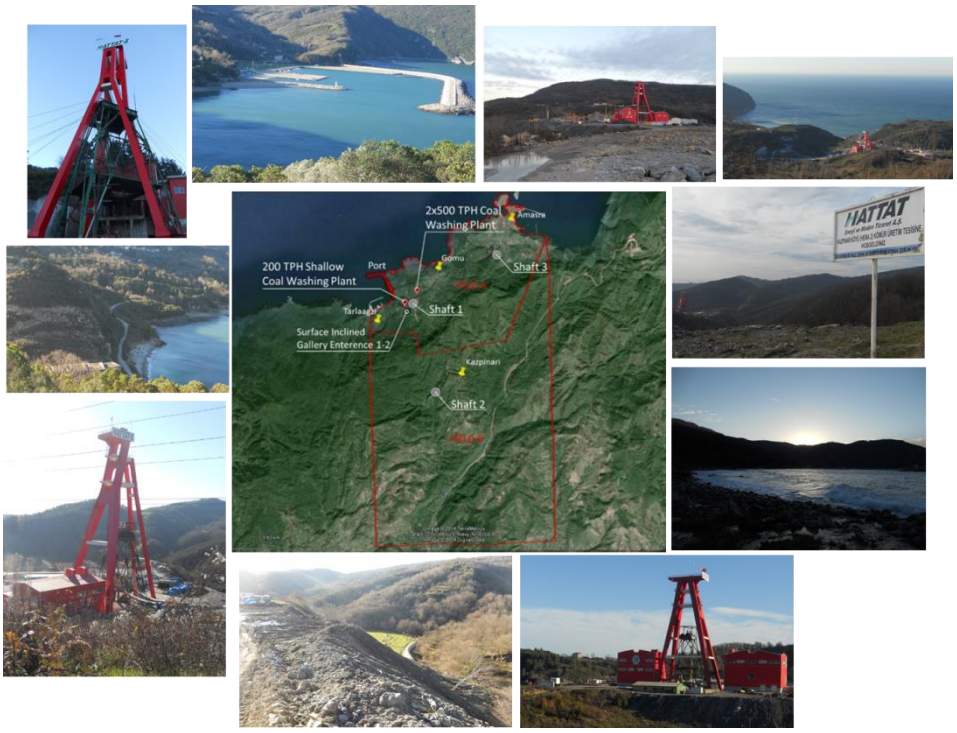

Environmental and Social Impact Assessment for HEMA Hard Coal Mine Project

Non-Technical Summary (NTS)

Final Draft

September 2015

Hattat Enerji ve Maden Ticaret A.Ş. (HEMA)

ELC GROUP Consulting & Engineering Inc a company of Royal HaskoningDHV *Enhancing Society Together*

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TABLE OF CONTENTS

ABBREVIATIONS

ACWP	Amasra Mine Coal Washing Plant
APELL	Awareness and Preparedness for Emergencies at Local Level
BAP	Biodiversity Action Plan
BERN	Bern Convention
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CWP	Coal Washing Plants
DWT	Dead Weight Tonnes
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ESR	Ecosystem Services Review
FIs	Financial Institutions
h	Hour
HR	Human Resources
IFC	International Finance Corporation
kg	Kilogram
km^2	Square Kilometer
kV	Kilovolt
kW	Kilowatt
m	Meter
m^2	Square Meter
m^3	Cubic Meter
MEUP	Ministry of Environment and Urban Planning
ML	Metals Leaching
MTA	Mineral Research and Exploration
NGO	Non-Governmental Organization
NTS	Non-Technical Summary
OG	Official Gazette
PAG	Potentiall Acid Generating
PS	Performance Standard
SCWP	Shallow Mine Coal Washing Plant
SEP	Stakeholder Engagement Plan
SWQR	Swimming Water Quality Regulation
TEIAS	Turkish Electricity Transmission Company
TPH	Tonnes Per Hour
TTK	Turkish Hard Coal Enterprise

WA	Westphalia-A
WC	Westphalia-C
WMP	Waste Management Plan
WPCR	Water Pollution Control Regulation
WWTP	Wastewater Treatment Plant

1.0 INTRODUCTION

1.1 Background

This document is a non-technical summary (NTS) of the Final Draft Environmental and Social Impact Assessment (ESIA) Report for the HEMA Hard Coal Mine Project ('Project') located in the Amasra District of Bartın Province in the West Blacksea Region of Turkey. The Project is being developed by Hattat Enerji ve Maden Ticaret A.S. (HEMA), a subsidiary of Hattat Holding. HEMA has been awarded the Amasra Hard Coal Mine Field B (Subfields A and B). Licensed Area (for mining rights) covering two sub-fields of 50 km^2 including A Sub-Field of 14.4 km^2 and B Sub-Field of 35.6 km^2. The location of the Project is given in Figure 1.

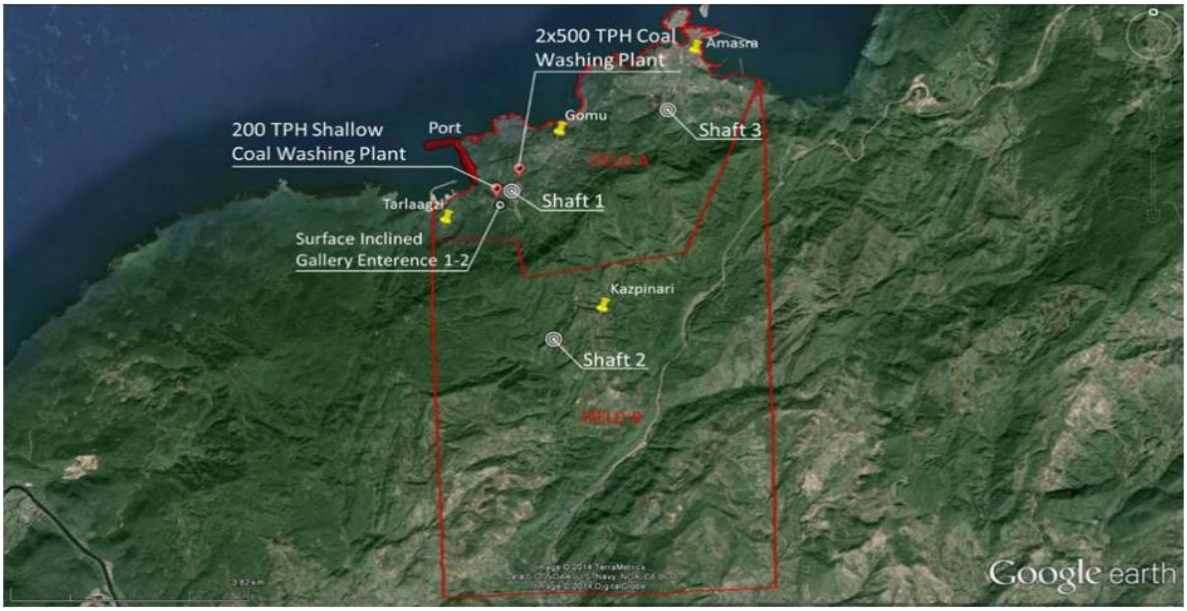


Figure 1: location with Amasra Hard Coal Mine Field B mining license area boundaries shown in red and project components

The Project will have the following main components: (1) underground hard coal mine within Amasra A (Shallow Mine) and B Fields (Deep Mine), (2) Port (Reclamation Area and Quay), and (3) Coal Washing Plants and waste disposal facilities. Auxiliary facilities within the scope of the Project will include the slope protection area behind the quay and three power transmission lines. Areas around three vertical mine shafts, which are located in the vicinity of Gomu Village (Tarlaagzi) (Shaft-1), Kazpınarı Village (Shaft-2) and Amasra District (Shaft-3), including aboveground developments at each shaft site (such as office buildings, personnel accommodation and social facilities). HEMA Port (Reclamation Area and Quay) area covering approximately 163,000 m^2 and consisting of a breakwater, a quay structure, storage yards and conveyor system. Coal Washing Plant Areas covering approximately 8900 m^2 and consisting of two steam coal (8000 m^2) and one shallow coal (900 m^2) washing plants. Waste Disposal Areas which are planned to be used during the construction and operation phases of the Project including coal washing plant waste disposal areas (i.e. Spoil dumpsite 1 and 2) and waste rock dumpsite around Shaft-1 and Shaft-2.

HEMA is seeking financing from financial institutions (FIs) to fund the development of the Project. In order to meet the requirements of FIs, HEMA has commissioned ELC Group Consulting and Engineering Inc. (ELC) to undertake the ESIA study.

The purpose of the ESIA study provide a detailed project description, identify the environmental and social impacts that may occur as a result of the Project development and operation and determine mitigation measures that can be taken to avoid and/or minimize the adverse impacts and maximize benefits. This document summarizes key points and findings of the ESIA Report which was prepared in line with the FI requirements for the HEMA Hard Coal Mine Project.

1.2 National EIA Requirements

Pursuant to the Turkish Environmental Impact Assessment (EIA) Regulation (Official Gazette date/number: 25.11.2014/29186), an EIA or a Project Description File may be required depending on the type of the project, its capacity, or the location of the activity. Based on classification of projects according to the potentially expected environmental impacts, the projects listed in Annex-I of the regulation are directly subject to prepare a full EIA Report and they should first apply to Ministry of Environment and Urban Planning (MEUP) with an EIA Application File. The projects listed in Annex-II should prepare a Project Description File and are subject to screening by MEUP to derive a decision whether or not a full EIA is needed. Opinion letter obtained from Bartın Provincial Directorate of Environment and Forestry (changed as Bartın Provincial Directorate of Environment and Urban Planning) dated 15.07.2008 revealed that "underground Hard Coal Mine Project (within Amasra B field) was exempted from the Turkish EIA Regulation valid at the time (EIA Regulation published in the Official Gazette dated 16.12.2003 and numbered 25318) based on the condition that the Project has obtained its operation license before 07.02.1993 (enactment date of the first EIA Regulation in Turkey) as described in the Temporary Article 3 of the mentioned regulation". Coal Washing Plants were assessed according to the Turkish EIA Regulation (Official Gazette: 03.10.2013/28784) under Annex-2, Article 55-Mining Projects e) Ore processing plants, f) Ore enrichment plants and/or related waste facilities (that are not listed under Annex-1); and Annex-2, Article 57-Coal Processing Plants: c) Coal Washing Plants. A Project Information File (PIF) was submitted to the Bartın Provincial Directorate of Environment and Urban Planning in January 2014 and "EIA is not required" document was obtained on 27.01.2015.

Apart from the underground Hard Coal Mine, HEMA Port (Reclamation Area and Quay) was assessed according to the Turkish EIA Regulation (Official Gazette Date/Number: 17.07.2008/26939) under Annex-1 article 10-b: Commercial ports, jetties and quays where marine vessels over 1,350 dead weight tonnes (DWT) can dock. The Final EIA Report for the Project was submitted to the MEUP in April 2013 and the final presentation was held on 07.01.2014. EIA is currently under approval process. .

1.3 ESIA Requirements

HEMA has undertaken an ESIA study for identifying potential environmental and social impacts and risks of the Project and developing mitigation measures appropriate to the nature and scale of the Project. The mitigation measures need to be included in an accompanying Environmental and Social Management Plan (ESMP). The ESIA report and the ESMP will then be used as a basis by the lenders for the environmental and social appraisal of the Project. The ESIA study has been conducted to meet the requirements of the following international standards:

- Equator Principles II (June 2006)
- IFC Performance Standards on Social and Environmental Sustainability (January 2012)
- IFC General Environmental, Health and Safety Guidelines (April 2007)
- IFC Environmental, Health and Safety Guidelines for Mining (December 2007)
- IFC Environmental, Health, and Safety Guidelines for Waste Management Facilities (December 2007)
- IFC Environmental, Health and Safety Guidelines for Ports, Harbors and Terminals (April 2007)

In addition to these standards, the Project must comply with Turkish environmental and social legislations. The applicable national laws and regulations have been compiled in a regulatory framework document provided in Annex C, including a brief overview of key EU Directives that may be relevant to the Project.

1.4 Stakeholder Engagement

The stakeholder engagement is an integral and crucial part of an ESIA process, aiming to provide an opportunity to affected and/or interested individuals, groups and organizations to express their views and concerns about the project, which are taken into account during the assessment of impacts and identification of mitigation measures.

A social baseline study was conducted in 2011 by 'PD Anadolu Araştırma' in the five Project-affected settlements (Kum Neighbourhood, Fatih Neighbourhood, Gomu Village, Tarlaagzi Village and Kazpinari Village) between the dates October 5-9, 2011 with a team of six people comprising one team supervisor, one focus group moderator and four interviewers. Settlement level questionnaires were conducted with the headmen of the villages and focus group discussions were conducted with vulnerable groups such as women, disabled, and elders. Additionally, a 'Social Impact Evaluation Report' is prepared in 2012 by Prof. Dr. Suavi Aydın in order to evaluate the social impacts of the different project activities which are planned to be accomplished and expected to affect the vicinity of Gomu and Tarlaagzi Villages in Amasra County, Bartın Province. During the EIA studies of the HEMA Port, a public consultation meeting was organized and

announced to be held Gomu Village Manison on 24/04/2012; however, because of a mass protest of the public and NGOs, it was decided to be cancelled.

A stand-alone Stakeholder Engagement Plan (SEP) has been developed for the Project to help to structure a systematic communication with the stakeholders during the ESIA study. Relevant stakeholders were identified including governmental authorities and non-governmental organizations (NGOs) at national, regional and district level, and local communities. In addition to that, within the scope of the ESIA studies, a Stakeholder Communications Plan is prepared by C-Line Public Relations Firm which includes;

- Current Situation
- Risks and Stakeholders
- Compliants of the Stakeholders
- Engagament Methods
- Stakeholder Information Strategy
- Stakeholder List
- Actions to be taken

1.5 Report Structure

The report structure is as follows:

- Project Description
- Environmental and Social Impacts and Mitigation
- Project Environmental and Social Management System

2.0 PROJECT DESCRIPTION

2.1 Project Need

Existing Conditions

Hard coal is widely utilized in diverse industries. Iron-steel factories need hard coal of coking coal (mainly used in steel production) quality, whereas thermal power plants need it as steam coal (mainly used in power generation) (World Coal Institute, Coal-Steel Report[1], 2009). In addition to iron-steel factories and thermal plants, other industries, such as cement and similar industry branches, also consume hard coal to meet their primary energy needs. Hard coal is crucial especially in iron-steel factories since it does not have a substitute.

The only hard coal reserves in Turkey are in Zonguldak and Bartin/Amasra Basins. According to TTK's Hardcoal Sector Report for 2012[2], dated May 2013, total volume of geological hard coal reserves in Turkey is about 1.31 billion tonnes, where 67% of total reserves is in coking quality, 2% is in half coking quality and the remaining 31% is not in coking quality. According to above-mentioned report, hard coal consumption in Turkey increased from 25.6 million tonnes to 26.2 million tonnes between 2010 and 2011 and domestic production decreased from 2.6 million tonnes to 2.3 million tonnes between 2011 and 2012, respectively. Given the growing need for hard coal production and the crucial role of hard coal in various industries, the proposed Project aims to contribute to the security of coal supply and decrease the dependency of Turkey to imported hard coal.

2.2 Project Alternatives

2.2.1 Project Site Alternatives

Since a hard coal mine project can only be realized in an area where the hard coal reserve (i.e. extractable part of the resource) is present and HEMA has an operation license in the subject Project site, there are no site alternatives for the Project.

2.2.2 Technology Alternatives

In underground mining, one of three methods is commonly used to extract the coal: room-and-pillar, longwall, or shortwall.

Room-and-Pillar Mining: Room-and-pillar mining has been used longer than any other underground method. Mining is accomplished by driving entries off the panel entries. As mining advances, rooms are excavated in the coal seam; the strata above the seam are supported by pillars of coal left in place. After a block panel or section has been mined, part of the coal in the pillars can be recovered as a retreat is made toward a main entry.

Longwall Mining: Longwall mining is used most efficiently in uniform coal seams of medium height. As in the room–and-pillar method, longwall mining starts with sets of entries cut into the panel

[1] http://www.worldcoal.org/search-results/index.php
[2] http://www.enerji.gov.tr/yayinlar_raporlar/Sektor_Raporu_TTK_2012.pdf

areas. The difference in the technique lies in the distance between these sets of entries and the method used to extract intervening coal. The longwall machine laterally shears or plows coal from the entire face, transports the fallen coal by an advancing conveyor to a secondary haulage conveyor, reverses direction at the end of a cut, and supports the roof in the area of the face by a self-advancing system of hydraulic jacks. The roof is allowed to cave behind the advancing work areas; the roof is occasionally blasted to ensure a controlled cave-in rate and to reduce overburden pressure on the coalbed being mined.

Shortwall Mining: The shortwall method of mining coal is best described as a method similar to longwall mining with two exceptions. The blocks of panels are smaller and the coal is cut with a continuous miner and is loaded into shuttle cars.

Among the described methods, longwall mining method is chosen for the Project based on the following main reasons:

- Appropriate production system for full mechanized mining,
- Minimum production losses,
- Relatively more economical and safer for up to 700 m panel lengths and 150-200 m face lengths,
- Lower fire risk compared to room-and-pillar method,
- Presence of coal seams thicknesses below 5 m in general, making shortwall mining relatively less practicable.

2.3 Project Components and Design

2.3.1 Coal Mining

2.3.1.1 Production Blocks

The Project comprises of three production blocks that are suitable for full mechanized mining have been identified, named as East Block, West Block and Southeast Block according to the Amasra Hard Coal Production Project Report by SRK (October 2013) (Figure 2). A hard coal resource estimation study has been undertaken by HEMA based on the drilling works completed to date and the results are presented in the “Amasra Hardcoal Project Resource Estimation Study Report” dated October, 2013.

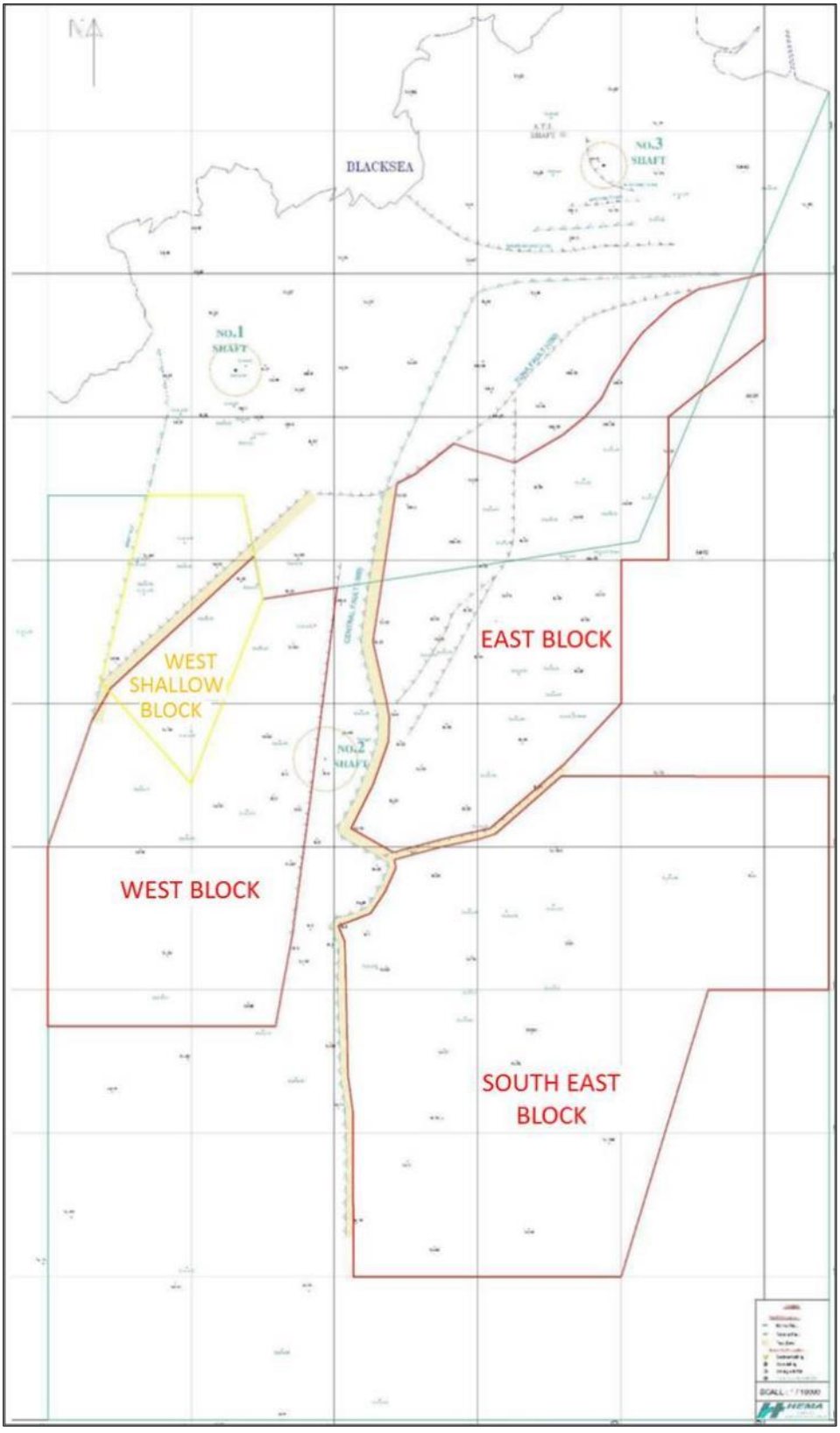


Figure 2: Hard Coal Mine Production Blocks

The 81 rotary boreholes and 53 core boreholes were previously completed by General Directorate of Mineral Research and Exploration (MTA) within the licence area. The 88 additional core boreholes have been installed by HEMA in order to clarify the continuity of coal seams and tectonic structure of the field. The drilling program is still in progress. During the gallery advancements, a total of 236,706 m will be driven as gateways. Approximately, an additional 5.6 million tonnes of coal is expected to be extracted from these gateways. HEMA has collected 525 coal samples during the geological investigation program and determined the chemical properties of the Amasra coals based on arithmetic averages of the analytical results for samples collected at each coal seam.

2.3.1.2 Shaft Locations

Based on the targeted production, 3 shafts have been installed as part of the Project (Figure 3). Shaft-1 is located between Gömü and Tarlaağzı Villages, approximately 900 m southwest of Gömü Village, 1.2 km northeast of Tarlaağzı Village and 1 km east of the Tarlaağzı Fishery Port. The shaft is located at a driving distance of approximately 2.6 km to the Amasra-Bartın road. There is a village road crossing the south end of the shaft area, which connects the Amasra-Bartın road to Gömü and Tarlaağzı Villages.

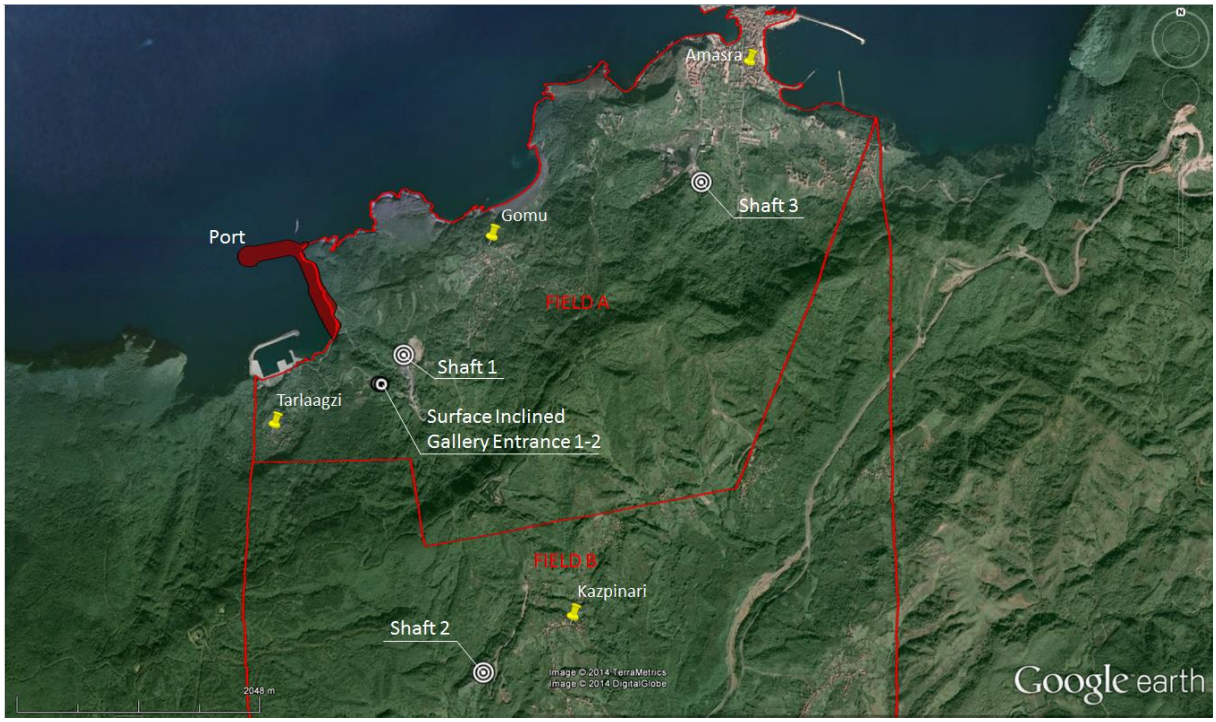


Figure 3: Aerial view of shaft locations and nearby settlements

Shaft-2 is located approximately 700 m southwest of Kazpınarı Village, at driving distances of 850 m to Amasra-Bartın Road and 4.5 km to Bartın-Ankara road. Shaft-3 is located approximately 800 m south of Amasra Center. It is located at a distance of 500 m to the new road which is under construction and there are mining facilities belonging to TTK around the shaft.

2.3.1.3 Planning

The phases of the mining project are; opening of the shafts, gallery driving, other preparatory works and the production phase. Installation of the mine shafts of the Project has been completed. In addition, West Block surface mining works have been started throughout the inclined Surface gallery near Shaft-1. For electricity demand of the Project activities, 31.5 kV electrical substations have already been established at shafts.

Coal extraction from the shafts is proposed to be initiated at the end of 2015. In the East Block, production will start in late 2015, while in the West Block, production will start in 2017. The production in Southeast Block will begin in 2028.

The main works to be performed until the mine starts production are as follows:

- Underground development works
- Aboveground construction works
- Electrical works
- Purchasing of equipment
- Installation works
- Installation of coal washing plants
- Installation of methane drainage systems
- Other necessary construction works

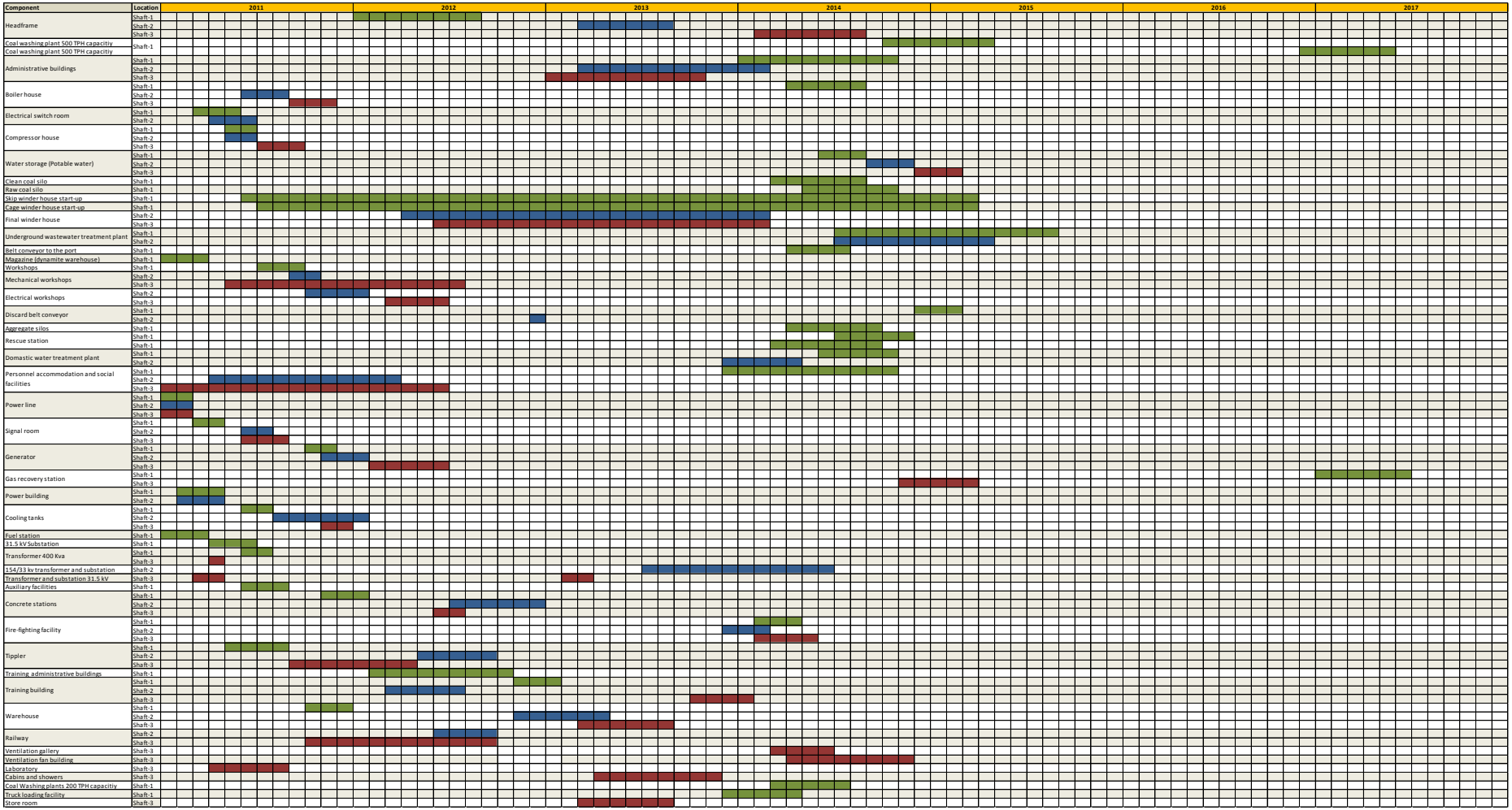
2.3.1.4 Major Aboveground Facilities

Several aboveground facilities for coal production at the shaft sites have already been constructed. Existing facilities and structures include headframes at Shaft-1 and Shaft-2, skip and cage winder houses at Shaft-1, final winder house at Shaft-2, fuel station at Shaft-1, magazine (dynamite warehouse) at Shaft-1, tippler stations, concrete stations, boiler houses, water storage tanks, cooling tanks, 31.5 kV electrical substations, transformers, power lines, maintenance workshops, warehouse, personnel accommodation and social facilities, cabins and showers, temporary office building, training buildings, laboratory and security building. The general construction schedule for the aboveground structures is provided in Table 1. Facilities under construction and to be constructed at the site include the following:

- Headframe (Shaft-3)
- Final winder house (Shaft-3)
- Boiler house (Shaft-1)
- Coal washing plants (Shaft-1)
- Administrative buildings
- Fire fighting facilities
- Drinking and fire fighting water storage (volume 300 m^3)
- Raw coal silos (four units, each with a volume of 1100 m^3) and clean coal silos (four units, each with a volume of 1100 m^3)
- Belt conveyor to the port
- Coal loading platform for trucks
- Discard belt conveyor

- Aggregate silos (Shaft-1)
- Power transmission lines, 154/33 kV transformer and substation 2*25 MVA
- Rescue station (Shaft-1)
- Domestic wastewater treatment plants (Shaft-1, Shaft-2)
- Water treatment plant (Shaft-1, Shaft-2)
- Industrial wastewater treatment plant (i.e. serial settlement tanks) (Shaft-1)
- Water line (from Shaft-2 to Shaft-1 and port)
- Temporary waste storage area
- Ventilation gallery and fan building (Shaft-3 and shallow coal mine)
- Gas recovery stations (Shaft-3 and shallow coal mine)

Table 1: Tentative construction program for aboveground facilities for coal mining



2.3.1.5 Underground Facilities

Based on the targeted production, three shafts of 8 m diameter each have been installed as part of the mining Project. Shaft-1 has 700 m, Shaft-2 has 730 m and Shaft-3 has 580 m depth. Hoist shaft locations are selected such that they lie outside the production panel zones. Production zones are isolated by big faults. As shown in Figure 2-3, the Amasra field is divided into two blocks (East and West) by the Central Fault. East Block boundary is Fault No.2 in South and Tuna Fault in North. West Block boundary is Fault No.3 in North and sterile zone in South. Southeast Block boundary is Fault No.2 in North and sterile zone in South. Shafts and galleries will serve these blocks.

Hoisting of East Block coal is planned from Shaft-1 with a double-skip system, while surface inclined galleries will be used to extract the coal of West and Southeast Blocks. Hoisting of materials and personnel is planned from Shaft-1, 2 and 3 with cage systems. -410 and -510 are designed as main operation levels and accordingly, double sided -410 and - 510 insets have been constructed in shafts. The basic technical characteristics of the three shafts are summarized in Table 2.

Table 2: Technical characteristics of installed shafts

	SHAFT -1 (Gömü-Tarlaağzı)	**SHAFT -2 (Kazpınarı)**	**SHAFT-3 (Amasra)**
Purpose	Skip (production) and hoisting shaft	Skip and hoisting shaft	Ventilation and hoisting shaft
Function	• Production of coal (by double skip system) • Personnel and material transport (by cage system) • Clean air inlet	• Personnel and material transport (by cage system) • Clean air intake	• Personnel and material transport (by cage system) • Clean air return • Main ventilation shaft (Exhaust)
Equipment	Single cage (5 m^3) Double skip	Single cage (5 m^3) Skip system	Single cage (5 m^3)
Start date	July 17, 2007	January 31, 2008	January 1, 2008
Completion date	April 15, 2010	February 28, 2011	January 7, 2010
Diameter (m)	8	8	8
Depth (m)	700.5	730.0 (current), 820.9 (future)	579.8
Surface elevation (m)	+86.33	+180.92	+32.31
Bottom elevation (m)	-614.2	-549.1 (current), -640 (future)	-547.5
Double-sided insets (m)	-410	-410, -510 and -610 (to be constructed)	-410 and -510
One-sided insets (m)	- 250 and -325, -510	-250 and -325	-325

2.3.1.6 Galleries

Galleries will be driven with 18 and 24 m^2 cross-sections. As mentioned before, there are three production fields in the Project area that are suitable for full mechanized mining: i)East Production Block (First Operation Field), ii) West Production Block (Second Operation Field), iii) Southeast Production Block (Third Operation Field). In total, including shaft stations and water sumps, 34,894 m of galleries will be driven.

East Block has an area of 4.2 km^2. In this area, based on seam correlation studies of four Westphalia-C aged six coal seams between -410 and -530 levels, approximately 45 million tonnes of coal is planned to be produced via production panels and development works.

West Block has an area of 3.7 km^2. In this area, based on seam correlation studies of seven Westphalia-A aged coal seams between -250 and -800 levels, approximately 37 million tonnes of coal is planned to be produced via production panels and development works.

Southeast Block has an area of 4.1 km^2. In this area, based on seam correlation studies of two Westphalia-C aged coal seams between -680 and -890 levels, approximately 21 million tons of coal is planned to be produced via production panels and development works.

2.3.1.7 Production

Longwall Mining System

Full mechanized longwall mining system with shearer loaders/plow and compatible powered support according to conditions will be applied since seam thicknesses vary at production blocks. Production will be done by drum shearers that have 0.8 m cutting depth and 7.29-12.34 m daily advance capacity, at 207-240 m long faces where coal thickness is 2 m. In East Block, production panels are named as EC100-101, EC100-102 and so on from north to south. Longwall faces will be operated as single cut, retreat and back-caving. Face width will be 204 m and panel length will be 650-2200 m. In West Block, production panels are named as WA100-101, 102 and so on from north to south. Longwall faces will be operated as single cut, retreat and back-caving. Mining method will be same with East Block. In Southeast Block, production panels are named as SEC400-101, SEC400-102 and so on from north to south. Longwall faces will be operated as single cut, retreat and back-caving. Face width will vary between 207 m and 242 m and panel length will be 788-1681 m.

Packwall System

As for the mining method to be applied, maingates will be used for a second time in the adjacent panels of same seam as tailgate. In order to make maingates remain steady for sufficient time, pack wall system will be applied for the whole length of “coal-produced-panel-side” of the maingate. The reason pillar system has not been chosen instead of pack wall system is that disturbed pillars under stresses will lead to reserve loss and spontaneous combustion. Moreover, in order to prevent stress disturbance of upper level seam gateways to the below level seam gateways, gateway axis will be out of effect area of upper gateways.

After supported and maintained, maingate of a panel will serve as the tailgate of next panel. It will be supported with packwalls in order to reduce the deformations to the gateway supports caused by the stresses. Based on experience from the similar operations, the width of pack walls will be around 4 m and height will be the same with the excavated height.

Coal produced and conveyed to surface will be processed in the coal washing plant and transported to the nearby bulk cargo quay which will be constructed within the scope of the Project and then be transported to the quay from coal washing plant by means of a belt conveyor.

Production of Shallow Coals

Amasra Hardcoal Project has been planned for -400/-530 levels at East Block, -250/-600 at West Block and -600/-900 levels at Southeast Block. In addition to this, license field covers coals at +90/-20 levels in west area of the field and a shallow coal mining project has been planned for these coal

seams. The shallow coal project covers a production reserve of approximately 5 million tonnes of coal. Coal will be produced by conventional and semi-mechanized systems and will be supplied to small industrial plants and utilized for domestic heating purposes. Semi-mechanized retreat longwall with steel support system will be used in West Shallow Block. The 3,271,875 tonnes coal reserve is determined as recoverable with semi-mechanized methods. Some possible panel locations where the existing data and/or correlated seam thicknesses are insufficient have been excluded from the reserve estimation and they will be reassessed during underground development activities.

Subsidence Effect

Bostanlar village, Karayusuflar and Camlık quarters are located above East Block. Coal will be produced at levels between -450 and -500 under these settlements. Settlements' levels are between +250 and +300 which means the production will take place 700-800 m deep. It was calculated that 54-64 cm subsidence may occur after 8-10 years. In Southeast Block, production will be done 900 m deeper than settlements level. "Stowing" will be done to minimize the subsidence. There is currently no settlement above West Block.

2.3.1.8 Ventilation

In East Production Block (First Operation Field), the ventilation plan uses Shaft-1 for intake air and Shaft-3 for return. In West Production Block (Second Operation Field), the ventilation plan uses Shaft-2 for intake air and inclined ventilation gallery for return. The existing design has been modified to meet the higher capacity requirements for the ventilation of this area of mining. Southeast Production Block (Third Operation Field) - Production from Southeast Block is currently scheduled to start in 2028. Ventilation system will utilize the same infrastructure that is provided for West Production Block. Ventilation of East Block will be achieved by two ventilation fans (1 main and 1 spare). These fans will be installed at Shaft-3 and will operate at minimum 200 m^3/sec flow rate each. Ventilation of West and Southeast Blocks will also be provided by two ventilation fans (1 main and 1 spare) which will be installed at the surface inclined gallery entrance.

The 35% of methane is being planned to be drained with four drainage methods in three phases during development, production and after production. Drained methane will be vented through ventilation fans to be installed at Shaft-3 and at the surface inclined gallery entrance using installed pipes for air return. Two methane gas recovery stations are proposed to be installed at these locations, for the purpose of generation of electrical power and heat from the drained methane gas.

2.3.1.9 Other Underground Developments

Other underground developments comprises of compressed air facilities, hydraulic pump stations, water drainage, control and command center.

2.3.1.10 Power Supply

Three power transmission lines will be fed from the national network At present, a power transmission line of 31.5 kV has already been erected. Two additional transmission lines of 31.5 kV and 154 kV will be erected to supply additional power for Project activities. Transmission lines (154 kV and 31.5 kV) to be installed will be capable of meeting the power demand of all facilities and installation will be undertaken by HEMA. The 154 kV transmission line will be later expropriated by

the Turkish Electricity Transmission Company (TEIAS). Power demand of all shafts are currently met by their existing 31.5 kV switch and substations.

2.3.1.11 Water Supply and Wastewater Generation

During the construction phase, domestic and industrial water is supplied from the groundwater well HSK-1 with a depth of 300 m located in Kazpınarı near Shaft-2. Drinking water demand is furnished by bottled water. For the operation phase, sea water will be treated to meet the water demand using reverse osmosis process. During operation, industrial wastewater will be generated as a result of water extraction from underground, which includes drained groundwater as well as wastewater originating from underground mining equipment and drilling machinery.

2.3.1.12 Waste Rock and Spoil Dumpsites

Waste rock is generated during during underground construction activities while driving the shafts and approaching the galleries in order to reach the target mineral. Part of this excavated material was used for filling and construction of the Project site whereas the remaining part is currently being deposited into the waste rock dump sites near Shaft-1 and Shaft-2 in accordance with the topography of the surroundings. On the other hand, spoils are the materials left during the enrichment process of the coal. If possible, they will be sent to power plants; otherwise they will be primarily deposited at Spoil Dump Site-1 and 2 which have permit from Provincial Directorate of Forestry. It should be presented out that these dumpsites are subject to « Regulation on Sanitary Landfills» and the design of these landfills and their approval must have been made by the authorities and a “Sanitary Landfill” license should be obtained.

2.3.1.13 Labor Requirements

The present Project construction works are being carried out with a total number of 470 HEMA employees. This number constitutes administrative personnel, engineers, technicians and skilled/unskilled workers. For the construction phase, HEMA has also cooperated with the Chinese DATONG firm and employed foreign workers for installation of the 3 mine shafts. During these works, experienced Chinese mine technicians and workers have been employed (currently 132 employees). Additionally, for driving the galleries, contracts have been signed with Denfa Construction Installation Mining Industry and Trade Co. Ltd. and Soner Engineering, whose 110 and 51 personnel currently serve the Project, respectively.

In the operation phase, on the other hand, the number of employees to be required for underground mining works by years is given as follows (including the total labour requirement considering 20% absence rate):

- 1.5 million tonnes/year production out of one full mechanized panel (2014-2016): 956
- 2.5/3 million tonnes/year production out of two full mechanized panels (2017-2018): 1418
- 4.5 M tonnes/year production out of three full mechanized panels between (2019-2025): 1745
- 5 million tonnes/year production out of four full mechanized panels between (2026-2032): 2178

2.3.2 Coal Washing Plant

HEMA is planning to construct two coal washing plants as part of the Project. The extracted steam coal will be transported to the Amasra Mine Coal Washing Plant (thereafter referred as ACWP- 500 tonnes/h TPH) and the coking coal will be transported to the Shallow Coal Washing Plant (thereafter referred as SCWP- 200 TPH). Coal washed will be temporarily stored at the stock yards located next to the coal washing plants. Energy required during the operation of both plants will be provided by 31.5 kV energy lines with until the construction of main energy line of 154 kV is completed. An estimated amount of 240 m^3/day fresh water will be needed for the coal washing plants. This water will be supplied from the effluent of the industrial wastewater treatment plant. Both ACWP and SCWP are closed-loop systems and no wastewater will be generated.

It is anticipated that 20 personnel will be employed during the construction of the coal washing plants. Total number of 86 employees will be employed for the operation. Construction and operation workforce will be supplied locally to the extent possible. Appropriate pre-fabricated facilities will be provided to those employees who need onsite accommodation.

2.3.3 HEMA Port

HEMA is planning to construct a new port (reclamation area and quay) to the east of the existing Tarlaağzı Fishery Port in the coastal part of Tarlaagzi Village for shipment of the coal to be produced. Location of the port project is shown in Figure 4. With the port investment, up to 5.7 million tons of coal annually produced in the mine area is intended to be handled and also optimize the production and distribution relationship. The port will be constructed within the scope of the Amasra Hard Coal Mine Project. The port is planned to be built on an area of 163,000 m^2 and involves reclamation works and construction of a breakwater, a quay structure and storage yards. The operation of the port is envisaged to be started by mid-2017. Up to 5.7 million tons of coal annually produced from the HEMA mine shafts will be transported to Çatalağzı and Eren Thermal Power Plants located in Zonguldak by maritime transport. Transfer of coal to the port will be undertaken by a covered conveyor belt system (2000-tonnes/h) that connects the quay to the temporary stocking yard as well as the coal mine. According to the planned handling capacity of the bulk cargo quay, 173 bulk vessels of 30,000 DWT (dead weight tonnes) will be served annually.

Figure 4: Location of the proposed port project

The Project will be comprised the following main elements:

- A 494 m long breakwater in the east-west direction for the protection of the quay structures;
- Reclamation (72,000 m^2) and excavation (22,000 m^2) works;
- A 250 m x 28 m bulk cargo quay structure at the northern end of the reclamation area, designed to accomodate 30,000 DWT vessels, including 2 piled mooring dolphins and steel catwalks between the quay and dolphins;
- 2 coal stocking yards with a total capacity of 50,000 tonnes, 200 m x 27 m x 8 m (h) each;
- Utilities and pavement works.

Land facilities to be contructed as part of the HEMA Port Project will include a 2 storey administration building, entrance-exit canopy and weighbridge, workshop building, transformer house and package biological wastewater treatment plant (for treatment of domestic wastewater). Power to the port will be supplied by the existing power supply network.

Additionally, reclamation material required for the port construction will be obtained from the slope protection area located behind the quay structure. Slope protection will be applied in this area for the purpose of stabilization against risks such as landslides to ensure a safe port layout.

During the operation of the port, the drinking/potable water needs of the 65 employees will be supplied from the groundwater extraction wells of the mining site. The generated domestic wastewater will be treated at an on-site package biological treatment plant which will be installed during the construction phase and will be used through both construction and operation activities. The workforce requirement during the construction phase of the port project is anticipated to be approximately 100 people. During the operation phase, a total of 65 people are planned to be employed, consisting of 17 white-collar and 48 blue-collar employees.

2.3.4 Road Transportation

The extracted coal will be transported to Bartın Cement Plant by road transportation. The processed coal is proposed to be shipped to Çatalağzı Thermal Plant and Eren Thermal Plant in Zonguldak through the HEMA port to be constructed, and continued to be overlanded to Bartın Cement Plant. Within the scope of the Project, a transportation assessment study was undertaken by Bogazici Proje Mühendislik Planlama Ltd. (Bogazici) and the results were presented in the report titled "Transportation Survey and Evaluation Study for Amasra HEMA Coal Mines" dated June 2012.

3.0 ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION

3.1 Overview

The ESIA Report provides a description of the environment and social baseline and explains the Project's potential impacts and identifies the mitigation measures to avoid or minimize the significant adverse environmental and social impacts. The mitigation measures are also included in the ESMP that has been developed as part of the ESIA study, and includes description of the mitigation measures, responsible parties for the implementation of the mitigation measures, the timing, monitoring and audit requirements.

The topics that are included in the ESIA study include (1) Land Use and Zoning, (2) Geology, Soils and Contaminated Land, (3) Hydrology and Hydrogeology, (4) Material Resources and Waste, (5) Air Quality, (6) Noise, (7) Road Transportation, (8) Ecology, (9) Socio-Economy, (10) Community Health and Safety, (11) Labor and Working Conditions and (12) Cultural Heritage. These topics and related impacts and proposed mitigation measures are summarized in the following sections.

3.2 Summary of Impacts and Mitigation Measures

3.2.1 Land Use and Zoning

The Project area is situated in an area having a variety of land classifications. These lands and assets mainly consist of "individual agricultural lands", "forestlands", "public enterprise area" and "residential lands". Agriculture is not a primary source of income in the region. Due to the distribution of Project components, HEMA required lands to conduct Project activities on. For this purpose, HEMA made arrangements with the land owners and acquired the property based on "willing buyer" and "willing seller" basis. The Project involves the purchase of approximately 60 private lands spread across the Gomu and Kazpinari Village and Amasra District Center.

The impacts are related with the loss of productive land and related income opportunities as a result of Project activities. There are a total of 11 parcels within the Project area which HEMA requires to be expropriated. Ten of these parcels are around Shaft-1 and the other one is located in Shaft-3 area. The number of parcel required to be expropriated may increase as a result of a project development such as increase in the capacity due to future expansions and another project application. HEMA will seek to apply feasible alternative project designs to minimize the area of land take and expropriation required and to reduce the need to acquire larger parcels of land more than its necessary for the Project. Physical and economical displacement will be minimized through the alternative and feasible project components design; when the economical displacement is unavoidable, HEMA will ensure appropriate compensation plan named "Livelihood Restoration Plan".

Additionally, planning of the project component and operation of the facilities will protect the sensitive areas such as "Drinking and Utility Water Short Distance Protection Zone" which is situated outside the borders of the defined Waste Rock Dumpsite around Shaft-2. Design and operation of the each project components will be done to minimize erosion, any damage to creek or stream bed and mass wasting. Loss of forestland will be compensated through afforestation according to the inventory of Ministry of Forestry which will also be covered in the Site Rehabilitation Plan to be prepared.

3.2.2 Geology and Soils

Impacts related to geology

As a result of the underground coal mining and associated subsidence effects a series of depressions are expected to occur across the landscape within the license area. A modelling study conducted by Hattat Enerji ve Maden Ticaret A.Ş. revealed that a part of Bostanlar and a minor part of Kazpinari Villages are located above the East Block whereas, the rest of the Kazpinari and a part of Ugurlar Village are located above the Southest Production Block; however, the study states that only a small portion is likely to be effected by subsidence when considered the design of the production panels. Theoretically, 54 to 64 centimetres of subsidence may occur within 8 to 10 years from the beginning of the coal production. Potential future impacts on settlements and occupants related to subsidence are considered to be of minor significance.

In order to minimize the subsidence effect, the following mitigation measures will be undertaken; pillars between the production panels will be adjusted accordingly below the determined risky areas, voids that are left within the collected strata will be stowed and If the damage is unavoidable, the would-be affected areas will be expropriated.

In the event of an earthquake during construction and operation, significant impacts on the environment as well as on the community and workers' health and safety may arise related to the seismic incident. The Project design will take into account the Turkish regulatory requirements and international standards related to seismic design and risk assessment. Systematic monitoring and regular review of geotechnical stability data will be carried out.

Impacts related to soil

Soil loss will be within the footprints of the shaft sites and the waste rock dump sites on which the excavation wastes have been placed. The entire footprint of the Shaft-1 site has been cleared, developed with the operational and administrative buildings and infrastructure development is still in progress. Apart from that, excavated soil and waste rock material resulting from underground construction activities are dumped on the land once-forested. The two coal washing plants proposed within the scope of the Project will also be constructed on the cleared HEMA land in Shaft-1.

The entire footprint of the Shaft-2 site has also been cleared, developed with infrastructure development such as workers' accommodation facilities, storage areas for construction equipment, waste rock carrying conveyor equipment and substations. Similar to Shaft-1, the excavated soil and rock resulting from the underground activities are being dumped on the land which makes the soil loss impact is major; with the potential of affecting forestlands, wetlands and deteriorating some agricultural lands in the surrounding area.

Shaft-3 is located on an urbanized area which has already been used for mining activities by Turkish Hard Coal Enterprise. Therefore, the soil loss impact of the Project is assessed to be minor; with lesser adverse effects on forestlands and residential areas in the surrounding area.

Potential for soil and groundwater contamination exists due to infiltration of acid mine drainage. Potential impacts due to leaching and infiltration of hazardous substances are expected to range between minor to major, depending on the extent and duration of such events. The Project will

therefore be designed with the necessary protection systems against spills, leaching and infiltration of hazardous materials and wastewater generated at the site. Spoil and waste rock will be disposed in dumpsites designed in accordance with applicable regulations and located in approved areas. Coal storage areas will be designed to prevent impacts to soil and water resources and will be paved with the associated leachate collection systems to segregate potentially contaminated storm water. A Soil Contamination Management Procedure will be included in the Emergency Preparedness and Response Plan.

Entire footprint of the proposed HEMA Port area will be cleared and utilized for infrastructure development. The loss of soil will be within the footprint of the site which is located on the forest land. Therefore, the soil resource to be affected is fragile and difficult to restore. The loss is moderate and may affect forest lands in the surrounding area. Additionally, the loss of soil will be confined within the footprint of the overland covered conveyor belt corridor. The soil loss impact will continue as long as coal extraction and transportation takes place and to a lesser degree post closure.

Impacts related to erosion

Impacts related to soil loss may occur due to increased erosion and landslide potential related to the removal of vegetation cover at Project areas such as shaft sites, spoil dumpsites, port area and conveyor system area as a result of site clearing during the construction and operation phases. During the construction of the port, slope protection area which is located behind the quay structure will be applied to prevent risks associated with landslides. Potential erosion impacts, which are considered to be moderate, must be minimized through mitigation measures during construction and operation phases of the Project. A Site Rehabilitation Plan will be developed and implemented, addressing both interim and final land rehabilitation requirements including topsoil management (top soil stripping, stockpiling, and application procedure), soil stabilization, erosion potential and control and afforestation activities.

3.2.3 Hydrology and Hydrogeology

During the construction of the mine, port and the coal washing plants, domestic water demand will be supplied from the existing well (HSK1) whereas bottled water is being used for drinking purposes. Given the water requirement of the mining activities will significantly increase including the water needed in coal washing plants, sea water will be treated using reverse osmosis process. The waste rock dumpsite around Shaft-2 is very close to the borders of the defined Drinking and Utility Water Short Distance Protection Zone. Since any kind of waste dumping and storage is prohibited in the zone, excavated waste rock resulting from underground construction activities will not be placed in that direction.

Surface water runoff from Shafts-1, 2 and 3 and Spoil Dumpsites may cause contamination to downstream surface waters. The contamination of surface waters will continue for the life of the Project. Two seasonal creeks, Gomu and Capak, pass near Shaft-1 and Buyukdere Creek pass near Shaft 2. In order to prevent the contamination of Buyukdere Creek, a concrete culvert was constructed for the creek to flow through waste rock dumpsite. Stream beds of Gomu and Capak will be protected, mouth of the stream will not be constricted, Creeks will be cleared off, no interference will be made in the stream beds,

Dust and sweepings will be appropriately managed and the ground will be paved in order to minimise potential runoff and interaction of water with coal in the Project area. Storm water runoff from the mine property will be monitored adequately in addition to treatment of effluent streams and will be transferred to the wastewater treatment. The acid generation potential of discard, product, spoil and waste rock samples will be determined using acid base accounting (ABA) to assess whether the coal from the area is likely to be acid generating or not by i) verification of metal leaching and neutralising potential of the overburden material, ii) conducting kinetic field tests on waste rock and spoil samples to determine the duration of oxidation, iii) reviewing the waste management strategy according to the results of the tests.

Operational activities such as accidental spills from the use of hazardous materials (fuel oils and lubricants) from the refueling and storage areas as well as runoff from quay, coal storage and windblown dust may affect the Gomu and Capak seasonal creeks, which merges near the port area, and the sea which are highly sensitive. A Hazardous Material Management Procedure will be included in Environmental Management Plan to ensure proper handling of hazardous materials during construction and operation of the port, coal washing and mining facilities

Waste rocks generated during the underground construction activities are currently placed near Shafts 1 and 2 and may adversely affect the downstream quality of Gomu, Capak and Buyukdere Creeks. Coal washing plants will be operated as a closed-circuit system in which the leakages and waste process waters will be fed back to the system. Therefore, a negative impact on surface waters is unlikely. Groundwater levels in the vicinity of the mine and mine dewatering volumes/rates will be monitored on a regular basis throughout construction, operation and post-closure phases. Springs and other wells used by villagers or any other public institutions will be monitored.

3.2.4 Material Resources and Waste Management

Domestic wastewater generated during both phases of the project, can have significant adverse effects on the environment. Therefore, on-site package treatment plants should be constructed and commence into operation as soon as possible. Treatment of the industrial wastewater is another important issue during the life cycle of the mine. Approximately 760 m^3 of recovered industrial wastewater will be sent to impoundments for purification and then discharged into the environment. The characteristics of the effluent should be analyzed and monitored on a regular basis. Moreover, the rejected material accumulated at the bottom of the impoundments should also be analyzed and sent to a licensed company. Both domestic and industrial wastewater discharge to receiving bodies will be done according to the Regulatory limits.

All waste will be collected, segregated, labeled and stored on site according to Turkish Environmental Regulations. Clean-up materials such as spill kits should be managed as hazardous waste and disposed of appropriately. Correct separation of hazardous waste is also of major importance due to the potential adverse reactions in case incompatible wastes are stored together. If not managed properly, special waste such as waste mineral oils, waste vegetable oils, battery and accumulators, waste electronic and electronic equipment, can cause adverse impacts to human and environmental health.

The domestic waste will need to be appropriately collected periodically and on time, stored and disposed of on the site in accordance with the regulatory framework. Packaging waste should be separated properly in order to regain its economic value in the market.

However, the most significant waste to be generated during operation phase of the Project is the waste generated by the coal washing process. Waste rock and spoil are Potentially Acid Generating (PAG) wastes since they most likely to have iron-sulphide-rich characteristics. Therefore, these materials will be managed and PAG and metals leaching preventive actions will be implemented. A comprehensive series of accelerated leaching tests will be conducted according to internationally recognized methodologies. According to the Regulation on Sanitary Landfills, it is necessary to apply to the Ministry of Environment and Urban Planning to obtain a "Sanitary Landfill" license in order to be allowed to deposit the coal processing wastes of the two CWPs. Additionally, the characteristics of the waste of the sites should comply with the limit values defined in the mentioned regulation and should be monitored on a regular basis. Additionally, necessary permits or opinions related to disposal of the waste rocks in dumpsites will be obtained from the Local Environmental Authorities.

Port operators will provide collection, storage and transfer and/or treatment services, and facilities of sufficient capacity and type for all wastewater generated by vessels at the port in accordance with MARPOL and national regulations.

3.2.5 Marine Environment

The water quality of the port is likely to be affected by the construction activities and ongoing activities during hard coal mine project. During construction phase of the proposed project, increased sediment suspension called as turbidity in marine waters during pile driving, filling operation, construction of reclamation areas, breakwater and other port components has the potential to reduce light penetration and reduce water quality. Slight changes in long term may occur due to the transportation of materials by means of wave and flow. There will not be any impact expected on shore erosion or scouring due to the port construction activities.

Water quality will be monitored during both operation and construction phase of the project and the levels of contamination will be monitored as well with the specified parameters as defined in Table 4 in WPCR. During the construction phase of the project, sea water analysis will be conducted in every three months in accordance with the criteria stated in "Swimming Water Quality Regulation (SWQR)" and one copy of the analysis report will be submitted to Bartın Provincial Directorate of Health.

Contingency measures will be taken and emergency response procedures against to accidental release of chemicals or other hazardous materials and relatively care will be paid to minimize the damage to marine habitat and fauna during construction activities both for Port and Mine. Emergency Preparedness and Response Plan for the port will be in line with the national law. Ship generated wastes such as "bilge water" (contaminated water remains after bulk cargo) will be accepted by HEMA Port and stored in waste reception facilities and delivered to a licensed company in line with the Regulation of Reception of Ship-Generated Wastes and Waste Control and MARPOL Convention

3.2.6 Noise

Main sources during construction and operation process of the Project includes earth movements, operation of equipments, vehicle movements, coal transportation, construction of infrastructure and structures for both Port and coal mine activities. Increased noise levels during both construction and operational activities have the potential to result in negative impacts to the background noise levels including health risks at nearest sensitive receptors.

In order to predict the impacts of the Project on environmental noise, baseline noise measurements and a sound propagation modelling study was conducted. In that modelling study, all equipments which are used in the construction activity are considered working at the same time and ventilation fans will work 24 hours.

The cumulative noise level is 3 dBA which is allowed limit defined in IFC General EHS Guidelines. The noise modelling study indicated that IFC noise limit values will be exceeded at Tarlaagzi and Gomu Village during night-time and during coal transportation. On the other hand, both in Tarlaagzi and Gomu villages during day-time, the cumulative values below the defined limits in IFC Guideline. Additionally, according to the baseline data and modelling results, the noise emissions from Shaft-3 (ventilation shaft) is expected to result in an increase of background noise level of Amasra central area, more than 3 dBA.

The coal transportation during operation phase of the Project may cause disturbance particularly to the residents which are close proximity as a result of frequent truck movement. Mostly residential buildings are present on the both sides of the road and the coal transportation is expected to continue during night time, the noise levels are expected to exceed both national and IFC standards.

HEMA will undertake deemed appropriate mitigation measures to reduce the amount of noise emissions. Necessary mitigation measures will be taken through good construction site practices, and Noise Control and Monitoring Plan and mitigations measures as mentioned in the relevant chapters (*Chapter 11: Noise*).

Construction phase noise impacts will be temporary and can be mitigated with the implementation of the mitigation measures such as use of low-noise equipment, limiting specific activities to day-time, installation of movable noise barriers where feasible and applicable. Therefore, the residual impact is estimated to be negligible. However, the noise generated by the ventilation system and the noise related to the coal transportation until the port enters into service will significantly affect the residential areas near the Project area.

3.2.7 Air

The key emission sources during the construction and operation phase of the Project including earth movements, operation of equipment, vehicle movements, coal transportation, construction of infrastructure and structures for both Port and coal mine activities. There will be also gas emissions from coal transportation and storage units.

Air dispersion modeling study (for PM_{10} and PM dispersion) was undertaken to estimate the air quality impacts associated with the Project activities. In addition to that, there will be CO emission in operation phase which is from ventilation fans.

The air modelling study indicated that PM_{10} and PM dispersion values are complied with the limits set by the Industrial Source of Air Pollution Control Regulation (IAPCR). It is allowed on IAPCR that PM_{10} emissions can exceed limit values more than 35 times during one year period. According to modelling study, Project emissions exceed limit value 29 times and it complies with the IAPCR. Also, there will be CO emissions from ventilation fans. According to the conducted modelling study, CO emission is also found conformity with the associated set by the national legislations.

Transport of coal outside the Project area will also result in emissions which may have the potential to affect the ambient air quality. The majority of the coal are expected to be transported through Gomu-Tarlaagzi Village Road and Amasra-Bartın Road through Kazpınarı on which more than 100 settlements and also sensitive receptors such as a primary school are passed along the way that may be affected by the emissions. However, transportation will be temporary until the HEMA port enters into service, it is considered that the impacts will be of minor to moderate significance.

An Air Quality Control and Monitoring Plan will be prepared in order to mitigate impacts on air quality during construction and operation that will include mitigation measures and monitoring requirements. Emissions during the construction and operation phase can be mitigated through good management practices and implementation of mitigation measures such as housekeeping practices, use of dust suppression methods, using low Sulphur fuel and placing screens as necessary in dumping areas and implementation of specific mitigation measures within the Air Quality Monitoring Plan.

Additionally, A Traffic Management Plan will be prepared and implemented which will decrease the impacts of the traffic load resulting from the coal transportation. This, in turn, will lower the exhaust emissions from the truck movements.

The residual impact on air quality will not be significant if the impacts from air emissions can be effectively mitigated through good management practices and implementation of mitigation measures stated in the Air Quality and Monitoring Plan.

3.2.8 Road Transportation

The extracted coal will be processed in coal washing plants and then transported to Bartın Cement Plant by road transportation. On the other hand, coal extraction from the shafts is proposed to be initiated late 2016. The processed coal is proposed to be shipped to Catalagzi Thermal Plant and Eren Thermal Plant in Zonguldak through the HEMA port to be constructed, and not to be overlanded to Bartın Cement Plant once the port enters into service which projected to be in April 2017. The route that trucks will follow is listed below with the deemed impact significances of the coal transportation:

- Tarlaagzi- Gomu Village Road – major impact
- Amasra-Bartın Road through Kazpinari Village– moderate impact
- Ankara- Bartın State Road (No. D010) – minor impact
- Urban Road to Bartın Cement Factory: 190. Ave (D010) / Tersane Ave. (D010) / Gazhane Ave. (D010) / Golbucagi Ave. (D755) / Bogaz Ave. (D755) – minor impact

A comprehensive Traffic Management Plan will be prepared by company administration and implemented in order to manage the internal traffic in the Project site that will take into account

vehicular traffic, emergency conditions and pedestrian traffic. Traffic signs will be placed at appropriate locations in order to prevent and accidents. A transportation map showing all accessible roads in the region and pointing out the coal transportation itinerary will be handed out to drivers. Trucks will be covered and any physical condition which may pose risks such as fall-offs or spills will be prevented before leaving the Project site. All vehicles will be cleaned regularly and transfer roads will be sprayed as necessary. All vehicles and work machinery will be subject to periodic maintenance. Weekly transportation schedule will be handed to head of Gomu Village. A school crossing sign will be placed earlier on Kazpinari Elementary School. Coal will not be transported during the school buses carrying the children. Convex mirrors will be placed at the necessary points of Gomu-Tarlaagzi Village Road and Amasra-Bartın Road in order to extend the angel of sight.

3.2.9 Ecology and Biodiversity

The spoil dumpsites 1, 2 and waste rock dumpsite close to the Shaft-2 are located in an area that is mostly forested. There is also a marginal agricultural area within the waste rock dumpsite close to the Shaft-2. There will be habitat loss due to the development of the Project. Large tracts of forest will be disturbed and trees will be cut for a number of reasons such as opening of the transport routes from the quarry to the port for transport of materials and the access roads to the Project Areas.

Necessary communication with the relevant forestry directorate is ensured, an inventory of the trees will be prepared and approval of the forestry directorate will be obtained prior to removing the trees. The seeds of endemic plant species in the region will be collected by experts during the appropriate seasons and will be stored in seed banks until the end of the construction phase of the Project. After the construction is finished, the collected seeds will be dispersed throughout the disturbed areas. Since Spoil Dump Site 1, 2 and some part of the waste rock dumpsite close the Shaft-2 are situated in forestry land, a Rehabilitation Project will be prepared. Populations of flora species that are of higher sensitivity are enabled to survive within the Project Areas through restoration projects and also outside the Project Areas by seed/tuber collection and plantation. Spoil dumpsites and waste rock dumpsites are needed to be permitted by the Ministry of Environment and Urban Planning. Uncontrolled burning of combustible materials will not be allowed in the forest areas during Project activities. A Biodiversity Action Plan (BAP) including a set of future actions that enables the conservation or enhancement of biodiversity will be developed.

Project activities will be conducted considering the mating and breeding seasons of the fauna species. For this purpose, spoil and waste rock coverage of habitats for these animals will not start before April. To prevent animal death, firstly all vegetation will be cleared by cutting and then surface soil to a depth of approximately 30 cm will be taken away. Environmental habitats will be restored to enable the return of these species back to the project area after the completion of the construction activities. The trees in the Project Areas may be used by some bird species, and before cutting the trees, an ornithologist will check the trees for the presence of birds and determine the time the trees can be cut. Collection of wild plant species within the Project Areas and region, damaging, hunting, intentional killing and/or capturing of the wild animals and collection of their eggs will be prohibited.

All construction and operation activities of the Project will be conducted pursuant to the Environmental Law (Law No: 2872), National Parks Law (Law No: 2873), Land Hunting Law (Law No:

4015) and their regulations. Also, requirements of the CITES Convention and the 6th and 7th Articles of the Bern Convention will be met during the construction and operation phases of the Project.

Construction activities within the marine environment such as pile driving, land fill operation, construction of the reclamation areas, breakwater and port will potentially increase the turbidity of the water and increase the level of suspended solids and nutrient content while also reducing sunlight penetration into the deep-sea. Concrete screens will prevent turbidity and shoaling due to sediment disturbance. Construction activities will be performed between the land border and the screen. Within the scope of the Project, it will not be allowed to discharge ballast water into the marine environment. A Marine Ecology Monitoring Plan will be developed for the Project.

3.2.10 Socio-Economy

Economic impact analysis for the Project involves assessing revenues generated or lost (by potential downsizing of existing fisheries, negative impacts of the project on tourism sector) by the economic activity as they flow through the local economy, tracking jobs created or lost, spending changes that supports local business and tax revenues.

As the Project necessitates a high number of workforces, during the construction and operation phases of the mine, coal washing plants and the port, it is expected to cause in-migration to the area. Operation of the coal mine, coal washing plant and port staff will be employed as locally as possible. The contractor should be required to adhere to policies and codes of conduct concerning employment and workforce behavior. They will be trained accordingly to enable employees to take advantage of the employment. Necessary appeals will be made to governmental authorities in order to provide the enhancement and improvement of health and education facilities in the region for the expected population increase.

The influx of large groups in the project may lead to social unrest including violence and sexual assault. Influx of new people may also contribute to crime and safety issues. Coal mine and worker accommodation compounds built for Chinese workers will be located as such to minimize adverse effects on the existing population.

The settlements within the proposed Project areas may be disrupted during the footprint requirement and Project and therefore expropriation of several numbers of lands may occur. Livelihood Restoration Plan will be prepared to ensure that affected persons and/or communities are provided in a transparent, consistent, and equitable manner.

There is a potential disturbance of the fishery boat operations due to the ship traffic and anchoring sites. Anchoring areas will be defined by the HEMA Port Authority in order to prevent the big vessels to hinder the fishing activities.

As a mitigation measure, the contractor should be required to adhere to an Environment and Social Managament Plan. Measures to be incorporated into this plan in order to reduce or avoid socio-economic impacts.

3.2.11 Community Health and Safety

Community health issues with respect to the construction and operation of the mine and the port include communicable diseases associated with the mining activities and the influx of temporary (port and coal washing plant construction) and permanent (mine, port and coal washing plant operation) labor. Good communication and working in partnership with local communities and the local police alongside good training of Project staff to ensure crime and safety issues are prevented from happening. A grievance management system will be in place that will enable the community to raise concerns during the lifetime of the Project. HEMA will attempt to minimize transmission of communicable diseases that may be associated with the influx of temporary or permanent Project labor. Necessary appeals will be made to governmental authorities in order to provide the enhancement and improvement of health facilities in the region for the expected population increase.

Construction and operation activities will be planned in a way considering the nearby communities and noise generating activities will not be undertaken during night time. A Noise Control and Monitoring Plan will be prepared and implemented.

Mines can use large quantities of water, mostly in processing plants and related activities. Besides, significant amount of water will be used for drinking and domestic usage in the mine area. For this purpose, well water will be drawn and also sea water will be treated in order to minimize the impacts to natural systems and water users, and avoid depletion of aquifers. Adequate monitoring and management of water resources used by the operations as well as the treatment of effluent streams including the stormwater run-off from the mine property will be applied. Water will be reused through a closed-circuit washing system to minimize the water usage and prevent the formation of industrial wastewater in the coal washing plant.

According to the statement of the company, coal extraction from the shafts is proposed to be initiated as of mid-2016 and the construction of the port will be finished by the beginning of 2017. In the meantime, the coal will be transported to Bartın Cement Plant via land route. A Traffic Management Plan will be implemented to manage the internal and external traffic for the coal transportation.

With the construction of the port, maritime traffic will be an issue which may pose risks to the community as a result of vessel collisions, fires and other accidents. Maritime traffic will be managed to effectively identify and correct unsafe conditions. This safety issues should include procedures to regulate the safe movement of vessels within the harbor (including pilotage procedures), protect the general public from dangers arising from marine activities at the harbor, and prevent events that may result in injury to workers, the public, or the environment.

All relevant health and safety regulations will be followed during the development and operation of the Project in order to minimize accidents. An Emergency Preparedness and Response Plan to be prepared in accordance with the guidance of APELL Technical Report. The risks and impacts of the Project, in the context of communication and social management practices with local community will be managed through a Social Management Plan.

3.2.12 Labor and Working Conditions

Health and Safety Audit was conducted by Mr. Özgen Özden between 17 – 19th February, 2015 simultaneously with the Follow-up Social – Labor Audit by Dogan Oktar to review of HEMA's management systems and performance in place with regards to occupational health and safety; identification of compliance issues with Turkish laws and regulations regarding occupational health and safety; occupational health and safety management capacity; review of accident and reporting statistics against industry benchmarks.

As Reported, former sub-contractor Datong was replaced with two different sub-contractors namely Qitaihe Long Coal Ltd. (Qitaihe) and China Coal No:1 Ltd (China Coal No:1) for underground mining operations.The general impression after the site visit and extensive review of documentation is that the foundation for Occupational Health and Safety management system is in place and its implementation is being executed at a moderate level within the mining operations with the exception of two findings: i) grounding of electrical equipment not connected to a separate grounding system located outside of the underground mines, ii) No annual inspection documentation of above and underground electrical system and equipment.

Going forward, it is imperative to have a more detailed and in-depth approach to Occupational Health and Safety practice when mine operations are fully in operation and the implementation of such practice including recording and monitoring of Occupational Health and Safety related activities must be performed.

Additionally, the foundation of labor and human resources management system and implementation are present at a basic level except the adequate level of communication between the management and employees (in particular with the Chinese sub-contractors personnel).

As a mitigation measures, an Integrated Management System (IMS) to be prepared to include labor and health and safety procedures during the construction and operation phases of the Project and an HR manager on Site will be appointed to ensure the implementation of the HR policy. Workers will have contracts in place prior to commencement setting out working conditions, terms of employment and EHS responsibilities. All workers will be insured under Social Security Institution.

All employees (including sub-contractors) will be trained on health and safety, and emergency preparedness and response plan to respond timely to the incidents. All accidents and incidents will be recorded and develop accident investigation program. Relatedly, an Explosion Protection Document to be prepared (for the operation phase). Work permits will be required for high risk activities such as working at heights, operation of heavy equipment etc. and such activities to be monitored by site supervisors. The efficiency of health and safety practices will be monitored through internal and external audits, and corrective actions will be taken if required. Job Safety Analysis (JSA) and Safe Working Instructions (SWI) for critical or high risk tasks during construction and operation phases to be prepared (in both Turkish and Chinese languages). A grievance mechanism will be developed for employees and included in the IMS both in Chinese and Turkish languages.

3.2.13 Cultural Heritage

The cultural heritage sites and archeological assets such as evidence of ancient settlements and ruins within/or out of the Project areas have been assessed through the desk-based researches, literature survey and reconnaissance field survey. There are cultural heritage assets in the vicinity of the Shaft-1, 2 and 3 and HEMA Port which are very close to legally protected archeological sites according to the information obtained from both Amasra Museum Directorate and Zonguldak-Bartın-Karabük Planning Zone Environmental Plan.

HEMA will identify and protect cultural heritage by ensuring that both national and internationally recognized practices for the protection, field-based study and documentation of cultural heritage are implemented. Chance Find Procedure must be conducted to address cultural heritage discoveries during both construction and operations. Using an "Archaeological Chance Find Report Form" by construction site responsible to record the date and time of discovery, coordinates of the location, contacts made with the authorities and decisions taken. Appropriate staff training in cultural heritage awareness will be undertaken by staff and contractors. Ensuring systematic stewardship of cultural heritage throughout the Project life-cycle in case of future expansion by developing and implementing a Cultural Heritage Management Plan (CHMP) including a chance find procedure.

4.0 PROJECT ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM

Hattat Enerji ve Maden Ticaret A.S. (HEMA) will establish an integrated management system *(referred to here as the Environmental and Social Management System - ESMS*) for the construction and operation phases of the Project Components. The ESMS will enable to (i) manage the above mentioned risks and impacts, (ii) implement, monitor and review identified mitigation measures, (iii) provide continuous control of the processes and (iv) improve environmental and social performance.

The ESMS will be established and implemented separately for the construction and operation phases. The ESMS will be established in line with the following international good practice and guidelines:

- ISO 9001:2008 - Quality Management System;
- ISO 14001:2004 - Environmental Management System;
- OHSAS 18001:2007 - Occupational Health and Safety Management System;

The ESMS will integrate planning, implementation, control and review of the processes in terms of environmental and social impacts. The scope of the ESMS will be clearly defined in an *"ESMS Manual"* to be developed.

The overall responsibility for the establishment, implementation, maintenance and effectiveness of ESMS will lie with the Project Board of HEMA. For this purpose, necessary human and financial resources and technical infrastructure will be provided by the Project Board for all phases of the Project.

Prior to start of the construction, the Board will establish an organizational structure for the implementation of the ESMS and relevant personnel, especially those who have critical importance in the implementation and management of the ESMS (i.e. management representatives) will be appointed. Key environmental and social roles, responsibilities and authorities as well as qualifications will be clearly defined and announced to the relevant responsible personnel and to the rest of the employees working within the Project. For this purpose, an *"Environmental and Social Task Qualification Table"* will be developed by HEMA.

4.1 Environmental and Social Management Plan (ESMP)

An *ESMP* has been developed for the Project (covering construction and operation phases) in order to manage the adverse impacts on the environment. The ESMP is prepared based on the international standards and national laws and regulations. The ESMP of the Project is presented in Annex D of this report. The ESMP includes description of the mitigation measures to avoid, minimize or compensate the adverse impacts during the construction and operation phases of the Project Components; responsible parties for the implementation of the mitigation measures; the timing of implementation; monitoring and audit requirements. The ESMP focuses on the avoidance of impacts, and where this is not possible, presents technically and financially feasible and cost-effective mitigation measures to minimize possible impacts to acceptable levels. The ESMP is based on the results of the ESIA study and is a framework document that specifies the necessary work to be conducted for the Project such as preparation of detailed management plans for each topic (e.g. air quality control and monitoring, noise control and monitoring, traffic management). The ESMP will be kept up to date with any required additional mitigation throughout the Project and to reflect the requirements of new and/or amended laws and regulations.

The following plans are described in ESMP and will be developed to achieve EHSS objectives for the construction and operation phases:

For construction phase:

- Environmental and Social Management Plan
- Air Quality Control and Monitoring Plan
- Waste Management Plan
- Noise Control and Monitoring Plan
- Marine Ecology Monitoring Plan
- Emergency Preparedness and Response Plan
- Traffic Management Plan
- Stakeholder Engagement Plan
- Occupational Health and Safety Management Plan
- Community Health and Safety Management Plan
- Cultural Heritage Management Plan
- Fire Safety Master Plan
- Contractor Management and Monitoring Plan
- Livelihood Restoration Plan
- Site Rehabilitation Plan
- Biodiversity Action Plan

For operation phase:

- Environmental and Social Management Plan
- Air Quality Control and Monitoring Plan
- Noise Control and Monitoring Plan
- Waste Management Plan
- Stakeholder Engagement Plan
- Marine Ecology Monitoring Plan
- Emergency Preparedness and Response Plan
- Traffic Management Plan
- Community Health and Safety Management Plan
- Occupational Health and Safety Management Plan
- Fire Safety Master Plan
- Contractor Management and Monitoring Plan
- Livelihood Restoration Plan and Resettlement Action Plan (if needed)
- Site Rehabilitation Plan
- Biodiversity Action Plan

These plans will be supported with operational procedures and related instructions as necessary as part of the ESMS. The ESMS procedures and plans will be periodically (or when necessary) reviewed and revised. Additional procedures and plans will be developed as the Project progresses, as necessary.

4.2 Grievance Process

A Grievance Management Procedure will be established in order to ensure that all comments, suggestions and objections received from the Project stakeholders especially from local communities that are mostly affected by the Project are dealt with appropriately and in a timely manner. It is important to note that there will also be a separate grievance management procedure for workers during construction and operation phases.

Local communities will be informed about the grievance management system during the consultation and disclosure activities. All grievances will be recorded, responded and resolved in a defined timeframe. Comments and grievances can be sent to HEMA via mail, e-mail, and fax during the construction and operation stages as well as through the Project website and telephone.

The procedure to handle grievances include consideration of all grievances submitted by the stakeholders in verbal and written, logging all the grievances, evaluation of the grievances in a timely manner, and informing the complainant about the corrective actions to be taken to manage the grievance. Any grievance related to subcontractors' activities will also be managed in line with the same grievance mechanism. In addition to grievances, comments will be reviewed once a week to identify if they require a response. In case the comment requires a response, an appropriate response will be developed by the Project team in a month after the submission date of the comment. Comments will be reflected to a comment log that will include information on the date of the comment submission, details of the person submitting the comment, issue of comment, response required or not, and date of response.