• Analytical and metallurgical test laboratory at ADR facility; and
• Hotel accommodation in Jermuk for Lydian construction and operations staff, with the potential to build a temporary camp that would be removed following the peak construction work force requirements.

The current Project site layout is shown in Figure 8.2.

Access to the mine, crushing facilities, and BRSF will be via a 10 km partially paved road that links to the H-42 connecting Gndevaz and Jermuk (see Figure 8.2). Since the HLF is also close to the existing H-42 leading from Gndevaz to Jermuk, a 100 m access road will be constructed for the construction, operation, and maintenance of the HLF and ADR gold and silver recovery plant. An access road along the conveyor corridor to the crusher will be also constructed, for maintenance / monitoring of the conveyor as well as access to the crusher and production infrastructure at the top of the mountain. Fibre-optic lines, water and power lines will also be located in this corridor to minimize land disturbance and provide easy access for maintenance. The existing power lines, which run along the western edge of the mine site, will be used to provide site power and a new 110kV substation will be built. Only mine employees and contractors/vendors with approved mine business will be allowed to drive on these access roads.
Figure 8.1: Project Schedule (as of April, 2016)
The location of the BRSF will be on the northeast side of Amulsar Mountain, approximately 2.8 km from Tigranes pit and 1.1 km north of Erato. The BRSF will include a barren rock storage pad and a toe pond connected via pipeline to the passive water treatment system (PWTS) at the HLF. Post-closure the PWTS could be relocated down-gradient of the barren rock storage pad if necessary. The BRSF will be constructed with a low-permeability compacted clay liner consisting of re-compacted subsoil. Non-acid-generating (NAG) barren rock will be placed over the compacted soil liner. From year 5 of operations, any water emanating through the foundation of the BRSF (from potential seeps and springs) will travel through this layer to the toe pond and via a gravity fed pipe to the PTS before being discharged as treated water in the Arpa River (see Appendix 3.1). Some of the barren rock at Amulsar has the potential to produce acid rock drainage (ARD) if managed improperly. Potentially acid generating rocks will be segregated and encapsulated within the BRSF to mitigate the potential formation of ARD and runoff.

### 8.3.4 Operations and Closure

Mining of the Amulsar deposit is planned to use conventional open-pit methods for the operational phase of 10 years. The Artavazdes and Tigranes areas will be mined ahead of the Erato area, which requires more rock stripping to expose the ore. Barren rock from the Tigranes and Artavazdes deposits will be managed in the BRSF and the barren rock from the Erato area will be used to partially backfill the Tigranes and Artavazdes areas in the later part of the mining operation.

Located approximately 0.8 km north of the Erato pit the crushing and screening facility will be located within a building and connects to the overland conveyor. Other mine facilities include the maintenance workshops, mine office building, and other smaller facilities to assist in the operation of the Project. Crushed ore will be transported approximately 5.6 km by the covered overland conveyor. Ore will be loaded into haul trucks at the western end of the conveyor for distribution and stacking in the HLF.

The HLF will be located on the western side of Amulsar Mountain, approximately 1 km south of Gndevaz at its closest point, and approximately 6.1 km in a direct line from the open pits. The HLF will be located in a valley fill area and is anticipated to have a design capacity of 104 Mt. The HLF is located within the Arpa River catchment and downstream of Kechut Reservoir. It includes collection and process ponds and the ADR gold recovery plant adjacent to the pad.
At closure the PTS, which would have been operational since year 5 of operations is the preferred option to mitigate the potential formation of ARD from the BRSF. Passive water treatment systems do not require continuous chemical inputs and take advantage of naturally occurring chemical and biological processes to treat ARD (see Appendix 3.1). After the BRSF outflow water has passed through the PTS, the water will collected and monitored prior to discharge into the natural environment. The PTS output will comply with RA, IFC and European Union water discharge standards.

Closure and rehabilitation include the reclamation of the open pits, barren rock storage facility, and heap leach pad / ponds, together with the dismantling of infrastructure and restoration of these and other disturbed areas to grasslands that support habitats similar to those currently present within the Project.

### 8.3.5 Preliminary Life of Mine – Closure and Rehabilitation Schedule

An approximate Life of Mine (LOM) and Closure and Rehabilitation schedule is as follows:

- **Years -2 and -1:** Mine construction.
- **Years 1 through 9:** Mining operational phase.
- **Years 9 through 10:** Removal and processing of low-grade ore from BRSF.
- **Years 0 through 10:** Develop and monitor instrumented re-vegetation test plots and closure cover test plots and optimize the closure and rehabilitation plan.
- **Years 1 through 3:** Progressive rehabilitation of pipeline disturbance areas and road embankments. Pilot test for the PWTS to demonstrate adequacy.
- **Years 1 through 6:** Placement of barren rock in BRSF (Phases 1 through 3).
- **Years 1 through 5:** Placement of low-grade ore in BRSF.
- **Year 1 through 4:** Progress feasibility studies to field trials and the construction of a passive treatment system for treatment of contact water including BRSF seepage.
- **Year 5:** Treatment of contact water from BRSF will commence in PTS.
- **Years 3 through 7:** Progressive reclamation of BRSF starting from northern toe of facility (excluding low-grade ore area) including regrading, recontouring, and cover construction.
• Years 3 through 9: Progressive backfill of Tigranes and Artavazdes Pits.
• Years 7 through 11: Progressive reclamation of pit backfill and resource areas including cover construction.
• Years 10 through 11: Reclamation of south facing BRSF slopes following removal of low-grade ore including regrading, recontouring, and cover construction.
• Years 11 through 13: Neutralisation / rinsing of HLF.
• Years 11 through 13: Progressive removal of infrastructure, including crushing facility, structures non-essential to closure, conveyor system and final rehabilitation of BRSF, haul roads, platforms and securing the pits.
• Years 13 through 14: HLF closure activities including regrading, cover placement and surface water controls (six-month construction period for closure and rehabilitation) after neutralisation / rinsing.

Year 14: Construct drainage and convert storm water ponds to a wetland system to direct contact water to HLF PTS.
• Year 14+ Passive treatment of HLF draindown solution.
• Years 14 through 19: Post-closure period.
• Monitoring of rehabilitated areas – minimum of five years.
• Final closure of remaining facilities (6 to 12 month decommissioning phase).

It is anticipated that the closure and rehabilitation schedule will last approximately 5 years.

8.4 Corporate ESH&S Policies

Lydian and its controlled affiliates promote sustainable development outcomes and are committed to the integration of environmental, social, health and safety considerations into their procedures for Project development and operation at all stages.

Lydian is committed to continuously improving the operational performance of the Project, to achieve zero lost time injuries (LTI’s), to establish a culture for safety, productivity, efficiency and flexibility to enhance the Project’s social and environmental benefits in Armenia, and to limit adverse impacts while maintaining a high level of environmental, social, and health and safety performance.

Lydian has a policy framework as described in Section 2.3 of this ESIA. It comprises the Code
of Conduct and eight corporate policies:

- Environment Policy (Appendix 8.1);
- Social Policy (Appendix 8.2);
- Occupational Health and Safety Policy (Appendix 8.3);
- Human Resources Policy (Appendix 8.4);
- Whistle Blower Policy;
- Anti-Corruption Policy;
- Insider Training Policy; and
- Disclosure and Confidentiality Policy.

Lydian’s corporate policies and Code of Conduct, available on the Lydian website, are all incorporated in the Project ESMP (see http://www.lydianinternational.co.uk/corporate-governance.htm)

8.5 Stakeholder Engagement

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 Stakeholder Engagement Plan (SEP) prepared in January 2016 (see Appendix 8.6) presents the disclosure, information and consultation activities proposed during construction and operation. It includes but is not limited to:

- Post ESIA disclosure consultation;
- Project information meetings and technical workshops;
- Postings on the corporate Geoteam website;
- Availability of the Amulsar Information Centre (AIC), with direct access to the Grievance Mechanism;
- Community Liaison Committee (CLC) regular monthly meetings;
- Message Boards and Newsletter; and
- Media Advertisements and Press Releases.

Lydian/Geoteam will organize meetings and workshops as needed to explain the construction
activities and schedule from March 2016 until mid 2018 in the Gndevaz AIC and the municipality of each village (Jermuk, Saravan and Gorayk) as well as in Yerevan.

The SEP will be updated periodically and in accordance with major Project changes to reflect engagement activities that may be required during the life of the Project.

8.6 Organisation for ESMP Compliance
Lydian International, with its wholly owned Armenian subsidiary, Geoteam CJSC, is managed as a single organisation with five principal departments reporting to its President and CEO:

- Chief Operating Officer / Country Manager;
- Finance;
- Operations;
- Government Relations & Business Development; and
- Project Implementation.

The proposed Lydian organization chart for 2016 to include the construction phase is provided in Figure 8.3.
Figure 8.3: Proposed Lydian Organisation in 2016
Lydian’s Vice President for Sustainability (VPS) is responsible for developing and managing the OHSMS and ESMS, and the associated management plans. In terms of implementation, the VPS retains overall accountability for compliance and responsibility for ensuring that the health, safety, environmental and social commitments of the ESIA are met.

During construction, the environmental, health and safety teams operating on site will be integrated into the construction team and will be directly accountable to the VPS, with an additional communication and reporting function to the Project Director. Contractor compliance management approaches will be defined when the exact composition of the “mixed contract” approach is understood (see Section 8.10). It is anticipated that larger EPC contractors will provide their own social and environmental management resources, plans and compliance reports, whereas smaller contractors may fall directly under Lydian’s OHSMS and ESMS. However, Lydian's social and environmental performance requirements will be specified in all contracts, and compliance checks and audits will be carried out by Lydian personnel. It is anticipated that there will be a significant effort related to training of contractors, construction workforce and Geoteam staff before and during the construction phase. To that effect the Social Capital Group (SCG) conducted, in January 2015, a nine-day scoping visit to the Amulsar Project to provide advice on the design of a training programme to benefit local residents during mine construction and operation, with a final report completed in March 2015, which will remain an internal document.
8.6.1 Corporate and Group Functions

The functions of the Corporate and Group executives include overseeing the implementation of Lydian’s environmental and social policies. The Lydian corporate level utilises supervision feedback, periodic meetings and audits to assess progress with the Social and Environment functions to ensure the proper implementation of the ESMP. The Board of Directors is advised on social and environmental issues through the HSEC Committee, as described below:

HSEC Committee

The purpose of the HSEC Committee is to assist the Board of Directors of Lydian in its oversight of:

(a) Health, safety, environment and community risks;
(b) The Corporation’s compliance with applicable legal and regulatory requirements associated with health, safety, environmental and community matters;
(c) The Corporation’s performance in relation to health, safety, environmental and community matters;
(d) The performance and leadership of the health, safety, environment and community function; and
(e) The Corporation’s external communication and annual reporting in relation to health, safety, environmental and community matters.

The corporate level will fulfill the following functions:

• Assure that Lydian’s policy and guidelines are adhered to;
• Coordinate the implementation of procedures established in the ESMP;
• Liaise with members of the public, local organisations, and governmental and non-governmental organisations on environmental issues; and
• Inform the relevant authorities of any incidents that occur during the Project.

8.6.2 Lydian HSEC Functions

Lydian Vice President Sustainability

The Lydian VPS reports directly to the Chief Operating Officer (COO) and presents social and environmental issues to the HSEC Board Committee. The VPS has overall responsibility for the social and environmental management, compliance, training and performance of the Amulsar Project. The management of all of the ESIA/ESMP commitments are organized under a single (non-operational) management responsibility reporting directly to the COO. The VPS will lead the development of the ESMS and OHSMS required for construction and operation.
Permitting and Sustainability Senior Manager

The Permitting and Sustainability Senior Manager reports directly to the VPS and is responsible for tracking compliance with Armenian environmental permitting requirements, regular reporting, and oversight of social, environmental and training issues as required by RA regulations. He/she is responsible for the management and implementation of the legal register, and will work closely on environmental requirements with the Senior Manager HESS.

Senior Manager Health, Environmental, Safety & Security (HESS)

The Senior Manager HESS is accountable for ensuring the development and implementation of the OHSMS and implementation of the ESMS together with responsibility for developing and ensuring training schedules to be implemented throughout the Company, in accordance with a training matrix. The Site Environment Manager (with a team of at least five reports), Site Safety and Health Manager (with a team of at least 7 assistants), and Security Manager (with a team of security officers) all report directly to the Senior Manager HESS. The Senior Manager HESS has overall accountability for environmental, health, safety and security management on site, together with the necessary environmental and social training requirements. The Senior Manager HESS will have direct accountability to the VPS and a second communication and reporting function to the Project Director. He provides support to the Site Environment Manager, the Site Safety and Health Manager and the Site Security Manager in terms of implementing the OHSMS and ESMS.

Environmental Roles:

Site Environment Manager

The Site Environment Manager is responsible for environmental management during construction and operations at Amulsar. Reporting to the Senior Manager HESS, he/she develops the necessary procedures, plans and training requirements for on-the-ground implementation of Lydian environmental policy and the environmental commitments made in both the approved regulatory EIA and the ESIA undertaken to comply with international financing institutions' requirements.

The Environment Manager’s functions include:

- Day-to-day water, noise, air quality, and footprint management, including compliance checking of contractor activities (as per the Compliance Assurance Plan; see Section 8.10);
- Liaison with contractors' environmental staff;
- Management of environmental monitoring and reporting;
• Training of environmental staff and contractors;
• Oversight of biodiversity initiatives;
• Management of the Site Environment Advisors; and
• Oversight of cultural heritage management.

**Senior Biodiversity Specialist**

The Senior Biodiversity Specialist reports to the Site Environment Manager and is responsible for the on-site implementation of Amulsar's biodiversity initiatives. This includes baseline data collection, monitoring, and implementation of the partnership work with the Institute of Botany (IoB) on the *Potentilla* Research Project and with Treweek Environmental Consultants (TEC) on development and implementation of the biodiversity offset and the management of the set-aside.

**Site Environment Advisors**

The Environment Advisors are responsible for the implementation of the environmental components of the ESMP on site, and particularly the Environmental Monitoring Plan (EMP) which includes monitoring of surface water and groundwater, aquatic ecology, meteorology, and air quality. These officers report to the Site Environment Manager.

The Environment Officers will also be responsible for day-to-day environmental observation and reporting as required by the various management plans.
Social Roles:

Community Relations Manager

The Community Relations Manager reports directly to the VPS and manages the social component of the ESMP and ESMS, local recruitment and training, stakeholder engagement and all community development programmes, together with responsibility for developing and ensuring training schedules to be implemented throughout the Company, in accordance with a training matrix. The Community Relations Manager also manages the community grievance procedure. He/she is the Company’s resource in strategic planning, providing social sector technical and training input and insights to the implementation of the corporate responsibility and social policy and strategy.

The Community Relations Manager’s functions include:

- Implementation and maintenance of the stakeholder engagement plan (SEP) and log (information meetings, public hearings, CLC meetings, other meetings, stakeholder contacts);
- Oversight of the local recruitment processes and the local training programme;
- Oversight of the local procurement initiatives;
- Oversight of community health, safety and security;
• Oversight and compliance checking (as per the Compliance Assurance Plan; see Section 8.10) of contractors’ activities where there is interaction with local communities;
• Implementation of the Community Development Plan;
• Managing the grievance mechanism and database;
• Supervising the Amulsar Information Centre;
• Preparing the annual "Issues & responses" report and respective database;
• Participating in any emergency response in the event that an accident or emergency occurs and involves social issues;
• Implementation of the livelihood restoration activities per the LALRP (see Appendix 8.23); and
• Managing the community field assistants and Community Liaison Officers.

Social Development and Stakeholder Engagement Coordinator
This Coordinator reports directly to the Community Relations Manager and is responsible for the implementation of the SEP and the social development programmes. This roles includes the tracking of community grievances (both those raised through the Project’s community grievance mechanism and those received through Contractor grievance mechanisms, where applicable).

Site Community Liaison Officer
The Site Community Liaison Officer is responsible for interfacing with the local stakeholders. Before the Project begins, the Community Liaison Officer will develop a tracking and documentation system to monitor this process.

The Community Liaison Officer’s functions include:
• Maintain an open line of communication with the environment, health and safety, construction, operations, and human resources functions (including contractors);
• Monitor Project activities that may affect the local population;
• Create and implement a directed, systematic communications strategy to help coordinate with local stakeholders;
• Consult with, and provide appropriate information to, all local stakeholders;
• Coordinate with construction personnel to provide information to community stakeholders during local meetings where the project’s activities are discussed; and
• Report any incident that takes place during the Project to the Permitting and
Sustainability Senior Manager and Community Relations Manager.

Environment Advisors and Community Field Assistants
The Environment Advisors and Community Field Assistants will supervise, monitor and track the implementation of the environmental and social commitments established in the ESMP. The teams will consist of a number of environment and social professionals reporting to, respectively, the Site Environment Manager and the Site Community Relations Manager.

Land Access Lead
Currently land access is placed under the direct responsibility of the Geoteam Managing Director (Land Access Lead), with compliance oversight provided by senior executives.

The Land Access Lead’s tasks include the following:
- Coordinates and allocates all activities, and ensure that they are delivered on time, particularly with regards to external contractors (valuer, notary, and potentially others);
- Liaises with mayors and other external parties;
- Coordinates grievance management (allocation of tasks with regards to grievance review and resolution) and overall accountability for grievance management;
- Participates personally in difficult negotiations (with the other staff identified below);
- Ensures quality control, particularly where tasks are outsourced, and ensures that all documentation is consistently gathered, stored, and processed;
- Checks, validates and signs all legal agreements pertaining to the land access process;
- Prepares monthly reports per the format indicated in the Land Access and Livelihood Restoration Plan (LALRP, see Appendix 8.23) and provides all information required for compliance monitoring; and
- Reports to Lydian Senior Management on a regular basis (weekly and monthly).

Most of the land acquisition for the Project has been completed, and the Land Access Lead’s responsibilities will diminish as the Project moves to implementation, although he will have a role in dealing with any residual issues or additional land acquisition, if required.

Other Land Acquisition Staff
Land Access Manager:
- Coordinates negotiation activities (including signature with notaries), establishment of schedules, verification of agreements, coordination of registration at cadastral offices,
coordination of identification of absentee co-owners, perform regular documentary audits;

- Coordinates the development of replacement land (irrigation works) and its further allocation to affected households;
- Coordinates activities pertaining to vulnerable peoples’ identification and assistance;
- Participates in difficult negotiations and general engagement;
- Triggers compensation payments with sign-off from the Land Access Lead;
- Liaises with absentee co-owners;
- Triggers the involvement of the Legal Services Provider where warranted.
- Coordinates social surveys and monitoring;
- Coordinates livelihood restoration initiatives (and other Geoteam social programmes);
- Coordinates activities pertaining to herders;
- Supervises and audits information management.

Negotiation Coordinator: based in the field, this individual is responsible for coordinating all survey activities and organises further negotiations and agreements.

Survey and Negotiation Agents (two): based in the field, these persons conduct negotiations and surveys and input data into the information management system; these persons were recruited in the community and are allocated full time to the land acquisition activity for the duration of the exercise.

GIS/database Specialist: coordination of data entry, quality insurance and verification (part time), generation of quantitative reports.

Land Acquisition Lawyer: liaise with the Cadastre and notaries, help with legal matters, prepare and keep records of negotiation visits and meetings.

Finance: coordination of payments (by financial director and existing collaborators within his department, part-time).
8.7 Development of the ESMS

Lydian currently has in place separate management systems addressing the Environment / Social and Occupational Health / Safety disciplines. It is the intention of the company to integrate the ESMS with the OHSMS to conform to ISO 45001 DIS, as the project development advances, during the operational phase. Generally the two separate systems are well aligned and follow international best practices for management system implementation. Lydian believes that having a management system framework in place is critical to ensuring effective Health, Safety, Environment and Community (HSEC) performance and management of the associated risks.

8.7.1 Current Status of Management System

The initial ESMS was developed for exploration activities in line with International Organization for Standardization ISO 14001:2004 Environmental Management Systems – Requirements with Guidance for Use. The existing ESMS takes into account the legal and administrative requirements of Armenia, the IFC Performance Standards and the EBRD Performance Requirements.

Work is underway during 2016 to develop a revised ESMS that aligns with the more current version of ISO 14001:2015. During the construction phase the ESMS and OHSMS will remain separate and operate under ISO 14001: 2015 and OHSAS 18001:2007 respectively. The management plans, procedures, training matrixes and requirements have been developed for early works of the construction phase.

The revised Lydian ESMS will also align with expectations outlined in ISO 26000: Guidance on Social Responsibility, and will address activities for the construction and operational phases of the Project.

8.7.2 ESMS Objectives

The objectives of the ESMS are to:

- Establish environmental and social management standards that comply with or surpass statutory, industry, and reasonable community expectations;
- Continually review and, where appropriate, amend, performance criteria to reflect developments in technology, statutory requirements, leading industry practice, and social/community standards;
• Facilitate the implementation of management plans as defined by the ESIA for the avoidance, minimisation and control of environmental and social impacts;
• Inform Project personnel of their responsibilities with respect to environmental and social issues and to monitor the manner in which those responsibilities are implemented;
• Train Project personnel, contractors and community representatives, as necessary, in relevant environmental and social procedures, actions, and monitoring programmes; and
• Audit business activities and working procedures and implement changes as needed to demonstrate that these objectives are being met.

8.7.3 Implementation of the ESMS
The ESMS establishes the framework that guides all environmental and social activities for the Amulsar Project. As required by IFC PS1 and EBRD PR1, the ESMS "is a dynamic and continuous process initiated and supported by management, and involves engagement between the client; its workers, local communities directly affected by the project... and, where appropriate, other stakeholders".

The ESMS provides a methodological approach to managing the environmental and social risks and impacts of the Project in a structured way on an ongoing basis. The ESMS applies to all Lydian activities in the Republic of Armenia, including the Amulsar Project site, any exploration activity elsewhere, and the Geoteam office located in Yerevan. Compliance with the ESMS is a requirement of all employees and contractors involved with Lydian, including its wholly-owned subsidiary, Geoteam.

Lydian’s ESMS is founded on the basic PLAN, DO, CHECK and ACT (PDCA) model, which is the foundation of most international management system standards for the past two decades, including the internationally recognized ISO 9001, ISO 14001 and OHSAS 18001 Standards (see Figure 8.5).
The ESMS includes 17 elements to guide environmental and social management activity (Figure 8.6). Note that the IFC PS and EBRD PR are embedded within the Lydian ESMS. Implementation of the ESMS is a means of ensuring that all commitments made in the EIA and ESIA are achieved (see Figure 8.6).
The ESMS incorporates other documents of importance for ensuring that environmental and social risks are managed in a responsible manner and impacts are prevented or mitigated:

- **Environment Policy and Social Policy**: Establishes the overall performance expectations. Commitments made in the Policies apply to all personnel in the organization, including contractors.

- **Environment and Social Objectives**: Establishes specific areas of focus for improvement (all levels of the organization are involved in meeting the improvement expectations).

- **Registers**: Serve as the means for documenting key areas of information such as risks and legal and other commitments. The Registers are administered by the Management Team and are updated on a regular basis as new information is obtained.
The ESMS will be developed during the first and second quarters of 2016 and will be fully functioning and in place before early work commences on site in May 2016.

### 8.8 Occupational Health and Safety Management System

The Occupational Health and Safety Management System (OHSMS) is being developed on the basis of existing Lydian H&S policies and the Geoteam Occupational Health and Safety Management Plan (OHSMP) in accordance with the elements prescribed in OSHAS 18001. The OHSMS and OHSMP also embody the IFC & EBRD requirements (see Figure 8.7).

**Figure 8.7: Framework for Occupational, Health & Safety Management System**
It is important to understand that the OHSMS is a living document and that changes, additions and deletion in the plan, Standards and Procedures will occur on a regular and controlled basis. This includes the intention to combine the management systems under ISO45001 DIS, during the operational phase.

The purpose of the OHSMS is to provide guidance, Standards & Procedures laying out requirements for construction and operations to align with RA Laws, Lydian Policy, IFC PS, EBRD PR and GIIP. It will ensure Best Practice for the protection of staff, contractors, local communities, and the environment and culture. The OHSMS outlines the actions to be carried out during the design, supply, manufacture, construction, installation and testing of the works, to ensure acceptable OH&S standards are maintained.

The OHSMP sets out what needs to be done to accomplish our goal of ZERO HARM and will provide guidance to our behaviour-based programme.

The OHSMP will provide an overview of systems and processes that are focused on the goal of “Zero Harm”. It will outline the OH&S requirements for the Project Management Team and contractors associated with the project.

It will further provide an opportunity for contractors with no established OH&S programmes to utilize this plan and its accompanying documents while working on the Project.

The OHSMS will be designed to manage and mitigate risk exposure levels to “As Low As Reasonably Practicable” (ALARP) throughout the Project.

The all-encompassing OHSMP comprises Management Plans, Standards, Procedures and training programmes that will be based on a combination of traditional safety & health and behaviour-based health & safety allowing for a focused transition to more behaviour-based aspects as the workforce development allows, while maintaining enough traditional systems to ensure compliance with the RA laws and other shareholders' requirements. More emphasis will be placed in 2016 on a “risk based system” approach to Lydian’s OHSMS, as behaviour-based systems are often criticised as too focused on “blame the worker” whenever things go wrong.
A new standard named ISO 45001, which sets requirements for occupational health and safety management systems, reached ISO Committee Draft stage in late 2014. It is anticipated that the final publication date of this new standard is set for late 2016.

8.9 ESMP Development and Implementation

8.9.1 Commitments Register

Various environmental and social mitigation measures have been developed as part of the ESIA to manage and minimise potentially significant adverse effects to acceptable levels and to enhance Project benefits.

These mitigation measures are collected and summarised in a Commitments Register (CR), which lists in one place all of the mitigation and management actions that need to be undertaken by the Project with respect to environmental and social issues. The CR enables Lydian to track its compliance with the ESIA. However, the CR is not considered practical for public issue, because it includes more than 400 items, some of which reflect relatively standard good mining industry practice. Therefore, the ESIA includes (as Appendix 8.5) an abbreviated version of the CR: the Public Commitments Register (PCR). Commitments on actions to be undertaken with respect to detailed engineering design, and routine on-site management measures, are excluded from the PCR; the PCR includes only those items which are particular to the Amulsar Project and which will be of most interest to Project lenders, shareholders and stakeholders. The commitments will also include the permit conditions that relate to environmental performance of the Project, including:

- Comply with construction normatives required by the Sevan Technical Committee for the protection of ground and surface waters;
- Comply with the requirements for the translocation of Potentilla porphyrantha, as identified in the Permit application; and
- Prior to 2 years before mine closure, the detailed plans for plans for closure and rehabilitation to be submitted.

Lydian is committed to report annually on its HSEC performance, including on implementation and progress of the PCR.

The full CR will be maintained as an internal document as part of the ESMS and will be used to track the status of the environmental and social commitments. It can be organised by Project phase, including construction, operations, and closure, and also references the
location within the ESIA document where each commitment can be found, for contextual reference. The intent is for the CR to be referred to constantly during all phases of Project implementation and environmental and social training, and shared with contractors as necessary. It will be a live document that will cross-reference other documents relevant to the Project as necessary (e.g. additional legal documents, requirements of lenders, and so forth).

8.9.2 ESMP
The Amulsar Project ESMP comprises a suite of discipline-specific environmental and social management plans (Appendices 8.7 to 8.24). Except in a small number of cases, each of the commitments listed in the CR (see above) which is also addressed within one or more of these management plans. The management plans describe how the commitments will be fulfilled, and how their fulfilment will be checked.

A total of 20 management plans have been developed, including two health and safety plans, an emergency response plan, three social plans, two biodiversity plans, and ten environmental management plans. They will be regularly revised as required and in accordance with the ESMS & OHSMS standards.

The discipline-specific management plans which comprise the Amulsar ESMP will be implemented during construction and operation via the ESMS. Linked to the plans will be operating procedures which govern how the plans' requirements are implemented; these may also include various forms, templates, checklists and work instructions. This three-tier arrangement is illustrated in Figure 8.8. The three-level structure is based on the premise that responsibility must be assigned to the individual or to the unit operation that controls or manages the operational procedures that can result in potential significant adverse effects. This individual or unit is therefore most able to respond and mitigate any occurrence requiring action.
As described in Section 8.3, a “mixed contract” approach to construction of the Project is envisaged, potentially using a number of different contractors operating under different types of contract. This presents challenges for implementation of the ESMP (in comparison with a...
single-contract strategy), since the commitments will need to be communicated to each contractor involved in their implementation. Although Lydian retains ultimate responsibility for ensuring implementation of the ESMP, Lydian will expect its contractors to align and abide with its provisions. To facilitate this, Lydian will adopt the following strategy:

- Potential contractors will undergo a pre-qualification process which will assess their competence in environmental and social management;
- The key environmental and social commitments associated with the Project will be communicated to potential contractors at the tendering stage, potentially in part as a series of “Project rules”;
- The tender evaluation process will conform to the requirements Contractor Management Plan (see Appendix 8.26), which includes the validation of the contractor’s consideration of environmental and social issues as well as safety and the contractor’s policy and resourcing commitments (this aspect will be appraised by members of the environmental and social team, reporting to Senior Manager HESS; and
- HSEC training modules will be developed for contractors in line with the Lydian Training Plan for construction activities.

Safety, social and environmental performance requirements will be specified in all Project contracts. Larger contractors will be expected to draw up their own appropriate environmental and social management plans that are compliant with the Project ESMP, and provide specialist safety, social and environmental management staff who will work with the equivalent Lydian personnel. Smaller contractors may work under the Lydian EMSs and ESMP. In all cases, contractor compliance with the Project ESMP will be checked by Lydian personnel. Certain elements of the ESMP, including biodiversity management, environmental and social monitoring, stakeholder engagement, land access, livelihood restoration and community relations, will be the full responsibility of Lydian, as will ultimate responsibility for successful implementation of the ESMP.

Lydian has an existing Compliance Assurance Plan, which was used during the exploration phase of the Project to manage both its own and its contractors' compliance with the exploration phase ESMP. The main elements used to check compliance are:

- Daily assurance monitoring of site;
- Weekly inspections of specific areas, activities or facilities;
- Internal audits of departments and overall operation; and
- External audits, as required by stakeholders, authorities and other third parties as required.

Daily monitoring is a routine, ongoing activity that is conducted as a normal and integrated part of department supervisors’ job duties, whereas the weekly inspections use a checklist and are more structured. Internal and external audits are carried out less frequently than inspections but are more formal and also aim to identify the adequacy of the ESMS.

The Compliance Assurance Plan will be adapted and revised for the construction (and later operation) phase of the Project once the contracting strategy and arrangements has been finalised.

8.10 Contractor Management Plan (see Appendix 8.26)

The purpose of this forthcoming management plan is to outline how contractor compliance with the requirements of the ESMP will be assured, including to:

- Define roles and responsibilities of Lydian and the contractor;
- Identify how Project environmental and social requirements and commitments will be communicated during the tendering process;
- Define how consideration of the contractor's environmental and social management capabilities will be used to determine preferred contractor;
- Define how the Project’s environmental and social requirements and commitments will be incorporated into contracts;
- Demonstrate the arrangements for environmental and social management during Project implementation, including division of roles between Lydian and the contractor;
- Define compliance monitoring and reporting plans, including Key Performance Indicators (KPIs);
- Define training requirements; and
- Any other arrangements necessary to assure effective implementation of the ESMP under the contractual arrangement.

The CMP defines the details of the contractor’s engagement processes to be implemented by Lydian, although it will not supersede the conditions detailed in the General Conditions for Goods and Services. The CMP will be reviewed annually to determine whether any changes or updates are required to the plan unless a more frequent update is required to reflect changing Project design or procedures. The process for contractor procurement will come
into effect in time for early construction works. The updated version of the Stakeholder Engagement Plan has been publicly disclosed on the Geoteam website and the Amulsar Information Centre (AIC). Armenian contractors will also be informed of project commercial activities and general information through announcements made by the Commercial Department. The Geoteam website will contain a link to a Commercial Activities webpage that will advise local, national and international contractors of forthcoming contract packages; the preliminary scope and requirements for each contract package will be indicated.

Contractors that are interested in becoming pre-qualified for consideration on upcoming contract tenders will be able to download and follow the pre-qualification instructions. Contractors that do not demonstrate sufficient levels of proficiency in the various Pre-qualification Checklist categories to pre-qualify for commercial activity consideration will be informed of their deficiencies and how to correct them for future consideration.

Contractors that pre-qualify will be informed of their eligibility and listed for future commercial activity opportunities with the Geoteam. Pre-qualified and eligible contractors will be able access the upcoming contract tender packages through a link to the individual contract description webpage. A similar process will be developed to inform local and national providers of the opportunity to become pre-qualified for participation in future Geoteam purchasing opportunities.

All pre-qualified contractors will be required to participate in a two day workshop to explain and train them in the Geoteam’s Environmental and Social Management Plan (ESMP), the Occupational Health and Safety Management Plan (OHSMP) and the Contractor Selection processes including contract bidding, adjudication and award, hiring of local labour and community relations requirements. The contract appendices will identify the environmental, social, health and safety requirements will be clearly identified.

The Senior Manager HESS, or representatives, will be involved in the procurement process at all stages from prequalification. The tender evaluation will require a detailed input with respect to environmental, social, health and safety in combination with the technical and commercial aspects of the proposal.
8.11 Lenders Environmental and Social Action Plan

The ESIA has been prepared as part of Lydian commitment to responsible corporate citizenship, but also as a requirement for financial institutions that are funding the project. It meets international standards required by Project Finance lenders, as well as Lydian’s own high standards for addressing environmental and social impacts.

As a result of a due diligence review of the Amulsar ESIA performed by the Project’s Lenders, further actions are likely to be recommended to address the Project’s environmental and social assessment commitments under IFC PS 1 and EBRD PR1. These recommendations will be in the form of an Environmental and Social Action Plan (ESAP) that will be completed following the completion of the independent review of the ESIA by the IESC, pending final approval by Lenders. The activities specified in the ESAP will be added to the CR as specific time bound actions and all necessary changes will be incorporated into the ESMP, where required.

The first independent audit of ESIA compliance shall be published and publically released at the end of 2016, tracking compliance with the commitments made, in particular per the ESAP and CR.