

Social Impact Assessment
Dundee Precious Metals Ada Tepe Deposit
Krumovgrad Gold Project, Bulgaria



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EXECUTIVE SUMMARY

Existing conditions

Krumovgrad municipality has an ageing and declining population, although these processes are not as extreme as in other regions in Bulgaria. The population is ethnically and culturally diverse and social cohesion is good. The population's health status is good with the biggest health issue being the lack of medical practitioners. The educational status of the population is also representative of Bulgarian rural regions, with improving levels of educational attainment, but persistent problems with acquiring adequate functional and career skills in the formal school system. A technical high school and local adult training centre in Krumovgrad have potential for development. In general, the full educational, career and social integration of some vulnerable groups, such as the Roma minority and underemployed youth remains a problem.

The engineering infrastructure is relatively well developed but needs maintenance and rehabilitation – especially with regard to the road network and water and sanitation. Krumovgrad municipality has potential to attract significant financial assistance from the EU operational programmes in the 2014-2020 period.

The local economic context is not dominated by any single business sector or activity, with light industry, agriculture, tourism and services generating local income and employment. Of these tourism likely has the biggest development potential.

Local incomes are modest, with low levels of savings and spending. Households supplement their financial incomes with subsistence farming. More than half of the local households regularly utilize for their own needs resources provided by the local ecosystems such as wild fruit gathering, firewood collection, hunting, fishing, beekeeping, etc.

Forecast impacts

Krumovgrad Gold Project expenditure has the potential to have a significantly positive impact on commercial activity within the Municipality of Krumovgrad as well as at district and national level. The Company's preliminary estimates indicate that a total of approximately \$164.1 Million would be spent on all aspects of the construction phase over 2.5 years, with closure costs at end of Project of \$14.7 million over 3 years. Operational expenditure throughout the life of the Project would result in a positive impact on the economy, increasing commercial activity, creating jobs and increasing incomes.

Employment will be generated through direct, indirect and induced employment opportunities over all project phases. During the Operations phase, the Company has committed to sourcing 90% of its workforce from the Municipality and only when skills limitations prohibit this target, will labour be sourced from the wider area of Kardzhali and

beyond. As such, within the project context where baseline conditions indicate high unemployment rates, this is considered a significant positive impact.

Increased economic activity in the area may create cost inflation. While this is particularly the case in relation to housing as the demand rises, levels of home ownership are high in the host communities, thus limiting the adverse impact of increased housing costs. Since the mine life is relatively short, and the window of opportunity for the development of new enterprises and self-sustaining businesses to become established within the Local Study Area (LSA) is limited, risks of over-dependency of the local economy on the mine are of concern. It can be assumed that mine closure will result in reduced economic activity, creating unemployment and levels of out-migration similar to those seen today in the area. Skills investment through training of the workforce in industry related skills and work readiness is considered beneficial and cumulative in effect. The Company has developed a robust training plan which will be implemented during the pre-Construction and Construction Phase, in order to meet recruitment milestone targets set for the Operations phase.

Slight changes in the demographic profile of the Municipality will take place, in particular Krumovgrad town. Currently, the general migratory trend is outward, especially amongst the younger generation of working age, and the demographic characteristics of the Municipality and in particular the villages and hamlets surrounding Ada Tepe which formed the sample for the socio economic household survey, indicate largely depopulated communities and a predominantly aged population. However this will reverse moderately and in-migration to the area of direct and indirect workforce candidates and opportunistic job seekers, who will be predominantly male, will take place. Increased population may put some pressure on Municipality utility services, presently functioning at a low capacity. Other social issues may also arise consequent to these demographic changes such as conflict over employment opportunities, although this should be readily mitigated by the commitment by the Project to prioritise local hiring..

The footprint of the project site and its anticipated buffer will take up approximately 134 hectares of National Forestry Department owned land. Further land will be acquired from the Municipality near Pobeda in order to widen the road to the mine site on Ada Tepe in some places. A discharge pipeline will be constructed alongside the municipal road, which will not disrupt agricultural activities. Before construction, pipeline easement rights for a period of 15 years will be negotiated for four sections of private land totalling 0.1 hectares. On Ada Tepe, there will be a loss of access to the abandoned tourist lodge (owned by the Municipality) and four tourist bungalows, but these will be replaced by the Project. Recreational hunting will be affected, as the assigned hunting territory of the Lulichka hunting group will be reduced in overall size, and the only boar hunting area, which is on Ada Tepe, will be lost. Although seasonal mushroom picking on Ada Tepe will not be possible any more, this activity is performed in various woodlands throughout the Municipality and no permanent loss of access to gathering grounds among host communities has been identified.

It is possible that impacts related to the perceived contamination of cultivated crops such as tobacco, vegetables and bee keeping as well as wild crops such as mushrooms, wild

herbs and berries may arise. This perception could affect the community's ability to sell the agricultural products, and this would have significant negative impacts on many community members' livelihoods. The Project's commitment to public information and ongoing stakeholder engagement, including with buyers of local commodities, will contribute to preventing the development or realization of such perceptions. Evidence of any sustained adverse impacts will lead to increased and improved communication about the Project's management of environmental impacts. .

Project activities will put increased pressure on the road infrastructure and increase the amount of traffic travelling on the road in the Municipality and District. The increased traffic movements will be insufficient to cause traffic congestion but there will be an increased risk of road traffic accidents and collisions between project and local vehicles, pedestrians, cyclists and livestock. Adequate road safety management measures will be put in place to prevent this as far as possible.

Potential impacts that could put further pressure on Krumovgrad Hospital (which according to baseline data is functioning at a low capacity) will be mitigated through key mitigation and management measures, which include sourcing the workforce principally from the host communities, investment in health and safety training for the workforce and effective management of traffic, noise and dust impacts.

Mitigation measures – people and communities

Enhancement measures proposed to maximise economic benefit from jobs and expenditure particularly in the local area of the Municipality comprise building capacity of the local supply chain in line with the Company's procurement policy; skill training of work force; and contractor contract clauses encouraging local recruitment and procurement.

To maximize employment opportunities, establishment of a fair, transparent and accessible recruitment procedure which is accessible to all interested parties in a timely manner is proposed. It is intended to establish effective community engagement with stakeholders via the Community Liaison team and the operation of the Company information centre in Krumovgrad as a source of accurate and up-to-date Project information including recruitment procedures and job opportunities as well as access to the Community grievance mechanism.

Mitigation is proposed to avoid the local economy becoming mono industrialised with the establishment of a Community Development Plan which incorporates agricultural, livestock and bee keeping initiatives that aim to strengthen and diversify present production; assist in linkages between producers and customers; and provide small and medium sized enterprise training.

To enhance the outcome from investment in skills, the timely establishment of a fair and transparent recruitment procedure and skills training is proposed.

Mitigating changes to the demographic profile requires monitoring of demographic flows within the community and partnering with the Municipality to provide assistance to support utility services and protective services. Social cohesion and community safety and security will be maintained by the following actions:

- Development of a Company induction programme and code of conduct for all workers
- To preserve the strong social fabric and sense of place of the Municipality, establishment of social initiatives within the Community Development Plan.

Additional specific actions include the following:

- Establish entitlements as part of the Community Development Plan in line with (or exceeding) EBRD Requirements to cover compensation of the affected private owners whose partial pieces of land will be temporarily limited in land use because of the construction of the discharge pipeline close to their property. Payment of rental for easement access will be made.
- Coordinate with the Municipality over an alternative location for the construction of a tourist lodge and bungalows
- Local hiring priority policies established for the affected communities of Skalak, Zvanarka, Ovchari and Roma populations
- A vulnerable persons mitigation plan established, which identifies the vulnerable groups and individuals in affected communities and targets them for mitigation to offset built-in disadvantages
- Provide financial assistance to Krumovgrad hospital to improve service provision, equipment and infrastructure
- Support the hospital and the health authority in awareness raising campaigns related to communicable diseases.

A social management plan (SMP) will be developed based on the findings of the Social Impact Assessment. The SMP will be supported by other plans already developed such as the Community Health, Safety and Security (CHSS) management plan.

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APPENDICES

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Appendix B:	Sensitive Locations
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GLOSSARY OF ABBREVIATIONS

AA	Appropriate Assessment
BGN	Bulgarian Leva
CL	Community Liaison
CLO	Community Liaison Officer
DPM	Dundee Precious Metals
DPMKr	Dundee Precious Metals Krumovgrad
EBRD	The European Bank for Reconstruction and Development
ESIA	Environmental and Social Impact Assessment
EU	European Union
GDP	Gross Domestic Product
GIS	Global Information Systems
HSE	Health, safety and environment
HIV	Human Immunodeficiency Virus
IFC	International Finance Committee
ILO	International Labour Organisation
IMWF	Integrated Mine Waste Facility
LCF	Local Consultative Forum
LSA	Local Study Area
MoEW	Ministry of Environment and Water
NIAM	National Institute of Archaeology and Museums
NSI	National Statistics Institute
PAP	Project Affected People
RSA	Regional Study Area
SEP	Stakeholder Engagement Plan
SIA	Social Impact Assessment
SMP	Social Management Plan
STD	Sexually Transmitted Disease
STI	Sexually Transmitted Infection
USD	United States Dollar
VIA	Visual Impact Assessment
WAI	Wardell Armstrong International

1.0 INTRODUCTION

1.1 Project Background and Regulatory Framework

Dundee Precious Metals Krumovgrad is a Bulgarian based, company engaged in the acquisition, exploration, development, mining and processing of auriferous ores.

In 2000 DPM Krumovgrad, formerly Balkan Mineral and Mining EAD – BMM was awarded the 130 km² licence area. Initial project plans incorporated cyanide leaching of gold ore and a conventional tailings impoundment for disposal of process waste. At this stage, the Project footprint extended to 200 hectares. An EIA report on this Project was compiled and submitted to the Bulgarian Ministry of Environment and Water (MoEW) in 2005. Significant stakeholder concerns were voiced against suggested technology and the Company withdrew this EIA Report.

In 2007, Bulgaria was admitted to the European Union. A Natura 2000 network was established within all EU countries, together with legislation to establish an Appropriate Assessment (AA) procedure, to be applied to investment proposals, plans and programmes which could potentially impact Natura 2000 sites. Because the Krumovgrad Gold Project is located within the boundaries of the Eastern Rhodope,¹ a designated Natura 2000 site, and is located close to the Krumovitzza River², an AA was deemed to be obligatory.

As such, fundamental changes were made to the Project design and an alternative project design was devised. An EIA report on the revised investment proposal was completed in 2010 and submitted to the MoEW. This resulted in the favourable MoEW EIA Decision No 18-8/2011, which entered into force in March 2013.

In 2014, DPM negotiated an amended financial package with a consortium of banks for which the European Bank for Reconstruction and Development (EBRD) acts as environmental agent. According to the EBRD's Environmental and Social Policy (2008), and its associated Performance Requirements (PRs), a project of this type and scale requires a full Environmental and Social Impact Assessment (ESIA).

Following an independent review of the local EIA process and reporting, the EBRD required completions of a number of supplementary environmental and social studies and documents to fill the gaps apparent under the EBRD Performance Requirements (PRs) and international good practice.

This Social Impact Assessment (SIA) report has therefore been prepared to supplement the approved EIA (2010).

In addition to the EBRD PRs, some of the consortium banks refer to the Equator Principles and therefore the Project also references the IFC's Performances Standards on

¹ (BG 0001032) Under 92/43/EEC Habitats Directive

² (BG00002043) Under 79/409/EEC Birds Directive NATURA areas

Environmental and Social Sustainability (2012). The package of supplementary environmental and social documents as well as the local EIA reports together form the Project ESIA. This composite Project ESIA is summarised in a Non-Technical Summary.

EBRD Performance Requirements

EBRD has developed an Environmental and Social Policy 2008 which sets out the environmental and social issues and aspects of sustainable development and outlines how the Bank will put into practice its commitment to promote environmental and social sustainability. Key areas of focus include the following:

- Mainstreaming of environmental and social considerations into all its activities;
- Establishing for clients the environmental and social performance requirements that they will be expected to meet in a time frame acceptable to the Bank;
- Defining the respective roles and responsibilities of both the EBRD and its clients in achieving sustainable outcomes in line with the Policy and the performance requirements;
- Setting a strategic goal to promote projects with high environmental and social benefits;
- Suggest key performance indicators as part of the management and monitoring measures.

The EBRD seeks to ensure through its environmental and social appraisal and monitoring processes that projects satisfy and fulfil the following conditions:

- A project/or operational activities are socially and environmentally sustainable;
- A project/or operational activities are respectful to the rights of affected workers and communities; and
- A project/or operational activities is designed and operated in compliance with applicable regulatory requirements and good international practice³.

Projects financed by EBRD are required to meet good international practice in relation to sustainable development. To achieve this, a set of Performance Requirements for key environmental and social issues and impacts has been developed:

- Performance Requirement 1: Environmental and Social Appraisal and Management
- Performance Requirement 2: Labour and Working Conditions
- Performance Requirement 3: Pollution Prevention and abatement
- Performance Requirement 4: Community Health, Safety and Security
- Performance Requirement 5: Land Acquisition, Involuntary Resettlement and economic displacement
- Performance Requirement 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

³ WAI, 2014, Krumovgrad Gold project – Environmental and Social Gap Analysis

- Performance Requirement 7: Indigenous Peoples
- Performance Requirement 8: Cultural Heritage
- Performance Requirement 9: Financial Intermediaries
- Performance Requirement 10: Information Disclosure and Stakeholder Engagement.

Krumovgrad Gold Project is considered as a 'Category A' Project, as it is currently a Greenfield Project located in a NATURA 2000 site with settlements in close proximity to the proposed mine complex. Category A projects must be subject to a full ESIA.

1.2 Structure of the report

This report presents the Social Impact Assessment, which has been prepared by AMEC on behalf of DPM (hereafter referred to as the Company) to meet the requirements of the EBRD Performance Requirements and referencing Wardell Armstrong EBRD commissioned Gap Analysis April 2014. This report has been detailed to supplement the approved EIA (2010).

In conjunction with this SIA report an updated socio economic baseline has been drafted by Denkstatt and forms Appendix A. The baseline, as discussed later, will form the basis for the comparative analysis of the socio economic impact assessment. Furthermore a report detailing the eco systems services baseline and impact assessment has been prepared separately (AMEC Report A150-14-R2258), and the main findings have informed and are detailed in the SIA.

The key aims and objectives of this study include:

- Identify the potential socio economic positive and negative impacts of the pre construction; construction, operations and decommissioning and closure phases of the proposed project, through professional experience/judgement, reference to EBRD Performance Requirements and interviews with affected/interested stakeholders;
- Develop attainable mitigation measures to enhance positive impacts and reduce or avoid negative impacts; and
- Develop management and monitoring measures to be implemented throughout the life of the project.

This report includes the following sections: Project Description and Project Context (Chapter 1); Issues and Assessment Criteria (Chapter 2); Socio Economic Impact Assessment (Chapter 3); Cumulative Effects Assessment (Chapter 4); Social Management Framework (Chapter 5) and finally the Summary Matrix (Chapter 6).

The Socio Economic Baseline Assessment report (Denkstatt Bulgaria Ltd) is included as Appendix A to this report. Other reports referenced throughout are available from the DPMK website.

1.3 Project Description

1.3.1 Project Description and Location

The Krumovgrad Project is a planned 850,000 tonnes per year (“tpa”) open pit gold mine located in Bulgaria which is consistent with existing permitting and environmental submissions and is forecast financially viable. The mill facilities and mine will be developed, constructed, and operated by DPMKr (or the Company), a wholly owned subsidiary of DPM.

The licence area is located in the East Rhodope Mountains, approximately 320 km (by road) southeast of Sofia, in the Kardzali District immediately south of the regional township of Krumovgrad (25° 39' 15"E and 41° 26' 15"N). Krumovgrad is located approximately 320 km by paved road southeast of Sofia and some 12.5 km (direct line) north of the border with Greece. The Ada Tepe deposit is located 3 km south of the Krumovgrad town site and its footprint trends in a north south direction. The deposit area comprises of hilly topography abutting a major regional river system.

Figure 1-1: Location Plan of the Krumovgrad Gold Project Area



1.3.2 Accessibility, Climate, Local Resources, Infrastructure and Physiography

The town of Krumovgrad is approximately 320 km southeast by paved road from Sofia's modern International airport. A second International Airport is located in the city of Plovdiv

located approximately 106 km northwest of Krumovgrad. Access to the the Ada Tepe deposit is available at all times of the year, by sealed road from Krumovgrad. Access within the licence area is good, with all-weather surface roads transecting the project area. Secondary roads are unsurfaced but generally accessible year round with four-wheel drive vehicles.

The average annual precipitation is 703.5 mm. The bulk of this falls in Autumn and Winter, occasionally as snow in the coldest months. The highest rainfall occurs in December (96.9 mm average) and the lowest in August (24.1 mm). Small villages are dispersed widely throughout the licence area with residents involved in subsistence farming, which forms the main land use of the area. Most common is livestock rearing and the growing of tobacco and different vegetables on the poorly developed soils characteristic of the region. The other main land use within the licence area is state controlled forestry by National Forestry Agency. The population of Bulgaria is largely non-practicing Eastern Orthodox Christian (85%) with a Turkish Muslim minority predominantly residing in the southeast of the country, including the licence area.

Infrastructure in the local study area is good, with mostly paved roads, and power and water resources available within close proximity to the Project.

The Town of Krumovgrad, located in Krumovgrad Municipality is around 230 m above mean sea level. The 2011 census recorded the population of the Municipality as being 17,823⁴, which is 12% of the population size of Kardzhali District (152,808). The municipality generally is characterised as having an ageing population with 28.33 % aged 40 – 59 and 23.50% aged above 60⁵. The gender distribution does not follow the national trend, as there are more men than women (8,997 men and 8,826 women). The average family size is reported to be 2.9. The ethnic representation is predominantly Turkish with a smaller representation of ethnic Bulgarian and to a much lesser extent, Roma. Krumovgrad town has a range of infrastructure services including a hospital, 19 schools (kindergartens, junior and secondary schools), a Police Force and a Fire Brigade. The town offers a range of services such as shops (food goods, hardware, clothing), hotels, guesthouses restaurants and cafes. People largely depend on tobacco growing as an income, selling their goods via contracts made at the beginning of the season with tobacco buyers. However there are a small number of other small scale businesses operating in the town and of relevance to the Project, construction and materials companies. Krumovgrad town will be the primary supply and service centre for the Project and it is intended that most of the construction workforce will be housed there.

1.3.3 Development and Operations

The timeframe for implementing the Project, once all necessary permitting is in place; from start through to practical completion of the process plant in readiness for ore commissioning is estimated to be 125 weeks (approximately 2.5 years).

⁴ Scoping report 2014

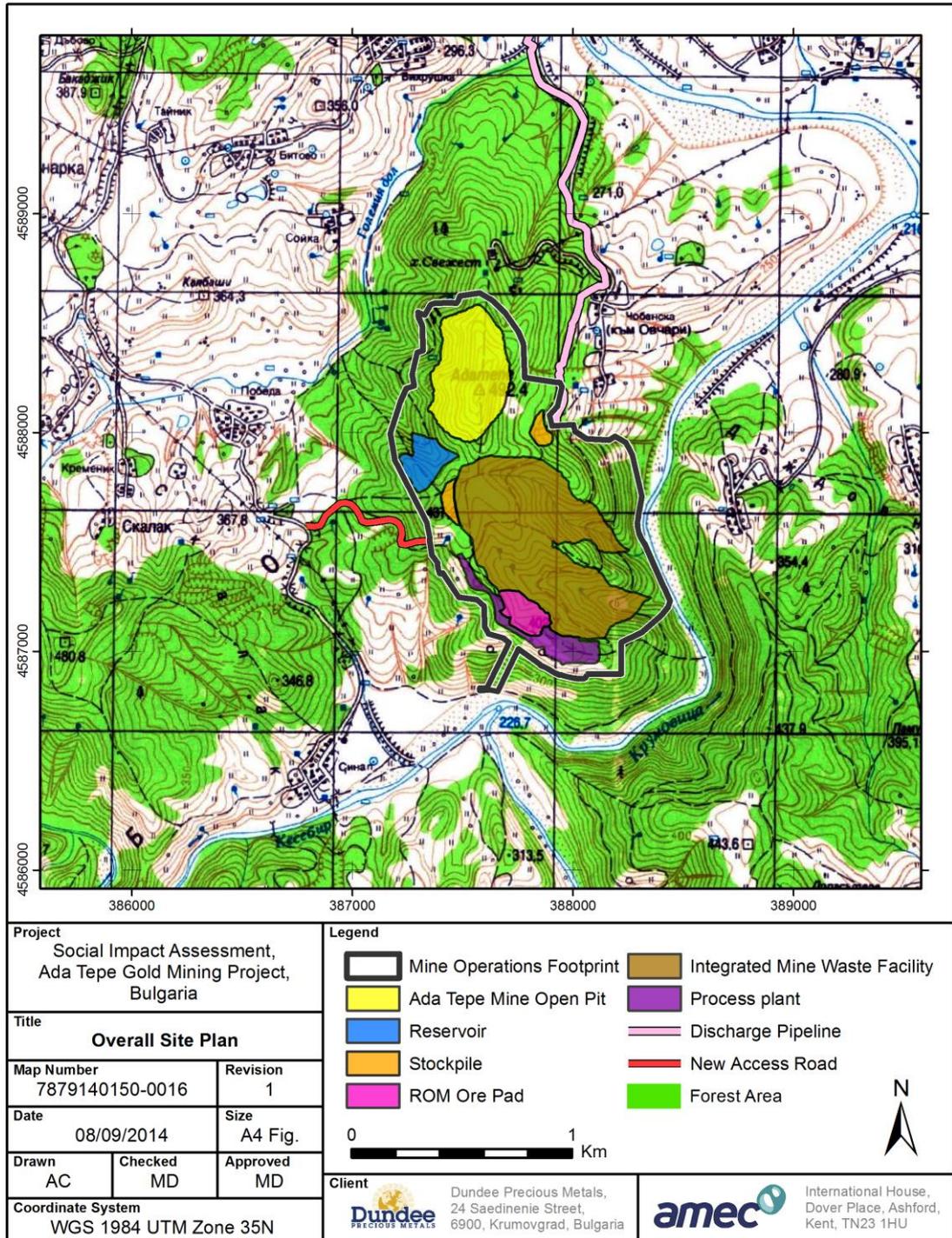
⁵ ibid



Over the 8 year life of mine, the project will produce 686,000 ozs of gold within a mineral concentrate. The plant is planned to treat 0.85 Million tonnes per year (Mtpa) of ore, including the processing of stockpiled low grade ore at the end of the Project.

Development of the Project will require the acquisition of land for the direct footprint and buffer zone of the project from the State Forestry Department. The size of the Project footprint has been minimised as much as possible and the footprint will be 85 ha. If the anticipated buffer is included, it will be approximately 134 ha. Widening of the haul road to the project site will require acquisition of land from the Municipality (approximately 3 m either side of the road). The discharge pipe which will run from Ada Tepe northwards, parallel to the Krumovitza River, and along the side of an existing road will cross agricultural cultivated land to a point on the shore of the River. This will necessitate temporary access of 0.1 ha of 4 private land plots . The overall site plan is presented in Figure 1-2 below.

Figure 1-2: Overall Site Plan



The operation is planned to use conventional drill and blast mining methods to mine ore, low grade ore and waste rock. The mining equipment proposed for the mining operation includes a 23.7 m³ back hoe excavator and 40 tonne off-highway haul trucks. The open

pit will operate for two 8 hour shifts per day to minimise the noise impacts on the local communities.

The process selected as a result of the test work program does not entail the use of aggressive or highly toxic chemicals. It comprises simply crushing and milling of the ROM ore followed by froth flotation to produce a gold and silver bearing concentrate that will be packed in containers and transported off-site for refinement into pure gold. The process plant will operate 24 hours per day, 7 days per week, except for ore crushing which will operate only for 12 hours per day (shifts of which will be 8 hours).

Emissions

Metallurgical recoveries of 85% and 70% for gold and silver, respectively, were used for the feasibility assessments.

The process plant will be located on the side of the Ada Tepe hill, adjacent to the Integrated Mine Waste Facility ("IMWF") and approximately 1 km south of the open pit. The milling and flotation areas will be in a building which also incorporates maintenance facilities for the plant, as well as warehouse, plant offices and change rooms. The mining fleet and other company vehicle maintenance will be done in a separate building about 600 m north of the process plant.

Process plant tailings (non gold-bearing minerals) will be thickened to a maximum solids content ranging between 56%wt and 68%wt and will be disposed of in the Integrated Mine Waste Facility (IMWF), along with waste rock from the mine.

As set out in the 2010 EIA report, air emissions will be within Government guidelines, approximating and below the daily limit for protection of human health and therefore will not adversely affect the surrounding lands and livestock.

Labour Force

The project will employ directly approximately 300 people during the construction period and during the operations phase reducing to 230 people on site who will be engaged in the administration, mining, and processing operations. 50 people will be employed in the closure and rehabilitation period. The Company has committed to sourcing 90% of the Operational workforce from the Municipality and where skill needs cannot be met sourcing, will be undertaken from the wider district of Kardzhali and beyond. In addition to the direct workforce, further employment will be made available through service contracts.

Non local workers will live in hotels, guesthouses or apartments in Krumovgrad. The work force will be bussed to the mine site daily from Krumovgrad Town based on three 8 hour shifts operating 24 hours process plant.

1.3.4 Project Implementation and Costs

The timeframe for implementing the project through to practical completion of the process plant in readiness for ore commissioning extends from the present through to Q4 2016/Q1 2017. This schedule allows for land acquisition, the completion of the permitting and approvals, engineering design, procurement of materials and equipment, and construction of all facilities on site, including pre-production activity at the open pit mine.

The development capital cost of the project has been estimated at USD 164.1 Million and is based on a hybrid EPCM (engineering, procurement, construction and management) implementation strategy. A renowned international consultant has been involved since July 2012 in the delivery of the "EP" component of the project, and DPM Krumovgrad's experience and "know how" in Bulgaria will be used to optimise the detail engineering, permitting and execution of the "CM" component of the project. An Owner's team commensurate with the stage of development will gradually be built up and award a number of consulting agreements to various consultants to supplement the Owner's team based on a defined scope of deliverables and implementation schedule. The estimate includes Owner's costs, working capital, and a contingency of approximately USD 30.8 Million.

1.3.5 Mining Equipment

A relatively small scale mining fleet was selected to suit the proposed production rate and the selective mining requirements. Rigid and articulated 40 t trucks were selected together with 3.7 m³ hydraulic backhoes. It is planned to use the rigid trucks for ore transport, and the articulated trucks for the waste haul, where more manoeuvrability is required. Both ore and waste will be drilled using a Tamrock DP1100. Additionally, four types of support equipment were defined, which will contribute to the performance of the production equipment.

The mining fleet was selected for a capacity of 8,000 tpd ore and waste in year one and a ramp up to 9,500 tpd from year four. It was determined that the equipment will be owner operated, with the maintenance done possibly through contract.

1.3.6 Integrated Mine Waste Facility (IMWF)

1.3.6.1. Background and Site Selection

The concept of a conventional slurry disposal facility as proposed in the 2005 investment proposal has been replaced with an IMWF which will receive both the thickened tailings and the mine waste rock from the Ada Tepe pit. The tailings storage location was revised to minimise land use and the environmental footprint. Two sites were initially identified for a potential IMWF, located north and south of the open pit respectively. Preliminary capacity assessments as well as optimisation of the mine and road layout resulted in selection of the south site.

1.3.6.2. General Description

The concept of the IMWF is to place thickened tailings into cells constructed from mine rock. The mine rock provides strength required for overall stability and also internal drainage. Water reporting to the underdrain will be pumped to the Raw and Process Water Reservoir ("RPWR") located southwest of the open pit. The IMWF will be constructed within two small valleys, being operated as two separate facilities early in the life of the project and later merging into a single facility as operations progress. Rehabilitation of the lower slopes of the IMWF will begin during the early stages of mine operation. DPMKr have an approved Mine waste management plan from the Ministry of Economy and Energy.

The IMWF structures required for commencement of mining operations will be constructed from the soil and rock excavated to create the platform for the process plant and the roads on the mine site. Once the mining operation begins, the mine rock will be trucked from the open-pit to the IMWF, dumped and spread to construct containment cells for the tailings. Tailings will be thickened in the tailings thickening plant to the maximum practical amount, and then conveyed by pump and pipeline to the containment cells. The IMWF will be a fully drained facility and will not contain a water pond at any time during its operation. A system of under-drains will be constructed along the axis of each small surface water channel in the footprint of the IMWF and these drains will discharge to one of two lined sumps located at the toe of the facility.

The IMWF will be constructed from the bottom up, with mine wastes placed on starting platforms at the bottom of the valley at approximately 300 m elevation and then progressively built up in benches during the mine life to elevation 450 m. This will allow the lower, completed sections of the facility to be reclaimed and closed during the life of the mining operation.

Given the economic parameters used for this study, (i.e. 0.6 g/t COG), 15.1 million tonnes of mine rock and 6.2 million tonnes of tailings will be stored within the IMWF over 8 years during the life of the mine.

A dual reservoir system has been developed which has resulted in the mine being able to adopt a zero discharge water management strategy. These two reservoirs are lined, adjacent to each other and have differing functions with regard to water management, these being management of process water and storage of storm water and pit inflows.

1.3.6.3. Closure and Rehabilitation

DPMKr have an approved Mine Closure Plan for mine decommissioning and rehabilitation of disturbed lands for the Ada Tepe prospect from the Ministry of Economy and Energy. The plan provides for removal of constructed facilities and roads (except where an agreement is reached for post-closure use by the Community) and revegetation of operational areas in order to attain an end-use for the site as agreed with Project stakeholders.

1.3.6.4. Water Management

The project water management plan is central to maintaining an appropriate environmental and operational performance for the project. The annual fresh water requirements are 70,000m³/y or 2.2 l/s. The principle adopted for site water management is to intercept and divert away water flowing towards operational areas and intercept water in contact with operational areas. Runoff will be diverted through a drainage system and pumped to a storage pond preventing run off entering watercourses. This contact water may then be used in the Project or discharged in line with conditions in issued EIA Decision. Any discharged water will be chemically treated to meet parameters for drinking water. In operation, the process plant will source its water from recycle and harvesting rainfall on the site. Make-up water will be taken from a borehole well located approximately 0.3 km southwest of the process plant near the Kesibir River (see below).

1.3.6.5. Communications

The mine site will be linked to the Krumovgrad public network using fibre optic cable which will support both data and voice communications. A repeater system will provide the infrastructure to enable hand-held and mobile radio sets to communicate around the site.

1.3.6.6. Access Road and In-plant Construction

The proposed access road to the plant site is an existing secondary paved road approximately 2 km in length which runs past the village Zvanarka through the hamlet Pobeda of the village Ovchari, and two small hamlets of village Ovchari located near to the site. This secondary road connects with the main road leading to the town of Krumovgrad, and further to Kardzhali. In anticipation of increased traffic on the section of the secondary road between Zvanarka and Pobeda, seven pull-off areas will be incorporated into the existing road design to facilitate vehicle passing. The road will be upgraded to accommodate heavy vehicles. The second portion of the access road from the paved road to the plant will follow an existing dirt road for approximately 950 m. This road will be constructed and paved with a finish layer of bitumen - crushed stone mixture to minimize dust emission.

On site a 950 m long road will connect to an exit of the mine open-pit and provide access to the crusher area. The main section of this road will be comprised of a 20 m wide running surface with 2 m high by 3 m wide berms located on the down slope side of the road. It will be surfaced with gravel maintained by frequent grading and water sprinkling.

The IMWF embankment access roads will provide access from the open pit to two embankment dams. One road will be 1.9 km length and will connect the open pit with the north embankment construction site. A second road 760 m long will connect to the south embankment construction. It will be surfaced with gravel maintained by frequent grading and sprinkled as necessary.

1.3.6.7. Liquid Effluent, Hazardous and Solid Waste

Sewage from the various plant site buildings will be dealt with by means of a packaged Tertiary Wastewater Treatment System. Waste such as hydrocarbons from equipment maintenance will be collected and stored for collection by contractors who will remove from site and dispose of in accordance with the applicable regulations. Office waste and waste from the meals areas will be stored on site for pick up by a contractor for disposal at a regulated disposal site.

Fuel Storage and Distribution

Diesel fuel storage will be provided to supply fuel to process equipment, light vehicles, the mining fleet and mobile plant and equipment. All fuel required at the plant site will be delivered in tanker trucks by commercial suppliers. The fuel storage area will be bunded to prevent spillage of fuel. Minor quantities of petrol that may be required can be obtained from local fuel distributors.

1.3.6.8. Vehicle Washdown Facilities

A vehicle wash down facility will be provided adjacent to the diesel fuel refuelling area. It will comprise a bunded concrete slab sloping to a settling sump. Captured rainfall and diesel spillage from the adjacent diesel refuelling facility will also be directed to this sump. A sump pump will transfer dirty water to an oil/water separator.

1.3.6.9. Power Supply and Reticulation

The plant electrical power will be supplied by the local power authority via a proposed underground high voltage cable supplied from the Krumovgrad 110 kV / 20 kV Substation. A 20 kV main substation will be established at the plant site to facilitate power distribution to various areas within the plant. Within the main substation, a tariff metering system will be established to allow reading of whole of plant power consumption.

1.3.6.10. Buildings

Infrastructure buildings are classified as either architectural, control rooms or industrial. Architectural buildings include administration offices and ablution facilities. Control rooms include the crusher control room and the main process plant control room. Industrial buildings include workshops, warehouses and buildings that house process equipment. The assessment of building requirements has been based on the number of personnel and functions required in each area. These buildings will be constructed of reinforced block-work or brick. Roofing will be corrugated steel and floors of elevated timber or (at ground level) concrete. Local construction materials will be used to the maximum extent possible.

1.3.6.11. Fire Protection

Fire protection will consist of the provision of fire hydrants, fire hose reel cabinets and fire extinguishers placed strategically around the facilities in accordance with the requirements of the relevant regulations. Fire-fighting water will be supplied from a dedicated volume in the fresh water reservoir. Water is gravity fed to firewater pumps at the process plant. Jockey, duty and diesel-powered standby pumps will be provided.

Various types of fire extinguishers will be provided in areas where water as a means of fire control is undesirable. Allocated staff will be trained in fire fighting and emergency preparedness⁶.

1.3.6.12. Security

All persons entering the Process Plant and mine facilities areas will be required to pass through the continuously manned boom gate adjacent to the administration building on the access road. Contracted (unarmed) security guards located within the administration building will control all entry and exit of vehicles and personnel. Search and inspection of personnel, bags and items leaving the plant will be carried out at this facility.

A stock fence will be constructed around all project facilities including the process plant, Integrated Mine Waste Facility, mine, and raw and process water reservoir. Security fencing with lockable access gates will be installed locally around the remote pumping facilities.

Additional security fencing will be provided around the warehouse yard. All security fencing around the key areas will be 2.4 m high wire chain mesh cyclone type fencing with 4 strand barbed wire.

Concentrate will be transported by road in sealed containers to the onward destination and will be escorted by unarmed security guards.

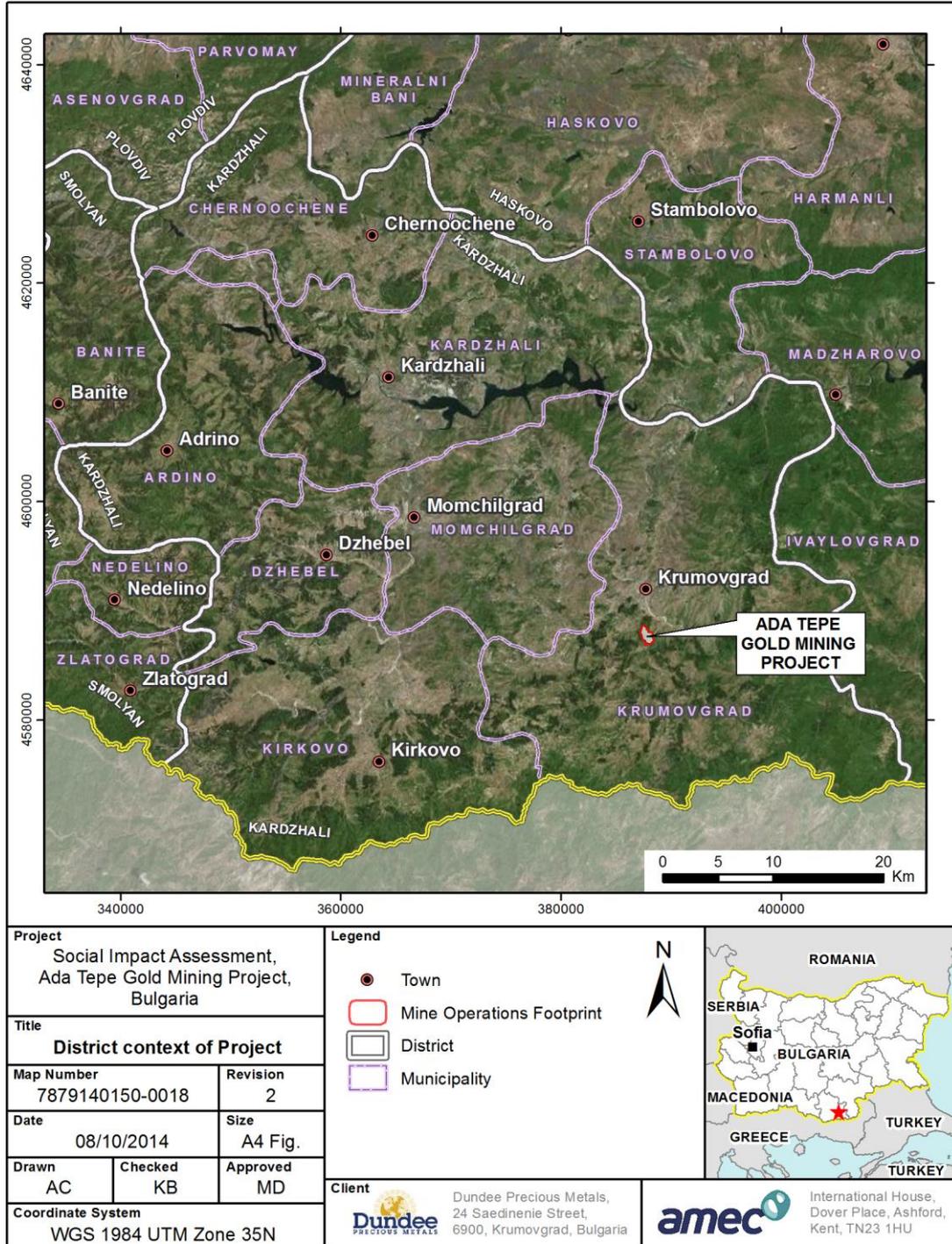
1.4 Project Context

1.4.1 Area of Influence

The proposed Krumovgrad Gold Project is located in the East Rhodope Mountains, Southern Bulgaria (refer Kardzhali District Map below in Figure 1-3). The Ada Tepe deposit is located in Krumovgrad Municipality, 3 km south of Krumovgrad town, extending over 0.7 km² of the Ada Tepe hill area as shown in Figure 1-4 Map below of Krumovgrad Municipality.

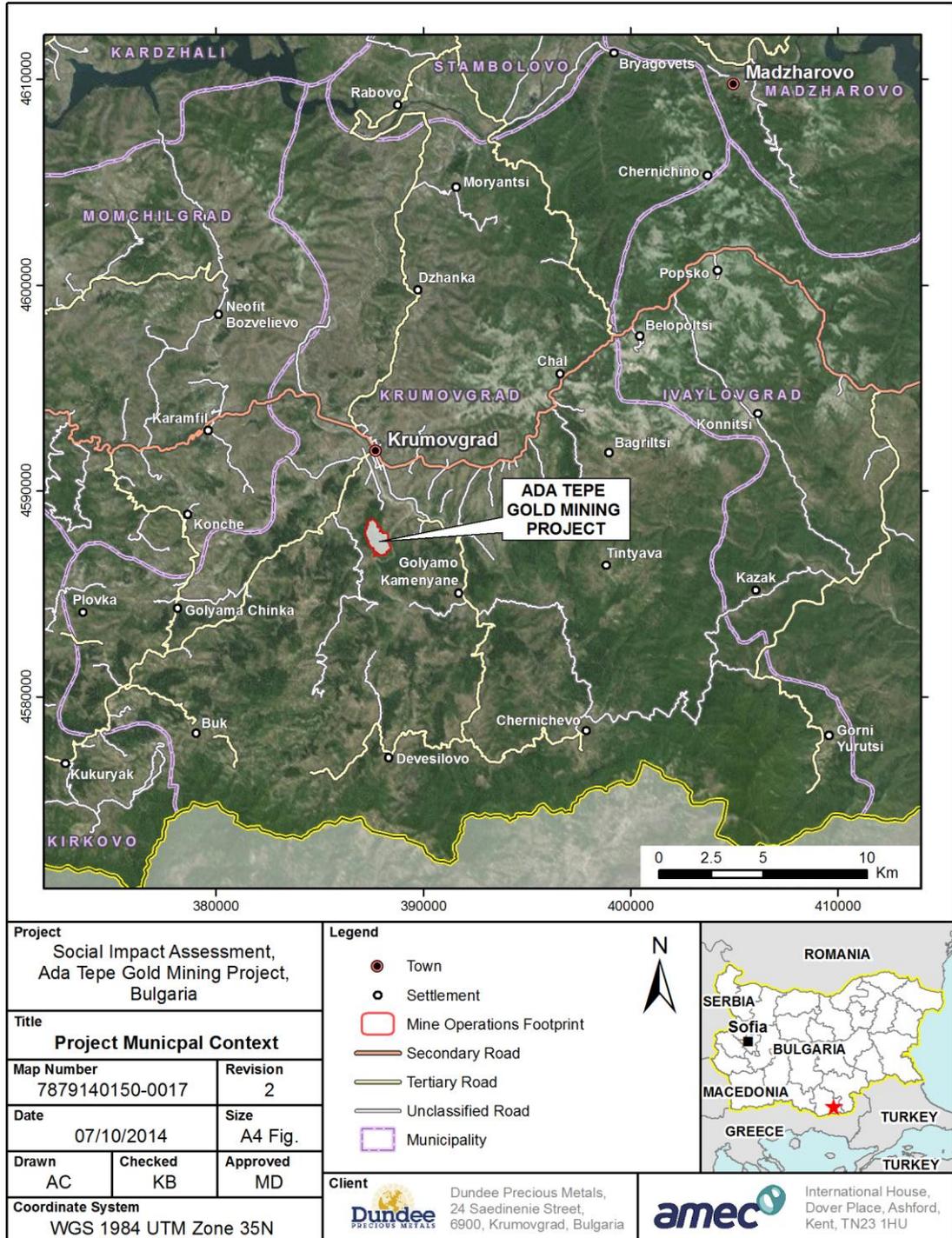
⁶ Email received 22 August DPM Operations Manager

Figure 1-3: Location of the Ada Tepe deposit within the context of Kardzhali District.



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, I-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Figure 1-4: Location of the Ada Tepe deposit within the context of Krumovgrad Municipality.



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

To establish the areas of influence of the project, the following was taken into consideration: transport routes; infrastructure use (such as utilities and health clinics); the physical environment such as the Krumovitza river, potential economic, social and cultural impacts; potential extent of indirect and cumulative impacts; human populations potentially affected in non-physical ways; cultural change; change in social networks; and economic effects.

Furthermore, during the baseline consultations to assist in the identification of potentially affected communities, a process of zoning was used whereby hypothetical zones were applied to a map of the area to facilitate the analysis of the significance of the potential impacts such as noise emissions and visual impact (referring to the EIA studies performed in 2010 of noise, vibration and emissions) on the communities. The various environmental media studies have different areas of influence which are discussed in the EIA (2010).

It is established that the primary area of influence of the project is Krumovgrad Municipality, henceforward called the Local Study Area (LSA) (refer Figure 1-4 above Map of Krumovgrad Municipality) within which the proposed project will be located. Within the LSA, some communities will experience more direct impacts (positive and negative) as a consequence of their vicinity to the proposed project site, the haul road or because the community will act as the principal service centre to the project and they are considered directly impacted. These communities⁷ are illustrated in Table 1-1 and can be located on Figure 1-5 below. Other villages and hamlets within the LSA may also experience impacts (positive and negative), however to a lesser degree and the impacts will be predominantly indirect.

⁷ The Mahala designation of names of hamlets / villages is defined as a cluster of houses which fall under the territorial jurisdiction (administrative) of a nominated village. This designation is only applied in rural/small village context.

Table 1-1: Table to illustrate the villages and hamlets considered directly impacted

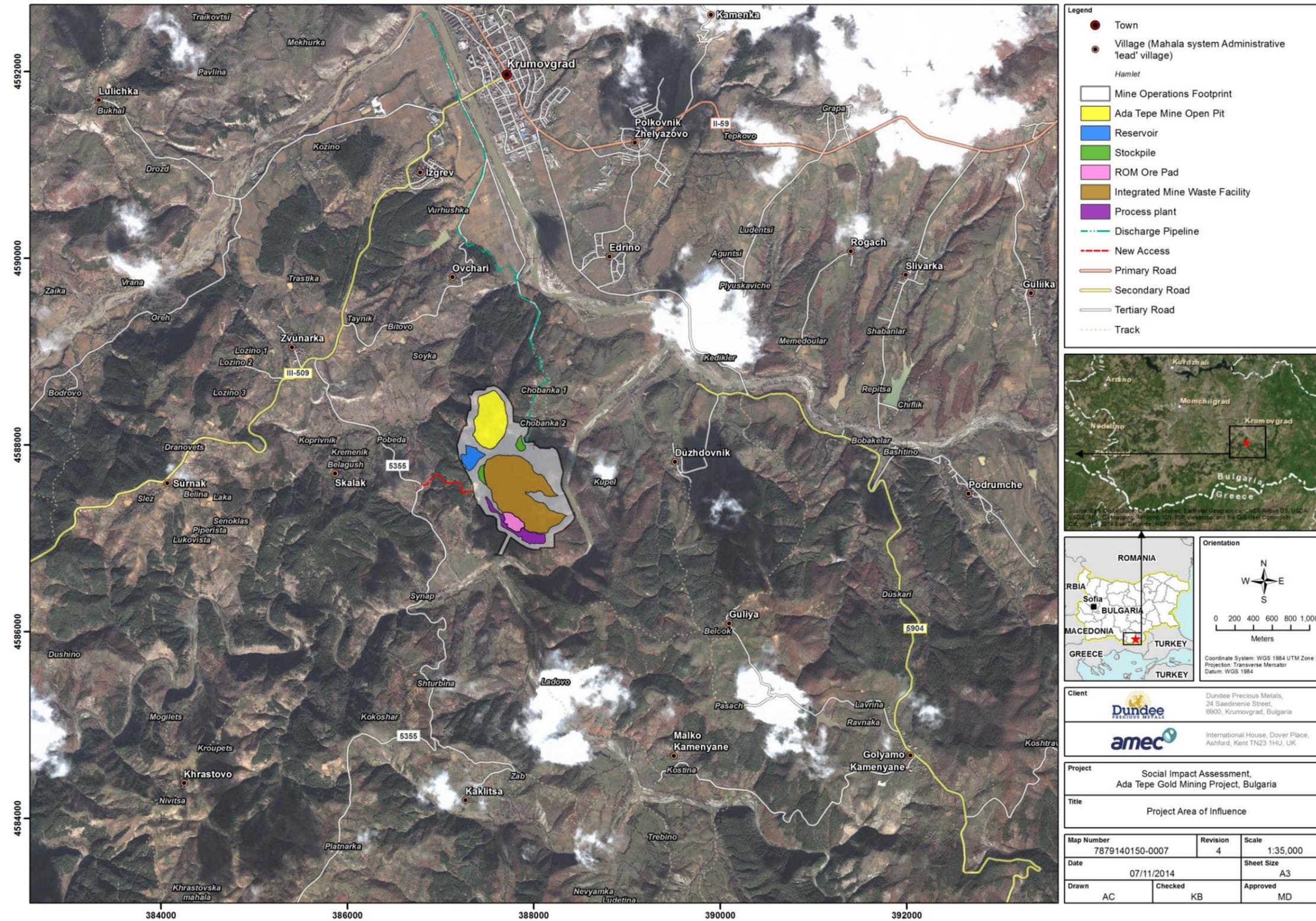
Village / Town	Hamlet*	Component
Skalak	Podeba, Skalak Koprivnik, Kreminik, Synap	up to 2000 metres from the mine site
Ovchari	Taynik, Bitovo, Soyka, Varhushka, Chobanka 1, Chobanka 2	up to 2000 metres or less from the mine site
Dajdovnik	Dajdovnik, Kupel	up to 2000 metres or less from the mine site
Malko Kamenyane	Ladovo	up to 2000 metres or less from the mine site
Kaklista	Shtarbina, Kokoshar	up to 2000 metres or less from the mine site also communities use the proposed haul road to access their communities.
Zvanarka	Zvanarka, Lozino 1, Lozino 2, Lozino 3	up to 2000 metres or less from the mine site .Communities are located near to haul road.
Izgreve		Location of Krumovgrad Hospital and Company offices.
Edrino		up to 2000 metres from the mine site.
Krumovgrad town		Principal service centre to the proposed project.

*Only hamlets within 2000 metre radius under the lead village have been considered. Further villages other than those set out above, were incorporated in the baseline study but in depth analysis of the SIA process and the identification of impact characteristics and their attributes ruled out these communities as being directly impacted (positive and negative) on a magnitude of those listed above. The impact discussion is set out in Chapter 3.

The secondary area of influence, henceforward called the Regional Study Area (RSA) is considered the broader geographic area within which Krumovgrad Municipality is located and consists of Kardzhali district, as well as communities located along the access road used to supply goods and services to the mine and to transport the concentrate to Momchilgrad⁸ (refer to Figure 1-3 above - Map of Kardzhali district). Included in this RSA, are Sofia, the capital of Bulgaria, as well as larger urban centres in Bulgaria such as Plovdiv where it is probable that a proportion of goods, labour and services will be provided to the mine.

⁸ At the time of writing two routes are considered as cited Traffic Management Framework, refer to discussion under Infrastructure in this report.

Figure 1-5: Map of villages and hamlets surrounding the proposed project site.



2.0 ISSUES AND ASSESSMENT CRITERIA

2.1 Issues Identification

This section presents a methodology for the assessment of the Project's socio economic impacts. It takes account of changes that will be caused to:

- Socio-economic conditions
- Public health and public health infrastructure
- Cultural heritage.

Furthermore the following main issues were identified by stakeholders during the scoping and baseline engagement, as presented in the separate stakeholder engagement report:

- The extent of economic investment in the LSA and RSA, and the extent to which local residents participate in the employment and business opportunities associated with the project;
- The extent of Stakeholder Engagement & Information Dissemination;
- Changes to livelihood opportunities;
- Changes to the land use and the loss of recreational space;
- Changes to community health and safety;
- Changes in the demand for health services and potential changes in conditions;
- Changes in local culture and the social cohesion; and
- Changes to environmental receptors and their effect on the quality of life.

The method supports a consideration of the proposed development's contribution to the cumulative change to the local baseline environment and social conditions from all anthropogenic sources.

Impact Identification

In order to understand the types of potential impacts (positive and negative), the baseline conditions of the context have been reviewed and valued components⁹ identified. The valued socio economic components are set out below in table 2-1 in the left hand column. Measurement indicators of each valued component have also been identified against which impacts to the socio economic environment will be studied and assessed.

⁹ A valued component is defined as sensitive components of the natural and human environment within the study area that are considered by the proponent, to have scientific, ecological, economic, social, cultural, archaeological, historical, or other importance, which need to be taken into account in relation to an act or thing, a physical activity or a designated project. (Guidelines for the selection of valued components and assessment of potential effects, Environmental assessment Office, British Columbia, Canada, 2013).
http://www.eao.gov.bc.ca/pdf/EAO_Valued_Components_Guideline_2013_09_09.pdf Accessed 18 July 2014.

Table 2-1: Identified valued components and indicators for the socio economic analysis

Valued Component (VC)	Indicator
Economy	<ul style="list-style-type: none"> • Economic investment including earnings and income • Employment • Procurement
Demography	<ul style="list-style-type: none"> • Population Changes (growth, immigration, migration, age and sex)
Land Use and Livelihood Activities	<ul style="list-style-type: none"> • Land use and livelihood activities in the direct project footprint • Land use and livelihood activities in the surrounding land of the proposed project
Community Services	
Housing	<ul style="list-style-type: none"> • Housing availability, housing status of local communities
Education and Training Services	<ul style="list-style-type: none"> • School enrolment • Industry training
Social Services	<ul style="list-style-type: none"> • Social services availability and capacity
Protective Services	<ul style="list-style-type: none"> • Fire protection services availability and capacity • Police services availability and capacity including crime rates
Infrastructure Services	
Roads, Traffic and Transportation	<ul style="list-style-type: none"> • Transportation network, access, traffic counts, road safety awareness
Utilities	<ul style="list-style-type: none"> • Utilities capacity and availability
Recreation and Leisure Services	<ul style="list-style-type: none"> • Recreation services availability and capacity
Health	<ul style="list-style-type: none"> • Health services availability and capacity. • Worker and community health issues.
Culture	<ul style="list-style-type: none"> • Cultural Heritage and archaeological resources • Cultural values and sense of place
Visual and Aesthetics	<ul style="list-style-type: none"> • Aesthetics

2.2 Assessment Criteria

The adequate assessment (AA) and evaluation of the potential impacts and benefits that will be associated with the proposed Project necessitates the development of a methodology that will reduce the subjectivity involved in making any evaluations. A clearly defined methodology is used in order to accurately determine the significance of the predicted impact on, or benefit to, the surrounding social environment. For this the Project must be considered in the context of the area and the people who will be affected.

Nonetheless, an impact assessment will always contain a degree of subjectivity, as it is based on the value judgment of various specialists and SIA practitioners. The evaluation of significance is thus contingent upon values, professional judgment, and dependent

upon the environmental and community context. Ultimately, impact significance involves a process of determining the acceptability of a predicted impact to society.

The purpose of impact assessment is to identify and evaluate the likely significance of the potential impacts on identified receptors and resources according to defined assessment criteria, to develop and describe measures that will be taken to avoid, minimize, reduce or compensate for any potential adverse environmental effects, and to report the significance of the residual impacts that remain following mitigation. There are a number of ways that impacts may be described and quantified. An impact is essentially any change to the identified value component's measurement indicator brought about by the presence of the Project component or by the execution of a Project related activity.

2.2.1 Criteria for Rating Impacts

Table 2-2 displays the definitions of the impact characteristics that will be applied to each impact prior to mitigation. The terminology and designations are provided to ensure consistency when these characteristics are described in the Impact Assessment discussion in Chapter 3. An overall residual impact rating will be applied post mitigation.

Table 2-2: Definitions of the impact characteristics applied to each Valued Component indicator in the assessment¹⁰

Attribute	Definition
Designation	
Direct	Impacts that result from a direct interaction between the Project and a resource/receptor.
Indirect	Interactions between the Project and its socio economic environment as a result of subsequent interactions within the environment.
Induced	Impacts that result from other activities (which are not part of the Project) that happen as a consequence of the Project (e.g., population influx).
Direction	
Negative	Effect is worsening or is undesirable.
Neutral	Effect is not changing compared with baseline conditions and trends.
Positive	Effect is improving or is desirable.
Geographic Extent	
Local	Effect will be limited to specific persons or communities.
Regional	Effect is limited to the study area.
District	Effect extends beyond the study area or includes effects at a district level (Kardzhali).

¹⁰ Methodology developed by Human and Environment Group, AMEC Canada and modified slightly by author to fit the context.



Attribute	Definition
National	Effects extend outside Kardzhali district or nationally.
International	Effect extends beyond Bulgarian national boundaries.
Magnitude	
Low	Effect that occurs and might or might not be detectable, but is within the normal range of variability.
Moderate	Effect is detectable, but is unlikely to pose a serious risk to the VSC or to represent a management challenge.
High	Effect is likely to pose a serious risk to the selected VSC and is a management challenge.
Duration	
Short-term	Effect is limited to the construction or closure period.
Long-term	Effect occurs during operations period.
Frequency	
Once - off	Effect has a once – off occurrence.
Infrequent	Effect occurs in infrequent pattern.
Continuous	Effect is continuous during either the construction or the operations phase.
Confidence	
Poor	No clear understanding of cause and effect because of lack of relevant information base.
Moderate	Moderate understanding of cause and effect influenced by multiple non-project forces.
High	High understanding of cause and effect from existing knowledge base and/or high site-specific data available and limited potential for site and/or time-specific variability.

Residual Impact Rating	
This is based upon professional judgment and takes into account the various rankings for each attribute (direction, magnitude, geographic extent, duration, and confidence) following the application of mitigative measures.	
Negative	Positive
Low -	Low +
Moderate -	Moderate +
High -	High +

2.3 Mitigation Potential and Residual Impacts

Once the significance of a given impact has been characterised using the above matrix, the next step is to evaluate what mitigation measures are necessary and appropriate. In keeping with the Mitigation Hierarchy, the priority in mitigation is to first apply mitigation measures to the source of the impact (i.e., to avoid or reduce the magnitude of the impact from the associated Project activity), and then to address the resultant effect to the resource/receptor via abatement or compensatory measures or offsets (i.e., to reduce the significance of the effect once all reasonably practicable mitigations have been applied to reduce the impact magnitude).

Once mitigation measures are detailed, the next step in the Impact Assessment Process is to assign residual impact significance. This is essentially applying the same criteria in the matrix above, considering the assumed implementation of the additional declared mitigation measures.

The approach taken to defining mitigation measures is based on the following hierarchy of decisions and measures, as described below.

Avoid/reduce at Source; avoiding or reducing at source through the design of the Project (e.g., avoiding re-routing activity away from sensitive areas or changing the time of the activity).

Abate on Site: add something to the design to abate the impact (e.g., pollution control equipment, traffic controls, perimeter screening and landscaping).

Abate at Receptor: if an impact cannot be abated on-site then control measures can be implemented off-site (e.g. fencing to prevent animals straying onto the site).

Repair or Remedy: some impacts involve unavoidable damage to a resource (e.g. agricultural land and forestry due to creating access) and these impacts can be addressed through repair, restoration or reinstatement measures.

Compensate in Kind; Compensate Through Other Means: where other mitigation approaches are not possible or fully effective, then compensation for loss, damage and disturbance might be appropriate (e.g. financial compensation for temporary damage to crops or providing community facilities for loss of fisheries access, recreation and amenity space).

2.4 Cumulative Impacts

Cumulative impacts are those that may result from the incremental effects of future activities (i.e. those developments currently in planning and not included as part of the baseline) with the construction and operational phases of the proposed project (to the extent that these are known at the date of this report). While a single activity may itself result in an insignificant impact, it may, when combined with other impacts (significant or insignificant) from projects or activities other than the proposed Project in the same

geographical area and occurring at the same time, result in a cumulative impact that is significant.

The SIA Report will predict any cumulative impacts/effects to which the Project may contribute. The approach for assessing cumulative impacts and effects resulting from the Project and other activity affecting the same resource/receptor is based on a consideration of the approval/existence status of the 'other' activity and the nature of information available to aid in predicting the magnitude of impact from the other activity.

2.5 Temporal Study Boundaries

The project is assessed on the assumption that the four project phases will have the following duration as set out below in Table 2-3.

Table 2-3: Temporal boundaries

Project Phase	Time scale
Pre Construction/Construction	2.5 Years
Operation	8 Years
Closure	3 Years
Post Closure	10 Years

2.6 Data Sources

The baseline data (2014) were analysed to provide an understanding of the socio economic context of the project-affected area and to gain an empirical measurement of the possible positive and negative impacts. This was performed by projecting the existing baseline into the future both with and without the project. The before-and-after analysis of these two project scenarios revealed the possible impacts and potential stakeholders to be affected.

A further review of documents and reports pertaining to the project area of influence was also made so as to afford an in depth understanding of the project area of influence. The following Project documents were reviewed;

- Ada Tepe Mine Closure Plan for the Krumovgrad gold project, 2013
- Archaeological Report, 2012
- Bulgarian EIA for Mining and Processing of Auriferous Ores from the Ada Tepe
- Corporate policies for anti-bribery, business ethics, disclosure policy, health and safety policy, environment and sustainable development.
- DPM Environmental and Sustainability Policy, 2006
- DPM Health & Safety Policy, 2010
- Draft version of the social benefits package and powerpoint presentation
- Local Populations Attitude Report, 2007

- Meeting notes from public hearings carried out prior to scoping.
- Mine Waste Management Plan, Krumovgrad Project, DPM, 2013
- Minutes from 2010 EIA Public Hearings, 2011
- Non-Technical Summary (NTS) for Bulgarian EIA, 2010
- Prospect of Khan Krum Gold Deposit, Krumovgrad, 2010; 13 Appendices to EIA report
- Proposed Mine Water balance Report, 2013 prepared by Golder's Associates Proposal for Cooperation between DPM Krumovgrad and the Municipality of Krumovgrad
- Socio Economic Baseline Report, Krumovgrad Project, September 2014
- Socio-economic segments of EIA, by KC2 Management & Solutions, 2010
- Stakeholder Engagement and Information Disclosure Plan, DPM, 2014
- Stakeholder Engagement Plan
- Social Assessment Report – social justification for the concession, 2008
- Traffic Management Plan, DPM Krumovgrad Project, 2010
- Traffic Management Plan, AMEC, 2014
- Updated ESAP for Krumovgrad Project, prepared by Denkstatt Bulgaria Ltd, 2014
- Vitosha Research – Baseline socioeconomic survey for the Krumovgrad impact area, 2004
- Vitosha Research study, 2007
- Wardell Armstrong (WAI), 2014, EBRD, Krumovgrad Gold project- Environmental and Social Gap Analysis.

Field Work

The initial scoping fieldwork took place between 2nd – 5th June 2014. The team consisted of two scoping consultants, a translator and a DPM community liaison officer. The baseline and SIA fieldwork took place from 8th to 15th July 2014. The team consisted of a SIA consultant and two translators (Bulgarian and Turkish).

Stakeholders were identified referencing the Company Stakeholder Action Plan (2014), updated to the Company Stakeholder Engagement Plan (2014) and in addition to this other stakeholders were identified by the consultant, based on whether stakeholders were recognised as being project-affected (directly or indirectly), those who had an interest in the project; those who may affect the project negatively and those who were involved in the project as direct or indirect employees.

Interviews, consultations and focus groups were used to gain an understanding of the socio economic context. Consultations with groups, one-to-one consultations with key informants, interviews and focus groups were carried out using a semi-structured interview technique. A translator was used throughout the stakeholder engagement process. Topic areas discussed were based on known key risks associated with mining developments and possible impacts identified during the scoping study in June 2014.

The purpose of the interviews was to gather rich local level insights and to establish a clear picture of the perceptions of the potential impacts of the project and possible mitigation

measures, as perceived by affected communities. Interview notes were taken as near verbatim as possible and salient points were extracted and analysed in relation to other consultations and studies. Based on this, a stakeholder engagement chapter has been detailed as a separate report to the SIA and will be used as an internal document.

In addition, observations were made of the physical environments in which communities were located, for example topography, infrastructure, land use and livelihood activities. Collectively, findings formed a basis for the impact analysis and identification of potential mitigation measures.

Data Consideration

Concepts and discussion points could have been distorted through the process of translation, thereby influencing the validity of responses from the stakeholders to the SIA consultant's questions. To counter this, checks were incorporated to ensure the reliability in the translation and the consultation process.

Stakeholder consultation is a fairly new phenomenon in Bulgaria and as such people, especially in the hamlets, were generally unwilling to talk in a participatory consultative forum. If stakeholders did participate they often did not always want their name taken. This was compounded by the fact that over the last 10 years during which the Project design has evolved and gone through the necessary permitting processes and public disclosure there has been lobbying by some N.G.Os and external organisations against the Project. In so doing the SIA consultant found that these parties had gone door to door to households (mainly in Krumovgrad) lobbying against the project. It was experienced that this has resulted in a lot of suspicion and unwillingness to talk to external parties regarding the Project. This was overcome by the consultant providing a detailed description of the purpose of the consultation and an emphasis was made on the independent SIA process and the requirements of the recipient organisations such as EBRD. Nevertheless recognising that stakeholder participation is fundamental for gaining the Project's social licence to operate, recommendations have been made within this report to establish Local Consultative Forums (LCFs) for each of the affected villages comprising community members from within the hamlets. It is envisaged that this will provide a two way channel for community liaison to provide information to the residents and residents to raise any issues or concerns.

The mine site area consists of a number of small hamlets. The hamlets as set out in the baseline, and as evidenced by the scoping study and other studies performed are largely depopulated. Although the baseline consultations were undertaken during the summer months of June and July, when a lot of the hamlet households historically return from Turkey to spend their summer holidays in Bulgaria, it was found that few households had actually returned this year or in recent years. The household survey performed as part of the baseline study found a significant difference between the Municipality registered number of residents and the actual number of people in residence. The study endeavoured to reach as many potential affected stakeholders as possible however due to absence of household residents not as many were consulted as had been intended.

3.0 IMPACT ASSESSMENT

3.1 Definition of Cases

The following chapter discusses the socio economic impacts of the project using the severity criteria detailed in Chapter 2. The project is analysed over the three phases; Pre construction/ Construction, Operation and Closure. The pre construction and construction phases are considered jointly in the assessment.

As discussed in the introduction, an EIA was performed in 2010 and submitted to the Bulgarian Ministry of Environment and Waters. In 2013 the EIA entered in force after a final ruling by the Bulgarian Supreme Administrative Court. The EIA has made an in-depth study of receptors such as surface and ground water, soil, noise, air, biodiversity, waste and traffic therefore this report only briefly discusses these aspects in terms of their inter relationship with the human population and health impacts and as relevant to any environmental issues raised by stakeholders during the baseline consultations.

The social and economic analysis will provide the following:

- A brief summary description of the current social and economic conditions in the LSA and as appropriate, the RSA. Descriptions include social and economic indicators, and quantitative and qualitative information;
- Consideration of the potential changes in conditions within the LSA and RSA as a result of the project;
- Identification of social and economic effects based on the potential changes in the LSA and RSA;
- Application of the assessment criteria to define the designation, magnitude, duration, geographic area, direction, and confidence level of identified effects; and
- Provision of appropriate mitigation measures that are likely to reduce negative effects and promote the positive effects of the project.

3.2 Valued Component: Economy (Economic Investment, Employment, Procurement)

3.2.1 VC Summary of Baseline

The macro economic status of Bulgaria indicates that the main economic sectors of heavy industry, extractive minerals industry, power engineering and agriculture are recovering from the impacts of the global financial crisis. In 2013 the Bulgarian annual Gross Domestic Product (GDP) totalled approximately BGN 67 billion (EUR 34 billion). The employment status in the country also took a sharp turn at the time of the crisis and unemployment reached historically low levels. The current rate of unemployment is 11.4% as at the second quarter of 2014.

In the LSA and the wider district of Kardzhali, the economy is centred around agriculture, food processing, construction and light manufacturing by micro and small enterprises. The main enterprises in Krumovgrad consist of light industry (shoe and textiles and food processing) and construction. There is a service sector with a number of hotels, restaurants, bars, cafes and retail shops. Tourism (discussed later under Valued Component infrastructure) operates on a minor scale. As of July 2014 the number of employed in Kardzhali District was 29,424.¹¹ The largest employer in the LSA is the Municipality. According to the draft Municipal Development Plan, 94% of enterprises are micro (up to 9 employees) and are concentrated in the municipal centre Krumovgrad. According to baseline data figures captured in the socio economic household survey, 32% of the 18 - 29 year age group and 26.4% of the 18 - 59 year age group within the survey sample are unemployed. The skill survey (2014) states that 19.4% of the Municipality is registered unemployed. With few income earning opportunities there are high rates of migration out of the LSA to urban centres within Bulgaria and overseas. Salary levels in the district indicate that in 2010, the average monthly salary was 522 BGN and the socio economic household survey performed in 2014 illustrates that the average monthly income was 384 BGN. The official poverty line in Bulgaria for 2014 constitutes a monthly income of 251 BGN per person.

3.2.1.1. Economic Effects Assessment (During pre-construction, Construction, Operations and Closure)

Table 3-1: Economic Effects Assessment

Summary	Pre Construction/ Construction	Operation	Closure
Project Activity	Project injections that would lead to increased economic activity. Creation of Employment Opportunities Increase in procurement of goods and services	Project injections that would maintain heightened economic activity. Creation of Employment Opportunities Increase in procurement of services and goods	Reduction in project injections that would lead to decreased economic activity, cf operational phase. Marked reduction of employment opportunity Decrease in procurement of services and goods, cf operational phase
Impact type	Direct and indirect	Direct and indirect	Direct and indirect
Stakeholders	Direct and indirect beneficiaries of project expenditure Job seekers	Direct and indirect beneficiaries of project expenditure Job seekers	Direct and indirect beneficiaries of project expenditure Job seekers

¹¹ Republic of Bulgaria, National Statistical Institute, available on line at <http://www.nsi.bg/en/content/6406/statistical-regions-district>

Valued Component Indicator: Economic Investment

Pre-Construction and Construction Phase

Pre Construction and Construction expenditure would constitute a positive injection of new investment. The Company's preliminary estimates indicate that a total of approximately \$164.1 Million would be spent on all aspects of the construction phase over 2.5 years, (Year 1 investments: \$56.4 Million, Year 2 investments: \$84.6 Million and Year 3 investments: \$23.2 Million). The Capital cost summary is set out in Table 3-2 below.

Table 3-2: Capital Cost Summary

Cost Element	850 kt/a Estimated Cost (USDx000)
Crushing	7,7
Grinding	18,0
Flotation	12,5
Concentrate Handling	3,4
IMWF	24,8
IMWF Haul Roads	8,6
Return, process and storm water reservoirs	3,3
Water supply	4,0
Plant air system and reagent mixing	1,6
Buildings & fuel depot	10,0
Electrical and Instrumentation	3,4
Mobile & mining equipment	12,6
Land acquisition	4,6
Commissioning and temporary facilities	9,8
Subtotal Direct Costs	124,3
EPCM	9,2
Owner's Costs	15,1
Contingency (12.5%)	15,5
Total Capital Cost	164,1

Source: NI 43-101 Technical report Krumovgrad Project, March 2014

The Project has the potential to have a significantly positive impact on commercial activity in the LSA and RSA during the pre construction and construction phases given the resultant expenditure. This is particularly significant within the LSA as the economy is based mainly, according to baseline data, on agriculture, food processing, construction and light manufacturing industry. During the construction phase the building, civil and other construction and specialist machinery sectors in the LSA and most likely in the RSA where these industries are mostly established would benefit substantially. The structural metal products, wholesale and retail trade and construction materials sectors in the LSA and RSA would also stand to gain due to indirect linkages. The project would therefore provide a major injection of investment in the LSA and RSA leading to positive impacts.

The economic investment of the proposed project is likely to drive inflation. Whilst inflation cannot be attributable to a single force it is likely that increased demand for goods and services will cause prices to increase in the LSA. Those whom are financially benefitting from the project will be able to afford price increases but those who are not, particularly those deemed vulnerable may be financially exposed and forced in to further poverty.

Incomes from salaries during pre construction and construction

During both the Pre Construction and Construction phases, the Project will provide 300 direct jobs at the construction phase's peak (discussed later under Employment). Also a number of indirect employment opportunities will be made available through sub contracting construction phase work out to companies.

Direct household income impacts would flow from all wages paid during pre construction and construction. According to the baseline study, average monthly income in the LSA is 384 Leva, which is 15-25% lower than comparable jobs in the district centre of Kardzhali. Furthermore, sources of income are predominantly based on agricultural products, which are dependent on weather conditions and market forces and an income from such is not reliable.

Tax Payments

There will be further Positive economic impact for the Municipality as approximately USD 13 million is to be applied towards the Municipality budget of Krumovgrad in the form of concession fees generated by the State. In addition, a further USD 830 thousand will be paid for the duration of the operation in local taxes and fees (such as property tax, vehicle tax, etc).

Furthermore, the Municipality will receive indirect financial benefits from the central Government on top of allocated budgets, grants and compensations for the personal income tax amount collected from individuals residing in the respective municipality.

Revenues paid to the Government during this phase of the project are however likely to be limited.

Indirect opportunities during pre construction and construction

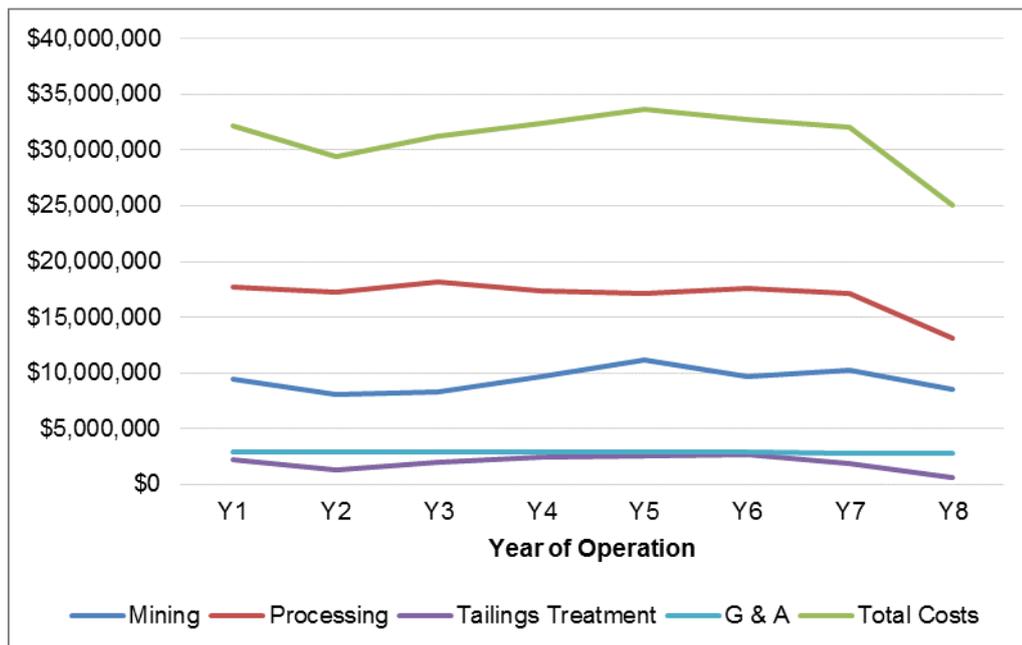
Other indirect economic opportunities would be created stemming primarily from expenditure of the Company in the LSA and RSA for services (discussed under Procurement). Expenditure by workers hired for the Construction phases would also contribute, thereby increasing commercial activity.

Expenditure during Construction phase would result in a positive impact on the economy in the LSA and RSA, increasing commercial activity, creating jobs (and therefore spending power) and increasing incomes. The geographic extent of the impact is national (though impacts would be proportionately greater at a local and regional scale). The expected impact will be of high magnitude (positive). The duration will be short term for the duration of the Construction phase but extending into the Operations Phase. The confidence level would be high.

Operations Phase

The key impacts associated with the project would flow from the expenditure on operations at the mine and the plant. Operational costs would increase in line with production levels. It is the Company's intention to source operational services from the LSA but given the availability of services in the Municipality it is more likely that the wider RSA will benefit from the Company expenditure on operational costs. Current planning indicates total operating costs over the eight year period of the Operations Phase to be USD 249 million, at an average of USD 40.13 per tonne processed (royalties not included). The operating cost estimate excludes concentrate shipping, insurance and smelting/refining costs, escalation, corporate overhead charges, financing costs, royalties, incomes taxes or similar taxes and fees as well as expenditures classified as capital, sustaining capital, rehabilitation and closure costs or any owner's costs. The Mine operating expenditures over the eight year life-of-mine are presented in Figure 3-1.

Figure 3-1: Total Mine Operating Expenditures (USD) – 850 ktpa Scenario



Source: Dundee, Krumovgrad Project CAPEX / OPEX Calculated AMEC

The economic investment of the proposed project is likely to drive inflation. Whilst inflation cannot be attributable to a single force it is likely that increased demand for goods and services will cause prices to increase in the LSA. Those who financially benefit from the project will be able to afford price increases but those who do not, particularly those deemed vulnerable, may be financially exposed and forced into further poverty.

Incomes from salaries during Operations

The Project will provide 230 permanent positions during the operations phase and the Company has committed to sourcing 90% of this workforce from the LSA (discussed later



under Employment). Labour expenditures for the mine operation over the eight year life-of-mine are estimated to be 22% of the total mining costs (NI 43-101).

A number of indirect employment opportunities will be made available by sub contracting construction phase work out to companies.

Direct household income impacts would flow from all salaried positions, including those of contractors paid during operations. This would be beneficial primarily to the LSA, which has few salaried opportunities, as long as the Company is able to recruit 90% of the work force from the LSA as intended.

Royalty and Tax Payments

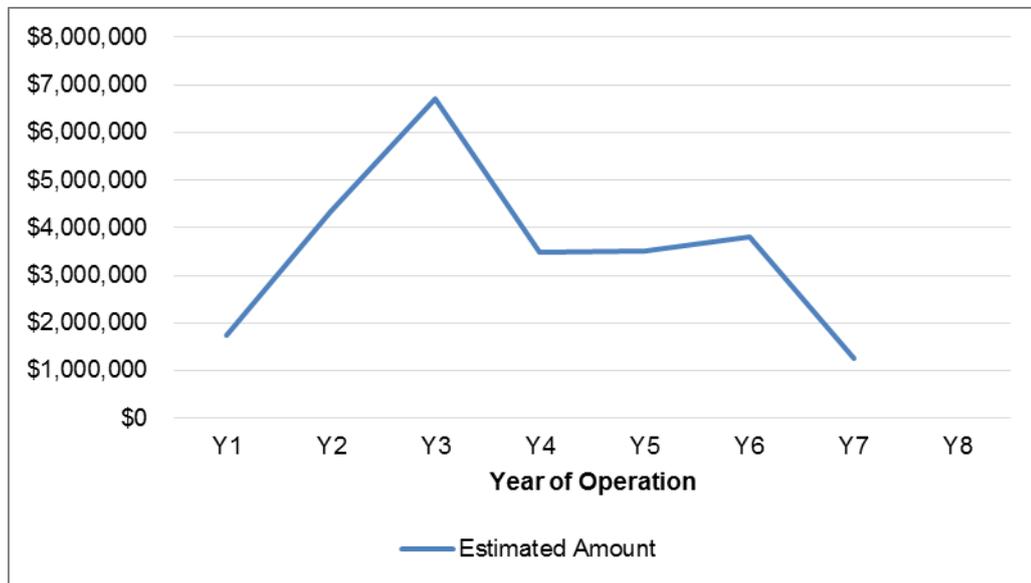
Further economic impact stemming from employment would be associated with direct Project contributions to the Bulgarian economy in terms of royalty payments at a national level. The payments will represent approximately 2.57% of gross value of ore produced from the mine, totalling USD 24.8 million over the life-of-mine (refer to Table 3-3 and Figure 3-2 below).

Table 3-3: Estimated Royalty Payments (USD) – 850 ktpa Scenario

Year	Estimated Amount
Y1	\$1,732,440
Y2	\$4,336,296
Y3	\$6,714,473
Y4	\$3,496,745
Y5	\$3,513,740
Y6	\$3,794,955
Y7	\$1,249,676
Y8	--

Source: Dundee, Krumovgrad Project CAPEX / OPEX Calculated by AMEC

Figure 3-2: Estimated Royalty Payments (USD) – 850 ktpa Scenario



Source: Dundee, Krumovgrad Project CAPEX / OPEX Calculated by AMEC

The Company payments to the Bulgarian Government will be variable based on the gross value of gold and silver metals combined in the ore mined. The royalty rate also depends on the profitability of the operation. At a pre-tax profit to sales ratio of 10 % or less, the royalty rate will be 1.44 % of the value of the metals. At a pre-tax profit to sales ratio of 50% or more, the royalty rate will be 4% of the value of the metals. At intermediate levels of profitability, the royalty rate will vary on a sliding scale between 1.44% and 4% in a linear fashion. With a gold price of USD 1,250/oz and a silver price of USD 23/oz, the royalty rate will be in the order of 2.5 % of the gross value of gold and silver metals contained in the ore produced from the mine (G. White, 2014)¹².

With regard to tax payments, as of 2007, Bulgaria has adopted Corporate Income Tax Act or CITA to meet the requirements for normalizing corporate income and profit tax policy with the European Union (EU). Under the CITA, all resident companies and partnerships (including non-incorporated business), as well as permanent establishments of non-residents, are liable to corporate income tax of 10%. Most goods and services purchased are subject to a Value Added Tax (VAT) rate of 20%.

Corporate taxes will be remitted by the Company over the course of the Project, the estimation of which is dependent on a number of financial and operating variables.

Approximately, USD 13 million¹³ is to be applied towards the Municipality budget of Krumovgrad in the form of concession fees generated by the State. In addition, USD 830

¹² G. White, 2014 NI 43-101 Technical report – Krumovgrad Project

¹³ Figures have been published in the proposal for cooperation between DPM Krumovgrad and the Municipality of Krumovgrad



thousand for the duration of the operation in local taxes and fees (such as property tax, vehicle tax, etc) will also be generated (DPMK, 2013).

Furthermore the Municipality will receive indirect financial benefits from central Government on top of allocated budgets grants and compensations for the personal income tax amount collected from individuals residing in the respective municipality.

Customs Duties / Payments

Customs duties or payments are levied on good and products imported to Bulgaria. In 2007, Bulgaria also adopted legislation to enter the EU with respect to import and export duties. At its accession to the EU, Bulgaria eliminated customs duties in its trade with the other EU Member States and started applying the Common Customs Tariff of the EU in its trade with non-member states. The Common Customs Tariff requires levying of the same duties on products, imported from third countries (G. White, 2014).

Production and Revenue

Returns of the Project have been projected¹⁴, based on the calculation of treatment of 850ktpa ore to produce gold/silver concentrate the project is anticipated to yield after tax IRR: 26.3%; NPV:USD 143.9 million at a discount rate of 7.5%; with an initial capital payback of 2.5 years after commencement of production (on the basis that the project is wholly equity funded).

At average yields of 4.04 grams gold per tonne of ore and 2.22 grams of silver per tonne of ore and with average metallurgical recoveries of 85% for gold and 70% for silver the 6.2 Mt of ore processed for the Project is calculated to produce concentrate containing 685,549 oz of gold and 309,915 oz of silver. At constant metal prices over the LOM of USD 1,250/oz gold and USD 23 /oz silver it is anticipated that USD 792.83 million will be realised in net revenue over the LOM. Cash operating costs are anticipated to average USD 44.13/t of ore treated over the life of the project (including royalties).

¹⁴ As set out in NI43-101 Technical Report – Krumovgrad Project, to arrive at calculations the following assumptions were made:

- Metal prices of USD 1,250/oz for gold and USD 23/oz for silver will be maintained throughout the life of the Project.
- Metal price and currency hedging are excluded.
- Gold and silver recoveries of 85% and 70%, respectively, based on average testwork performance on all ore types.
- All production will be sold in the period in which it is produced.
- The life of the project will be 8 years from commencement of operation, including the processing of stockpiled low grade ore at the end of the project.
- Evaluation has encompassed a 125 week development period prior to commencement of ore feed to the mill, through to the end of ore processing.
- Analysis has been conducted in USD using base exchange rates USD 1.25/EUR and BGN 1.95583/EUR

Indirect opportunities during Operations

Other indirect economic opportunities would be created stemming primarily from expenditure of the Company in the LSA and RSA for services such as hotels, restaurants, and food as well as expenditure by workers hired for the operations phase, thereby increasing commercial activity.

Expenditure on Operations activities would result in a positive impact on the economy, increasing commercial activity, creating jobs and increasing incomes. The geographic extent of the impact is predominantly local and regional (if the Company commits to 90% of the work force sourced from the LSA) but extending to district and nationally. The expected impact will be of high magnitude (positive). The duration will be limited to the operational phase. The confidence level is high.

Closure Phase

The Company's preliminary estimates indicate that a total of approximately \$14.7 Million would be spent on all aspects of the closure phase over 3 years. However final Closure would result in no more operational expenditure or jobs associated with the project, which would result in negative impacts as the Project is withdrawn from the economy. People will have become almost entirely dependent on the mine for livelihoods and an income, making them particularly vulnerable when they lose their jobs. As the mine life is relatively short this may be an insufficient time for the development of enterprises and self sustaining businesses to become established within the LSA, leaving the local economy reliant on the mine for the principal part of its business. When the mine closes down these businesses will diminish or have to stop completely creating unemployment and inducing people to move away to look for work. This is typically known as the boom and bust scenario, and as baseline consultations found, this has certainly been the experience of stakeholders within the District of other mining operations, which were operational during the Communist Government era and then closed down leaving ghost towns. The impact is further discussed under cumulative impacts. As a recognised impact, particularly within the extractives industry, the Company intends to mitigate through the creation of alternative industries via a community development plan (discussed under mitigation) while the mine is operational. A significant decrease in economic activity in the LSA would, however, not be avoidable given the size of the Project and according to baseline data, there is no other large scale industry and few existing alternative employment prospects located in the LSA.

Closure would result in negative impacts as the project is withdrawn from the economy. The geographic extent of the impact is national, though impacts would be proportionately greater regionally in the LSA and at district level in the RSA. The magnitude of the impact will be high and long term in its effect, extending well beyond the closure period and potentially permanently. The degree of confidence is high.

Mitigation Measures and Residual Effects

The following are in place by the Company to mitigate impacts related to the Project:

- Staffing, Training and Development Plan database (2014)
- Skill Survey (2014)
- Survey on available accommodation in Krumovgrad (2014).
- The objective of mitigation measures is as follows;
- To maximize economic benefit from jobs and expenditure particularly regionally within the LSA and at district level in the RSA
- To minimise the negative effects of mine closure.

Pre-Construction and Construction Enhancement and Mitigation

It is proposed to further develop the existing Staffing, Training and Development plan database into a Recruitment and Training Management Plan, which will be in line with Bulgarian labour legislation and International Labour Organization (ILO) requirements. Some broad targets that will be considered and detailed in the Management plan are as follows:

- Maximise opportunities for the training of unskilled and skilled workers from the LSA .
- Formal recruitment and human resource procedure established to ensure a fair, formal and transparent recruitment process. Measures established in the recruitment process to prevent child and or forced labour and a procedure to verify age of potential employees. Monitoring (internally or externally) to ensure those who are employed are eligible for employment. A transparent recruitment system will ensure that all recruitment is performed in a non discriminatory and legal manner.
- Look for measures to increase employment equality and remove some of the barriers to women that limit female job options on the project.
- Identify measures to ensure employment equality of vulnerable groups such as Roma and youth of working age.
- Prioritisation of LSA residents, in particular those identified as directly project affected.
- Develop retrenchment plan and packages in line with national legislation or above.
- Establish a monitoring mechanism to measure the success and challenges to local community employment on the project which will incorporate the compiling of a database of the local and regional work force. The database would identify where workers live (LSA or RSA); age; experience; qualifications; gender etc to ensure that recruitment is fair, legal and in line with the employment targets and prioritisation in terms of Project Affected Peoples (PAPs) that the Company establishes.
- Build awareness locally of employment and recruitment procedures and opportunities possibly through the Company Information Centre in Krumovgrad through posting of employment opportunities while managing local expectations. This will allow a wide

audience to have access to employment opportunities and enable job seekers to ask Company staff questions about potential positions and the recruitment procedures.

- Contractors required to recruit and manage personnel in terms of the Company's recruitment and human resource procedure, where considered practicable.
- The Company will implement two separate grievance procedures; an external Grievance procedure for stakeholders and internal grievance procedure for workers. Both will need to be easily accessible so that complaints can be lodged and responded to in a timely manner.

Procurement is discussed later in this chapter however mechanisms will be put in place to maximise the opportunities for companies within the LSA to provide services. A Procurement Management Plan will be developed and implemented which includes an approach to maximise procurement opportunities for the LSA.

Some broad targets that will be considered are as follows:

- Local subcontractors from the LSA will be used wherever possible and contractors from outside the local area that tender for work will be required to meet targets on how many locals from the LSA are given employment.
- Further research to assess the potential capacity among local businesses, as well as support available to build sustainable local businesses with the profile of skills / goods required by the project and capacity to meet project procurement standards. A database will be created of potential suppliers in the LSA and updated prior to any procurement. Suppliers will be audited.
- Work with the Municipality and local institutions as early as possible to encourage the development of sustainable local businesses that can provide services to the project through, for example, local supplier training programmes to enhance specific competencies of local businesses including capacity to meet tendering and HSE requirements, and partnerships with organisations that encourage small and medium sized businesses (SMEs). Aim for inclusion of vulnerable groups from the supplier training programme.
- Establish project incentives schemes to develop local businesses that can provide services to the Project e.g. tendering criteria that consider local community added value factors.
- Tender forms kept as simple as possible so as not to act as a barrier to entry and the Company will be willing to provide assistance with tendering where required.
- Establishment of a fair, formal and transparent procurement process. A Transparent procurement process will ensure that all procurement is performed in a non-discriminatory and legal manner.
- Build awareness locally of procurement and tendering procedures and opportunities in a manner that is accessible to encourage local businesses to bid for contracts whilst managing local expectations.

- Monitor success and challenges to local community businesses securing procurement contracts on the project. This could be achieved through tracking the bid applications and awards, common reasons for non award and using such information for future capacity building such as local supplier training.

Furthermore, to mitigate against the cumulative impacts of the local economy becoming mono industrialised, alternative livelihood opportunities will be enhanced through development of a sustainable community development plan in consultation with stakeholders including the Municipality and partnering with local organisations as implementing partners. As such, a plan will be developed in consultation with stakeholders with broad targets for consideration as follows:

- Develop a community development plan, which incorporates an agricultural, livestock and bee keeping programme in consultation with stakeholders that aims to diversify and increase production in the LSA through best practice techniques to ensure viability and sustainability.
- Partnering with an organisation such as the Krumovgrad Agricultural Organisation to provide training programmes to farmers to improve their technical capabilities and support the marketing and sale of produced goods.
- Assist establishing linkages between producers and potential customers including the Project (e.g. market infrastructure, procurement contracts).
- Provide Small Medium Size Enterprise (SME) training in businesses that do not rely on mining directly or indirectly.

Operational Enhancement and Mitigation

Mitigation measures would be the same as for the pre construction and construction phases focused on local employment and procurement as outlined in detail above.

Ongoing support to a Community Development Programme and adjustments made as necessary to ensure its sustainability post closure.

Closure Mitigation

Mitigation measures will have to be developed and refined with time as part of the Recruitment and training Management plan and the Procurement Management Plan.

Sufficient capacity building, funding and support throughout the mine life would have enabled the Community Development Programme to be able to continue post closure and businesses and initiatives created through the programme would be able to continue as they do not rely on mining directly or indirectly.

Post Mitigation Residual Significance: Impacts associated with economic investment in relation to employment opportunities

The implementation of the above mitigation and enhancement measures would make the effects of Company investments of pre construction and Construction phase impacts High+ and the Operational phase impacts High + as long as the Company implements its commitment to recruit 90% of the labour force from the LSA. The implementation of the closure phase mitigation measures will make the residual effects of impacts reduce to Low.

Valued Component Indicator: Employment

Employment has been discussed in the previous paragraphs in financial terms in relation to salaries provided. These paragraphs will discuss the social implications of employment.

Employment will be generated through direct, indirect and induced employment opportunities over all project phases.

- Direct opportunities are those jobs with the Company, both permanent and temporary;
- Indirect opportunities are those jobs with the contractors and suppliers and;
- Induced employment arises from increased disposable income and demand for additional goods and services.

The project will require highly skilled, semi skilled and unskilled workers to undertake construction and operational duties. The project is expected to create 300 direct employment opportunities during Construction (at its peak), 230 direct employment opportunities during Operations and retain 50 direct employment opportunities during Closure. The Company, as discussed earlier, has committed to recruiting 90% of its work force from the LSA during the Operational phase. This is considered a beneficial impact for the LSA and the district and would be a positive impact on the unemployment levels in the Municipality. Furthermore, with increased employment opportunities within the district, potentially there would be less economically motivated migration out of the area (discussed later under demography).

However, the recruitment of the workforce in the LSA will largely depend on the successful implementation of the Company recruiting and training the workforce in a timely manner in view of the low skills capacity and the educational attainment of the local work pool. Concerns were expressed by stakeholders during the baseline consultations in this regard.

The skill survey performed indicates that of people submitting applications to the Company in a 2 year period, a significant number had skills, often more than one skill, related to the semi skilled positions required for the project, such as welder, road construction machine operator, Driving Licence categories B,C and T holders, electrical/electronic qualifications, operator of aerial platform, forklift driver, crane operator, crane worker, fitter of transport equipment and crane operators. Nevertheless, the numbers available to work in the LSA outweigh the positions available and there are particularly high expectations amongst the



local population across all stakeholder categories associated with employment opportunities. Unfulfilled expectations could potentially cause discontent, further compounded by a potential influx of migrant workers and opportunistic job seekers who will increase competition for employment opportunities. It is quite possible that migrant job seekers would have gained skills in large scale projects, which will be an advantage in seeking positions within the Project. As such, potentially they could out-compete local job seekers.

In addition to the direct employment opportunities available to local people there will be a number of indirect and induced employment opportunities generated through the Project for the Construction and Operations Phases. Indirect employment will be created through the supply chain and procurement of local goods and services. Induced employment will also be created through increased spending in the LSA economy by people employed to work on the Project. Furthermore there will be induced employment due to an increase in services linked to greater demand. Services include hotels, restaurants, cafes, retail shops etc.

Induced employment can be estimated by the current ratio of basic sector to non-basic sector employment in the local or regional economy. Basic sector employment is generally considered to be the volume of jobs and workers involved in agriculture, mining, construction and manufacturing industries in the economy. The remaining sectors of employment (mostly service sectors) comprise non-basic industries in the economy. By aggregating sector employment to these categories a ratio can be constructed to establish the number of basic to non-basic jobs in a local or regional economy.

For this analysis disaggregated data is only available from NSI sources from 2012 when the total number registered as employed was 29,757 in Kardzhali district (slightly higher than employment recorded in July 2014 29,424). The number of workers involved with basic sector employment in the Kardzhali district in 2012 was 13,659¹⁵. The total number employed in the district for the same period as stated previously was 29,757. These levels form an employment ratio of 1:2 in 2012 meaning for each basic sector in the district there were 2 non-basic jobs. Assuming the district level local economy was stable in 2012, the ratio represents an equilibrium that employment levels will return to in the event more basic jobs are added to the economy. It can be estimated that for every ten basic sector jobs added in the district 20 non-basic jobs will also be added or induced.

Construction employment levels as estimated by the Company management of 300 direct workers will potentially induce the creation of 600 additional non-basic sector employment in the district.

Applying the same ratios as for Operational employment levels as estimated by the Company, management of 230 direct workers will potentially induce the creation of 460 additional non-basic sector employment in the district. During the closure phase estimated

¹⁵ Basic sector industries aggregated at district level as set out in NSI 2012 datasets as follows: agriculture & fisheries, mining & quarrying, construction, Information & communication and financial & insurance services.



employment levels are 50 national and expat direct workers which will support 100 additional non-basic sector employment positions in the district.

Pre Construction / Construction

The impact will be positive (directly for direct employment opportunities and indirectly through indirect and induced employment opportunities). The geographic extent of the impact will be local, regional, district, national and possibly international level as employment opportunities will be extended to people from outside the country (however it is the Company's intention to prioritise sourcing of labour at local, regional and district level). The magnitude of the impact is Moderate+ in view of the high unemployment rates and lack of employment opportunities in the LSA and RSA. However the skill levels are such that it may restrict many from the LSA being eligible to take up employment opportunities and the number of people seeking employment will outweigh the number of positions available. The expected impact will be short term for the duration of the Pre Construction and Construction phases, and for some extending in to Operations Phase. The frequency will be infrequent and the degree of confidence is high.

Operation

The impact of employment creation at the operational phase will be positive and direct and indirect as it relates to indirect and induced employment. The geographic extent will be local, regional, district, national and possibly international however the impacts will be mostly felt regionally as the Company has committed to 90% employment of the 230 work force sourced from the LSA. The magnitude is considered high +, as it is linked to the duration of the employment opportunities, quality/level of employment and the degree to which local workers will secure the employment opportunities given the skill levels and the training commitments of the Company. However the Project aims to employ most of the workforce at local and regional level. The number employed will be less than during construction phase, however these jobs will be longer term.

The duration will be for the life of the Project, for those employed during the operational phase and the frequency will be continuous. The degree of Confidence is moderate.

Closure

Mine closure will result in loss of jobs for those employed directly as it scales down. The job losses will be experienced by direct employees as well as those employed in the supply chain as the procurement needs of the Project will change. Induced employment opportunities will also be lost due to diminished demand. As the employment will have been created with businesses associated to the mine during the mine operation, without mitigating diversification of the economy, closure will result in a sharp and rapid contraction of the economy at the point of closure and will be characterised by high loss of employment and a general slowing down of the local economy. As discussed earlier, this potentially could result in a boom and bust scenario within the LSA.

The impact on employment will be negative, direct and indirect as related to the job losses along the supply chain as well as induced because of the reduced demand for services. The geographic extent will be local, regional, district and to a limited degree national and international however the extent will be most felt locally and regionally. The magnitude of the impact will be high. The duration will be long term extending beyond the closure period and potentially long term and the frequency of the impact continuous. The level of confidence is high.

Mitigation Measures and Residual Effects

The following are in place as established by the Company to mitigate and enhance measures related to employment:

- Staffing, Training and Development Plan database (2014)¹⁶
- Skill Survey (2014).

The objectives of mitigation measures are as follows:

- To maximise the employment opportunities for people in the LSA
- To establish a fair and transparent recruitment procedure which is accessible to all segments of the population
- To minimise the negative effects of retrenchment.

The mitigation and enhancement measures presented below as a first step indicate general mitigation measures that are applicable to all phases followed by specific measures for each phase of the project.

General Mitigation

As detailed under expenditure mitigation above, the Company will develop and implement a Recruitment and Training Management Plan, which is incorporated into a human resources procedure.

Local expectations and concerns will be managed through a trained community liaison unit, with the capacity to engage and visit communities and talk to potentially project affected people and all other stakeholders. Strong stakeholder relations are a prerequisite for good risk management. A management structure with Community Liaison Officers is proposed in Chapter 5. Having a dedicated community liaison unit will enable consultation with affected communities to extend beyond engagement uniquely with local government officers and enable the Company to engage and visit communities and build a constructive working dialogue, trust and understanding with all stakeholders and essentially allow the Company to establish its social licence to operate in the LSA and RSA. Stakeholders, and in particular affected groups, will be more likely to accept project outcomes once they trust

¹⁶ Provided to the consultant on 22. 08.2014 by DPM Operations Manger and an updated version provided on 18.09.2014



the Project's commitment to them, however this relies on consistent and reliable engagement with a trained team who are able to speak both Bulgarian and Turkish.

The Company has established an Information Centre in Krumovgrad, which is highly regarded among the population. The Centre will be used to publicise job opportunities on a notice board and provide access to recruitment procedures and the project grievance mechanism.

Pre Construction and Construction Mitigation

The Company will advertise job opportunities and criteria for skills and experience needed through local media, at least three months, where possible, ahead of recruitment. This information will also be provided to all relevant authorities including the Municipality Offices in Krumovgrad, Labour Offices, community representatives and organisations.

No employment will take place at the entrance to the site. Only formal channels for employment will be used, however these channels need to be accessible.

The Company will implement the staffing, training and development programme as set out in the Staffing, Training and Development Plan database.

Operational Mitigation

Establishment of a scholarship scheme for LSA beneficiaries to study mining related courses will be considered.

Closure Mitigation

The Company will develop a retrenchment plan during the operations phase and at the peak of the operations, initiate dialogue on the closure process with all employees.

Post Mitigation Residual Significance: Impacts associated with employment

Assuming that the above mitigation measures are implemented, the anticipated impact on employment creation at the local level is likely to increase over the mine life. The significance rating during the pre construction and construction phases and the operational phase will be high positive. The closure significance rating will decrease to low.

Valued Component Indicator: Procurement

The planning, design, construction and operation of the Project will require the purchase of equipment and other goods and services and will generate large contracts, particularly during construction. The majority of these will be for highly specialised and technical work and will be provided by specialist providers of goods and services. There is potential for

local businesses in the LSA and district wide in the district RSA to feed into this supply chain.

The project has the potential to provide procurement opportunities during the **Pre-construction phase**. The types of contracts that /have been required include:

- Project engineering design
- Environmental and social studies
- Archaeological studies
- Small scale reconstructions and constructions
- Fence for tortoises and maintenance
- Project-related preparatory construction.

The procurement needs have not yet been defined but based on other similar mining projects the types of contracts required under the **Construction phase** include supply of construction equipment and materials:

- Fuel supplies
- Transport services
- Training services
- Road maintenance
- Snow removal and road maintenance
- Maintenance of supplies
- Provision of temporary containers
- Gravel/aggregate/concrete.

The procurement needs have not yet been defined but based on other similar mining projects the types of contracts required under the **Operations phase** include:

- Catering and cleaning services
- Provision of food supplies
- Supply of construction equipment and materials
- Waste disposal
- Laboratory testing
- Equipment maintenance
- Blasting
- Training services
- Road maintenance
- Snow removal and road maintenance during winter
- Maintenance of supplies
- Provision of temporary containers
- Hauling of effluent and solid waste from mine site to approved waste disposal facility
- Contract security services
- Bussing service



- Gravel/aggregate/concrete.

Procurement opportunities are considered a beneficial impact. However it is considered that without mitigation, the likelihood of local residents and enterprises to secure procurement with the project are lower given the limited pool of existing companies and mechanisms to support the development of companies with the right profile and calibre to deliver on project requirements. This concern was raised during baseline consultations. Despite this, implementing the mitigation proposed, the Project has the potential to boost suppliers in the LSA as well as the broader RSA during construction phase.

Baseline data indicate that the businesses located in the LSA are not linked to the services required for mining with the exception of a small number of construction and engineering businesses. Furthermore the ability of LSA businesses to meet health and safety criteria set by the Company, without mitigation, will be limited. It is likely that many of the specialized procurement needs of the operation will be fulfilled by companies nationally, while the smaller regional and district businesses would supply goods and services such as civil and construction materials, accommodation (hotels, guest houses and apartments), catering services, transport, vehicle servicing and security services. For those regional and district companies from which goods and services are procured, there will be long lasting and sustained benefits to businesses and their employees. The benefits will be through capacity building, increased experience and training particularly having to meet more stringent requirements set by the Company.

Pre-Construction and Construction Phase

As there are few mining-related businesses in the LSA, the positive direct impact associated with procurement will primarily be experienced at district, national level and possibly international level. However to some extent the local level will benefit. It is anticipated that the magnitude of the impact at local level will be moderate but beyond, at district and national levels, it will be high (Positive). The duration of procurement opportunities during construction is short term (2.5 years) and the frequency continuous for the duration of the construction phase. The degree of confidence is high.

Operation Phase

The operational phase activities associated with the Project will provide opportunities for local business growth and development. Procurement in the LSA will assist in creating income and building a more stable and diverse economy. Furthermore, as the Project develops and there is increased demand for goods and services, more local businesses will be established. The induced employment opportunities through the procurement of opportunities will be aligned with this expenditure and growth at local, regional and national levels.

The impact on procurement of goods and services during Operation will be positive and direct. The geographic extent will be local, regional, district and national with more companies possibly able to compete or contribute to services having undergone supplier

training. The magnitude will be high positive and the duration of the impact will be long term (8 years) and continuous in frequency during the operations phase. The degree of confidence is high.

Closure Phase

During the closure phase there will be a reduction and an eventual withdrawal of procurement needs. Companies which have been providing the mine with goods or services may have better capacity and experience to bid for opportunities elsewhere.

Nevertheless, the impact of procurement of goods and services during closure phase will be positive and direct although the requirement will reduce rapidly and eventually stop. The geographic extent will be Local, regional, district and national level. The magnitude of the impact will diminish to moderate. The duration will be short term during the closure phase and continuous in frequency. The confidence level of the impact occurring is high.

Mitigation Measures and Residual Effects

At the time of writing there are no known measures as yet established by the Company to enhance measures related to procurement. However procurement procedures established for the Company Gold mine at Chelopech in Bulgaria were presented to the consultant and it was stated that procurement measures would be established along the same lines, meeting good industry practice.

The objective of the mitigation is as follows:

- To maximise opportunities for procurement of goods and services from vendors and suppliers in the LSA and at district level in the RSA. Furthermore where possible, to build capacity in the local supply chain in line with the Company's procurement policy.
- The enhancement/mitigation measures set out below indicate general enhancement measures that are applicable for all phases followed by specific measures proposed for each phase.

General Mitigation

Implement mitigation as set out under expenditure mitigation related to procurement. Specifically, develop and implement a Procurement Procedures which includes an approach to maximise procurement opportunities for the LSA.

Some broad targets will be considered:

- Local subcontractors from the LSA will be used wherever possible and contractors from outside the local area that tender for work will be required to meet targets for how many locals from the LSA are given employment.

- Further research is needed to assess the potential capacity among local businesses, as well as support available capacity to build sustainable local businesses with the profile of skills / goods required by the project and to meet project procurement standards. A database will be created of potential suppliers in the LSA and updated prior to any procurement.
- Working with the Municipality and local institutions as early as possible will encourage the development of sustainable local businesses that can provide services to the project through for example, local training programmes to enhance specific competencies of local businesses including capacity to meet tendering and HSE requirements. Establishing partnerships with organisations that encourage small and medium sized businesses (SMEs) will assist, as will targeting vulnerable groups to benefit from the supplier training programme.
- Establish project incentives schemes to develop local businesses that can provide services to the Project e.g. tendering criteria that consider local community added value factors.
- Tender forms kept as simple as possible so as not to act as a barrier to entry and the Company will be willing to provide assistance with tendering where required.
- Establishment of a fair, formal and transparent procurement process.
- Build awareness locally of procurement and tendering procedures and opportunities in a manner that is accessible to encourage local businesses to bid for contracts whilst management local expectations.
- Monitor success of and challenges for local community businesses securing procurement contracts on the project.

Pre-Construction and Construction Mitigation

In addition, to the above, split certain contracts to allow small businesses that are compliant with the Company's HSE regulations to provide goods and services as far as possible, so as to prevent the supply being monopolized by one large contractor.

Operation Mitigation

As part of the tendering process, large companies will need to demonstrate how they will partner with local or regional companies to jointly supply a service if it is not possible to split a contract.

Closure Mitigation

Certain contracts could be split to as far as possible allow small businesses that are compliant with the Company's regulations provide goods and services. Again, this will prevent the supply being monopolized by one large contractor.

Post Mitigation Residual Significance: Impacts associated with Procurement

If the above mitigation measures are implemented, the anticipated positive residual impact on procurement is likely to be high + over the pre construction/construction and Operations phases, reducing to moderate + for the closure phase.

3.3 Valued Component (VC): Demography

3.3.1 VC Summary of Baseline

The 2011 national census population of Bulgaria is 7 364 570 people. In the period between the two censuses of 2001 and 2011, the population of the country has decreased at an average annual rate of 0.7%. Some factors influencing this are the negative natural growth (births and deaths) and international migration. With regard to migration within the country in the period 2001 and 2011, there has been a steady rural urban migration with people mostly moving to national and regional centres such as Sofia, Varna, Plovdiv and Burgas. With regard to ethnicity, as of 2011, the Bulgarian ethnic group comprises of 84.8% of the population followed by the Turkish ethnic group representing about 8.8% of the total population and the third largest ethnic group is Roma. The dynamics of the ethnic groups have been relatively stable over the past decade, with the notable exception of significant migration of the Turkish population (especially in Kardzhali district) to Turkey in the late 1980s, which has been slightly reversed since then. Language and religion are closely related to ethnicity. Among Bulgarians, 99.4% indicate Bulgarian as their native language, with 96.6% of the Turks indicating Turkish. For the Roma minority, 85% indicated Roma as mother tongue, 7.5% Bulgarian and 6.7% Turkish. With regard to religion, Eastern-Orthodox make up the largest religion practiced but there is also Muslim, Catholic, Protestant as well as other religious beliefs.

The 2011 census recorded the population of the Municipality as being 17,823, which is 12% of the population of Kardzhali District (152,808). The Municipality itself was recorded to be 17,823¹⁷. The municipality generally is characterised as having an ageing population with 28.33 % aged 40 – 59 and 23.50% aged above 60¹⁸. The gender distribution does not follow the national trend, as there are more men than women (8, 997 men and 8,826 women). The average family size is reported to be 2.9. The ethnic representation is predominantly Turkish with a smaller representation of Bulgarian populations and to a much lesser extent Roma populations. Baseline data indicate that the LSA is characterised by homogenous and closely knit communities. There is an outward migration trend of those of working age (both men and women), understood to be economically motivated owing to the lack of job opportunities in the LSA and wider district of the RSA. Furthermore the LSA is characterised by a plentiful scattering of small hamlets, which are largely depopulated with residents mostly living in Turkey and only returning for the summer months in Bulgaria. Consequently baseline studies found a significant disparity between the registered population statistics of mine site hamlets and the actual population size as found during the socio economic household survey and the baseline consultations. This is

¹⁷ Scoping report 2014

¹⁸ *ibid*

possibly related to the absentee population who reside in Turkey but who hold dual nationality. Baseline consultations found the social fabric of the LSA to be robust with positively interconnected social networks, possibly owing to the small population size of the Municipality, and strong cultural conservative values associated with the predominant Muslim religion. Based on the Bulgarian Social Support Act's definition of those individuals needing monthly financial assistance and baseline studies of the context, vulnerable groups consist of minors, elderly, single parents, minority Roma population, pregnant women, orphaned children, disabled, unemployed, homeless people and women.

Studies and stakeholder engagement undertaken to date indicate that there are no indigenous¹⁹ communities living around the mine site or in Krumovgrad. Therefore any potential for impact on indigenous people has been ruled out.

3.3.1.1. Effects Assessment (During Pre-construction, Construction, Operations and Closure) Demography

Table 3-4: Demography Effects Assessment

Summary	Pre construction/ Construction	Operation	Closure
Project Aspect	Population influx due to employment opportunities	Population influx due to employment opportunities	Population out-migration due to mine closure and loss of employment opportunities
Impact type	Indirect & induced	Indirect & Induced	Indirect & Induced
Stakeholders	Local, Regional	Local, Regional	Local, Regional

Valued Component Indicator: Population Changes

It is anticipated that in-migration will take place in the LSA, in particular to the town of Krumovgrad as it will be the main service centre for the Project and accommodation infrastructure (hotels, apartments etc.) will be used to house workers (direct and indirect). The influx will comprise of directly employed staff, indirectly employed staff working for contractors and opportunistic job seekers..

To ascertain the extent of project induced in-migration, IFC has established a tool based on the qualitative analysis of three factors; existence of a mobile population within the

¹⁹ Indigenous People are defined by EBRD (2008) in relation to PR 7 Indigenous People is used in a technical sense to refer to social and cultural minority group, distinct from dominant groups within national societies possessing the following characteristics in varying degrees; self identification of a distinct indigenous ethnic or cultural group and recognition by others; collective attachment to geographically distinct habitats, traditional land or ancestral territories in the project area and to the natural resources in these habitats and territories; descent from populations pursued non wage subsistence strategies and whose status was regulated by their own customs or traditions or by special laws or regulations; customary culture, economic, social or political institutions that are separate from those of the dominant society or culture; a distinct language or dialect of the country or region.

context, project characteristics, and capacity of the area to meet project needs²⁰. Based on this paradigm, firstly the analysis of the mobility of the Bulgarian population is analysed.

According to the Migrant Integration Policy Index²¹ (MIPEX) (2014), since accession to the EU, Bulgaria has remained largely a country of emigration, indeed Bulgaria (and Romania) has the highest mobile population in Europe (Rolfe, Fic, Lalani, Roman, Prohaska and Doudeva, 2013). The economic push factors out of the country as depicted in the baseline are high unemployment, underemployment, few employment opportunities and low GDP (0.09% of world economy). The pull factors to other countries in Europe, specifically Spain, Italy and to a lesser extent Germany (countries with higher GDP than Bulgaria) are the possibilities of employment, higher wages and better standards of living compared to those in Bulgaria as well as education opportunities, career considerations and in the case of the Roma populations, escape from discrimination and poverty (Rolfe et al, 2013²²). Indeed the baseline studies indicate that there is significant economically motivated migration out of the LSA of both men and women of working age, particularly the youth. It also found that if individuals were working away from home, generally they would not take their entire family. Therefore whilst there is a highly mobile population in Bulgaria, it can be deduced that the pull factors out of the country are more attractive than remaining in the country to seek work opportunities. Therefore an assumption could be made that despite the proposed project's pull factors, an economically motivated migrant population would prefer to seek work abroad. That said it is likely that the younger population in the LSA may be more inclined to remain in the Municipality with increased work opportunities created by the Project. Additionally, potentially those residents who migrated out for economic reasons, but whose family units remain in the LSA, could be induced to return, thereby reuniting family units on a more permanent basis.

Krumovgrad Municipality borders Greece and it is in relatively close proximity to the Turkish border. This also has to be considered as a risk factor to the extent of a possible trans national influx, particularly due to the economic climate in Greece. Furthermore, the ethnic make-up of the LSA is predominantly Turkish and there is a long history of people migrating between Turkey and Bulgaria, many of whom, have dual citizenship and are registered citizens in the Municipality but live in Turkey for most of the year, only returning to Bulgaria for the summer months, as evidenced in the socio economic household survey. However, Bulgaria itself has very low in-migration rates, despite government initiatives and MIPEX (2014) account for this as due to a critical lack of many basic citizenship, education and political opportunities that are becoming best practice across Europe. Therefore if trans national in-migration is to take place, it is more likely to be from Turkey and only

²⁰ IFC, Risk Assessment,

http://www.ifc.org/wps/wcm/connect/63f07100488658f3b7a2f76a6515bb18/Influx_Part3.pdf?MOD=AJPERES&CA_CHEID=63f07100488658f3b7a2f76a6515bb18 Accessed 12 October 2014

²¹ Migrant Integration Policy Index (MIPEX), <http://www.mipex.eu/bulgaria> Accessed 14 October 2014

²² Heather Rolfe, Tatiana Fic, Mumtaz Lalani, Monica Roman, Maria Prohaska and Liliana Doudeva (2014)

Potential impacts on the UK of future migration from Bulgaria and

Romania <http://niesr.ac.uk/sites/default/files/publications/NIESR%20EU2%20MIGRATION%20REPORT.pdf>

Accessed 14 October 2014



among those who have links to the area e.g. owning an existing property or having a family member who still lives in the LSA.

There are no mining operations which have recently opened up in Bulgaria similar to the Project and therefore there are no recent examples by which the likelihood of a risk of an influx within the context of the LSA may be better understood.

Secondly, the characteristics of the Project consist of one project site with employees, external to the LSA, housed in Krumovgrad Town which will serve as the service centre. Existing infrastructure will be used to transport goods and concentrate and there will be no need to create proximate service centres or infrastructure. The project life is relatively short with a 2.5 year construction phase, which is the phase in which the mine will require the highest number of workers. As evidenced in commissioned studies, there is a large potential workforce present in the LSA, more than there are available Project jobs, that has some skills which match the job opportunities> Where skills are lacking, the Company will have in place a training programme which will initiate during the Construction Phase. The Company has publically committed to employing 90% of its workforce from the LSA during the Operations phase. Therefore it can be concluded that while the pull factors to the LSA will be the demand for labour, goods and services, these pull attributes are on a small and relatively short term scale.

Thirdly, the capacity of the area to meet the project needs is discussed under community services and protective services.

Further to the qualitative analysis, quantitative estimates²³ of a potential population influx attributable to the Project are summarised in the table below in the two right hand columns. Estimates are derived by applying a multiplier to the total number of direct workers across the life of the mine²⁴. High estimates are based on a multiplier of 1.0 and low estimates on the 0.3 multiplier. Analysis of other parts of the world such as Africa or Indonesia would apply higher multipliers (3 or 4). These countries have larger population densities and also legacies of mining projects with large work forces and associated mobile groups of people, known as 'camp followers'. Bulgaria has a small population and the absence of a culture of camp followers. Based on these figures as set out in the table below during Construction phase, the estimated highest amount of in-migrants, based on the multiplier of 1, and worst case scenario, would be double the number of direct workers. On a lesser scale using the multiplier of 0.3 approximately a third of the number of direct workers could potentially arrive as in-migrants. The number of potential in-migrants would drop during the operations and closure phase, in line with the number of direct employees.

²³ Multiplier estimates applied in this analysis have been based on the Oyu Tolgoi, Mongolia SIA assessment performed by AMEC

²⁴ This figure does not include the number of contract workers as at the time of writing the Company were unable to provide this data.

Table 3-5: Project workforce annual figures and influx estimates

Project Phase	Year	Number of direct workers	Estimated Influx High (1.0 Multiplier)	Estimated Influx Low (0.3 Multiplier)
Construction	Year 1	300	300	90
	Year 2	300	300	90
	Year 3	300	300	90
Operations	Year 4	230	230	69
	Year 5	230	230	69
	Year 6	230	230	69
	Year 7	230	230	69
	Year 8	230	230	69
	Year 9	230	230	69
	Year 10	230	230	69
	Year 11	230	230	69
Closure	Year 12	50	50	15
	Year 13	50	50	15
	Year 14	50	50	15

Based on the analysis above, it is inevitable that in-migration will take place however it is likely that those who come to the LSA will already have links to the area. The project characteristics are such that it is not considered that the pull factors will attract a surge of opportunistic job seekers. The capacity of the LSA to meet project needs is discussed later in this report as part of the valued components of Infrastructure services.

Understanding that in-migration will take place, albeit on a small scale, the impact of having an increased population in the LSA may have further indirect negative impacts on the local population, such as creating tension with the local resident population as they single-status men compete for employment opportunities and other Project related benefits. A significant negative impact would possibly be the disruption to the social cohesion of the LSA, in particular to existing family structures and social networks, linked to the potential behaviour of such workers. This could include increase in alcohol and drug use, crime levels (discussed later under protective services), teenage and unwanted pregnancies, prostitution and sexually transmitted diseases (discussed later under health). This is particularly pertinent as the LSA is characterised by a conservative culture with the population demonstrating few social pathologies such as alcohol and drug abuse and crime. In addition, an influx of people into an area typically brings about social change. These changes have been known to increase vulnerability and increase an individual's susceptibility to social pathologies.

Pre-Construction and Construction Phase

Referencing the table above, the number of workers during the construction phase will be larger than other phases of the Project and more transitory in nature. A proportion of the work force is expected to come from the wider district of Kardzhali, nationally and internationally. This will lead to the perception that outsiders are taking local jobs, which could fuel resentment towards the Project and possibly towards the direct employees.

Prostitution, alcohol and substance abuse have not been identified to be an issue in the community, but it may well become one, so too social maladies such as increased crime and domestic violence. Furthermore people deemed most vulnerable may not be able to adapt to the social changes as easily.

As with all economic development, population influxes have the additional effect of causing inflation of prices of food, transport and generally the cost of living. However it is difficult to attribute inflation to a single factor. Those with direct and indirect employment with the project would be able to afford any price changes, however those with limited means would suffer.

Depending on the level of vulnerability of stakeholders, these demographic changes and the consequent change in social dynamics could have a negative impact as people strive to adapt to changes in the area. The geographic extent of the impact will be most felt locally and regionally within the LSA. The magnitude of the impact will be moderate (negative) as potential tensions may arise and the population dynamics will be in a state of flux as they adapt to the rapid changes. The duration of the impacts will extend into the Operations phase. The change will be continuous in frequency and the degree of confidence is moderate.

Operations Phase

During the Operational period, the population influx, lesser in scale as referenced in the table above will be less transient in nature, as longer term employment is established. Furthermore, the Company's commitment to sourcing 90% of the workforce from the LSA will mean that there will likely be fewer migrant workers and opportunistic job seekers in the communities. Vulnerable Groups identified throughout the Project life may be more susceptible to the changes as individuals struggle to assimilate to the pace of change.

As with the Pre Construction and Construction phases, depending on the level of vulnerability of stakeholders, these demographic changes and the consequent change in social dynamics could have a negative impact. The geographic extent of the impact will be local and regional (within the LSA), if the 90% commitment is achieved. The magnitude of the impact will be low but if more people are employed from outside the area this rating could rise to Moderate (negative). The duration will be the Operations phase. The change will be continuous in frequency. The degree of confidence is moderate.

Closure Phase

During the closure period, the population size will return to near baseline conditions and migration out of the area would most probably take place in order to seek other employment opportunities elsewhere, especially amongst the younger and more mobile population who have benefited from employment and its associated skill investment and training.

Vulnerable individuals identified throughout the Project life may be more susceptible to the impacts of mine closure in terms of a dependency on an income or support provided through the Community Development Programme or Community Investment Programmes.

As the Project closes the impacts associated with influx are likely to continue to be negative in view of the potential outmigration of the economically active population. The geographic extent will be felt locally and regionally. The duration of the impact will be long term in effect as job seekers relocate to where employment opportunities exist. The effect will be gradual and infrequent. The magnitude of the impact without mitigation is likely to be high (negative) as the community will have adapted to the induced social changes and the degree confidence high. The confidence level is moderate.

Mitigation Measures and Residual Effects

A Community Health, Safety and Security Management Plan (2014) (AMEC Report A150-14-R2257) has been established by the Company to mitigate measures related to potential demographic changes:

- To monitor the effects of in-migration and demographic changes
- To monitor relations between the community and migrants in order to put appropriate measures in place to address issues that may arise
- To educate workers and community on the impacts related to potential social pathologies, and
- To support protective services (Police Force) to deal with anti social behaviour arising in the LSA.

The mitigation measures below provide general mitigation measures that are applicable to all phases followed by specific measures for each phase of the project.

General Mitigation

The following general mitigation measures will be applied:

- Obtain data, through sampling techniques of population size at key intervals over the life cycle of the Project to monitor demographic flows of people to ascertain if there have been any significant demographic changes to Krumovgrad Municipality and the District of Kardzhali

- Using the baseline study compare and analyse changes to understand the origins, characteristics and motivations of inward and outward migration. Engage with strategic partners on issues, risks, and opportunities regarding demographic changes
- Using appropriate media and networks to inform potential in-migrants of the scale and nature of opportunities, manage expectations and where appropriate discourage opportunistic job seekers from moving to the Project area
- Publication of recruitment procedures and employment opportunities using media such local newspapers, internet/Company website, and Company Information Centre as well as local employment offices of the state, if they exist, to ensure that information is accessible in the LSA and RSA
- The Company's security personnel will work in close collaboration with the local police force to monitor anti social behaviour
- Company Security Guards (contracted) trained in line with the Company codes of practice so as not to infringe people's human rights
- Timely and effective community engagement with stakeholders via the Community Liaison team and the operation of the Info Centre in Krumovgrad as a source of accurate information including recruitment information and job opportunities for stakeholders
- Establishing Local Consultative Forums (LCFs) consisting of representatives from the communities in the LSA with whom the CLO unit can liaise with and channel information through as a two way process
- A grievance mechanism procedure has been established as part of the Stakeholder Engagement Plan, which sets out an understandable and transparent process as per EBRD requirements. The Grievance Mechanism will be made accessible to all segments of the population. All stakeholders in the LSA and RSA will be made aware of the grievance mechanism and the process. All grievances that are brought to the attention of the CLO Unit will be documented and dealt with in a timely manner and on a centralised system with a monitoring and evaluation procedure attached
- Vulnerable Persons identification amongst the affected communities and a Mitigation Plan developed, expanding on those identified as vulnerable in the SEP
- Within the Community Development Plan, social investment initiatives will be developed, which aim to support social networks and organisations such as clubs, societies and sporting events to promote social cohesion and to encourage interaction between Project workers and the community. The Company has a number of investment initiatives in the concept phase²⁵. It is recommended that social investment initiatives are channelled through local NGOs, and organisations such as Municipality Social Services Complex, Krumovgrad dance and music group, etc which are established organisations with a mandate. Wherever possible, build within the

²⁵ Proposal for cooperation between DPM Krumovgrad and the Municipality of Krumovgrad 2013

organisation a clear strategy including investment themes, disbursement mechanism, monitoring and review, transparency and community engagement.

Pre-Construction, Construction and Operations Mitigation

The Company and its identified contractors will develop an induction programme and a code of conduct for all workers (direct and indirect). Contractors and direct employees will be obliged, when signing contracts, to sign a code of conduct. The code of conduct will address the following:

- Zero tolerance of Project related employees engaging in illegal activities.
- If workers are found to be in contravention of the Code of Conduct, which they have signed they will face disciplinary procedures
- If the breach of the code of conduct warrants a dismissal, the dismissal must comply with Bulgarian Labour legislation.

The Company will ensure that people from the LSA, in particular the directly affected communities, are given priority in terms of employment opportunities (where possible). For the operations phase, employment of those indirect employees working for contractors who are made redundant during the pre construction and construction phases will be considered.

Post Mitigation Residual Significance: Impacts associated with demography

Assuming that the above mitigation measures are implemented, the anticipated residual impact as a consequence of an influx caused by migrant workers and opportunistic job seekers is expected to be low negative during the Construction phase. During the Operations and Closure phases, the residual impact will remain low / negligible residual effects, as long as the Company employs the majority of the work force from the LSA.

3.4 Valued Component: Land Use & Economic Activities

3.4.1 VC Summary of Baseline

In the following paragraphs Land Use is covered in terms of the Project footprint and secondly in the surrounding area.

Land Use in the direct Project Footprint and its associated components

The current land use in the direct footprint on Ada Tepe, which will be taken for the proposed mine site, is coniferous forest, which has been planted for commercial usage and is State-owned, administered by the Forestry Department.

The land required to widen the haul road has designated usage pasture and is owned by the Municipality.

The land in the easement of the proposed discharge pipe will cross Municipality land, forestry Department land and privately owned land. Some Municipality land is informally used for grazing of livestock. Private land is intensively cultivated land used for growing tobacco, peppers, and maize as well as alfalfa and fruit and nut trees.

The project footprint area has additional current eco systems usages as set out below.

Recreation

The land is used to a lesser degree for recreational and leisure usage (not tourism). There is an abandoned tourist lodge (owned by the Municipality) and four tourist bungalows, which are purported to be used by a Krumovgrad school despite their dilapidated state (EIA 2010). According to baseline consultations, people also use the forest area for walking and hiking but to a minimal degree. Furthermore, Lulichka hunting group's (of which there are 50 male members) assigned hunting territory, as set out by the Forestry Department, includes a proportion of the Ada Tepe area. The Club's total hunting area amounts to 35 hectares, and it is flanked by six other hunting territories. During baseline consultations, the Forestry Department expressed that hunting territory boundaries have been established and cannot be moved. Hunting of animals such as wolves, jackals, foxes, wild boar and fowl is carried out over the Lulichka hunting territory, however Baseline consultations found that the only part of the Lulichka hunting territory where wild boar roam is in the Ada Tepe area. Wild boar are however purportedly predominant throughout other woodland areas in the Municipality. Hunting is seasonal and generally takes place during the Autumn and Winter months. Baseline studies found that hunting was not carried out as an income generating activity but rather for recreational purposes, although according to the baseline socio economic household survey a very small proportion use hunting as one of a number of income generating activities. However it was understood that to a small degree hunters were recompensed by the Forestry Department Krumovgrad to cull animals and birds in order to manage population sizes in a tightly controlled manner.

Fishing as a recreational activity takes place on the Krumovitza river, which skirts the southern side of Ada Tepe area. The socio economic survey indicates that few people fish. Of the villages nearby the proposed development, the greatest number of people citing that they fished were in the Village of Kuklista (Shtarbina) which is up-stream from the site and village Ovchari and Skalak (Kremenik).

Natural Resources

A separate ecosystems services report sets out comprehensively the natural resource usage within the LSA (AMEC Report A150-14-R2258). Based on these findings and further triangulated by the baseline studies and consultations, it was found that people use the Ada Tepe forest during Spring and Autumn for collecting mushrooms for household consumption and to a minor extent for commercial benefit but not as a sole income source. Mushroom picking is a traditional activity throughout the LSA and RSA and is performed by both men and women. The mushrooms (chanterelle, saffron milk cap and *Bolletus*) grow throughout the Municipality and are not restricted to one particular area. According

to baseline studies it is predominantly the Roma population who traditionally collect mushrooms as a source of income. The Socio economic survey found that mushroom collection was carried out mainly by people from within the Kuklista hamlets of Shtarbina and the Skalak hamlet of Kremnik, which is at a distance from Ada Tepe. Only one person in the survey indicated they performed the activity as an income generating activity, which contributed to their annual income. The eco systems studies indicate that there are other spatial forest areas where the types of mushrooms found on Ada Tepe grow within the LSA. This was also confirmed during the baseline consultations.

Firewood collection is also undertaken, but as indicated by the socio economic survey and the ecosystems services studies, to a small extent. Of the communities near the proposed development it is mostly carried out in the hamlets of Kuklista (Shtarbina), Gulia (Belook and Pazach) and Zvanarka (Zvanarka and the Lozino (1,2,3)) (AMEC Report A150-14-R2258). However these hamlets are at a distance to Ada Tepe and the direct footprint of the proposed project site, furthermore there are other spatial forest areas in the LSA, where wood could be sourced.

Cultural heritage

According to baseline and archaeological studies commissioned by the Company in 2012, Ada Tepe is the site of an ancient gold mine, and associated activities. Artefacts have been found which date back to late bronze age.

Culturally sensitive locations have been identified next to the proposed haul road (refer Appendix B) such as animal watering wells, public taps, two Islamic graveyards, and a sacred tomb. The Islamic graveyards (according to baseline consultations, one is still in use and fenced off) and the Said Baba Tomb are not moveable, according to the Mufti. The Said Baba Tomb is open to the public and is the focus for an annual celebration, whereby a sheep is sacrificed in the garden adjacent to the tomb.

Surrounding area land uses not in the immediate footprint

There are no farms within the direct area of the proposed development, however current use of lands immediately surrounding the site includes commercial and subsistence agriculture. Leisure activities such as fishing (to a minimal extent during Autumn, Winter and Spring) and collecting wild herbs, fruit and berries are also carried out.

Agricultural activities

With few formal employment opportunities in the LSA, baseline data illustrate that livelihoods are predominantly based on agricultural activities growing cash crops such as tobacco, vegetables such as peppers, onion, potatoes and tomatoes, performing animal husbandry (cattle and sheep) and bee keeping. Tobacco growing is a formal income generating activity with growers establishing contracts with buyers at the beginning of the season and revenues taxed at source. Agricultural produce (vegetables and livestock) is generally sold to buyers who travel from the RSA to the LSA and as buyers travel to the

producers there is little bargaining on prices and income generated is low. Some farmers receive EU subsidies for tobacco growing and organic bee keeping, but Baseline studies found these are a minority. Income from these agricultural activities was found to be minimally supplemented through selling excess subsistence produce, grown in gardens, on an informal basis to local buyers or at the Friday Market in Krumovgrad. According to the studies as well as GIS analysis, to the east and to some extent to the south of the proposed mine site, the agricultural lands are predominantly cultivated intensively for arable purposes owing to their proximity to the Krumovitza River and the availability of irrigation. Towards the north, west and to an extent the south of the Project site, the arable purposes land use is on a lesser scale and also for livestock grazing (refer Appendix C). The socio economic survey indicates that the villages that keep livestock are Kuklista (Shtarbina), Ovchari (Taynik, Bitovo, Soyka, Varhushka, Chobankas, Synap) Skalak (Podeba, Belagush, Skalak, Korpivnik) and Guliya (Belook, Pazach) and of those who keep livestock in terms of economic importance, it is mainly in Skalak and Ovchari. Of the socio economic sample, the people who own livestock do so predominantly for subsistence purposes. Baseline consultations found that cattle roam free to graze on pasture land and hills. Bee keeping and honey production according to the baseline studies is a growing industry and in the surrounding area of the proposed mine site it is carried out in the villages of Kaklista, Malko Kamenyane, Skalak, Ovchari, Rogach and Guliya. However of the surveyed households in the sample, only 4% were shown to keep bees.

Natural Resources

Throughout the LSA the natural habitat is also used for collecting wild herbs, berries, wild fruit, and mushrooms. The collection of wild herbs is mainly undertaken in semi natural areas of meadows. Of the communities surrounding the proposed site it is mainly carried out in Edrino and Kuklista (Shtarbina) and Skalak (Kremenik). Baseline studies found that it is a traditional activity carried out by both men and women in most households mostly for home consumption in the season. However as discussed earlier, it forms one of a number of income generating activities for the Roma populations. According to baseline studies, of the five Roma people whom were respondees in the household survey, four stated that collection of wild herbs during the season was one of the five sources of income they depended on. Moreover, baseline consultations engaged with a herb buyer located in Krumovgrad which would indicate that it is to an extent a commercial activity for some people in the LSA.

Recreation

The Krumovitza River, as discussed in the previous paragraphs, is used for recreational activities such as fishing. This is carried out both upstream and downstream of the Ada Tepe area. Other rivers where fishing takes place are the Arda and Kesebir. This activity is seasonal as the river dries up in the summer months. Also the banks of the river were observed to be used as sites for picnicking and relaxing.

3.4.1.1. Effects Assessment (During Pre-construction, Construction, Operations and Closure) Land Use and Economic Activities

Table 3-6: Land Use and Economic Activities Effects Assessment

Summary	Pre construction/ Construction	Operation	Closure
Project Activity	All project aspects and activities that could impact on the current land use and economic potential of the direct footprint. All project aspects and activities that could impact on the current land use and economic potential of and surrounding lands.	All project aspects and activities that could impact on the current land use and economic potential of the direct footprint. All project aspects and activities that could impact on the current land use and economic potential of and surrounding lands.	All project aspects and activities that could impact on the current land use and economic potential of the direct footprint. All project aspects and activities that could impact on the current land use and economic potential of and surrounding lands.
Impact type	Direct and indirect	Direct and indirect	Direct and indirect
Stakeholders	Local	Local	Local

Valued Component Indicator: Land Use in Direct Project Foot print

The footprint of the project site and its anticipated buffer will take up approximately 134 hectares of National Forestry Department administered land. Further land will be acquired from the Municipality near Pobeda in order to widen the road to the mine site on Ada Tepe. Furthermore, construction of a discharge pipeline along the line of the existing road will require easement access rights through four sections of private land and Municipality land. The requirement will be for a period of 15 years and during construction of the pipeline. Temporary disturbance during the construction of the pipeline to the private and municipal lands will take place, the duration of which is not known but is expected to be short term.

Pre Construction and Construction Phases

The land take required will mean that there will be a reduction in the size of State Forestry Department land, however the land will be sold to the Company at commercial value. There are no agricultural lands within the proposed development area, therefore direct impacts on farming livelihoods are unlikely. Municipality land will be permanently taken to widen the haul road passing through Podedaba, however the road will be upgraded and improved by the Company, thereby improving access for the local villages of Skalak and Kuklista.

During construction of the proposed pipeline, although it will follow the line of the road, there may be temporary disturbance to agricultural lands.

There will be permanent physical disturbance to the archaeological site on Ada Tepe, and temporary non-physical disturbance to sensitive locations located along the side of the haul road such as animal watering wells, public taps, two Islamic graveyards, and a sacred tomb (discussed later under Cultural Heritage).

There will be a loss of access to the abandoned tourist lodge (owned by the Municipality) and four derelict tourist bungalows.

There will be loss of access to the Ada Tepe area for recreational activities such as hiking, understanding that the area does not have established hiking paths and according to baseline consultations is used by few people. There are alternative areas for hiking activities in the LSA, and therefore the impact is not considered significant.

The 35 hectare Lulichka hunting group territory, which incorporates Ada Tepe, will be reduced in size. Furthermore the area on Ada Tepe is the only area within the hunting groups territory where they are able to hunt wild boar, as wild boar cannot be found in other parts of their assigned territory. The Forestry Department whom manages and oversees all aspects of hunting throughout the country has stated that boundaries of hunting territories cannot be moved as the action will reduce other hunting groups territories. Therefore it is considered that the 50 male members of Lulichka hunting group no longer will be able to hunt boar within their reduced size hunting territory. The impact is considered moderate (negative).

There will be loss of access to Ada Tepe, which is one of many spatial areas in the Municipality where desirable types of mushrooms grow during the appropriate seasons. The eco systems services studies indicate that communities near to the proposed development do not use the area for collecting mushrooms apart from one individual in the village of Skalak. As there are alternative spatial woodland areas in the LSA where mushrooms grow, including near to Skalak (on the opposite side to Ada Tepe) this impact is not considered significant.

There will be loss of access to Ada Tepe, which is one of many spatial areas in the Municipality where firewood can be collected, providing that a permit is sought from the Forestry Department. However the eco systems services report found that none of the villages in close proximity to the proposed development collected firewood. As there are other spatial woodland areas where wood can be collected this impact is not considered significant.

According to Baseline consultations and further corroborated in the eco systems services report, livestock from hamlets and villages in Ovchari, Skalak, and Ladovo graze up to the edge of the Ada Tepe forest area. The proposed project will not affect the grazing areas but it may affect access to grazing areas due to increased traffic along the haul road at Skalak, which may require alternative grazing areas to be sought. The impact without mitigation is considered minimal.

The impact of the direct land take, unmitigated, is considered negative. The geographic extent is considered local. The magnitude is considered Moderate (negative) with long term (for the life of the mine) and continuous effect. The degree of confidence high.

Operations Phase

No further land take will take place under the operations phase.

Overall impacts and significance

No further land take will take place under the operations phase therefore the impact of the direct land take, unmitigated, is considered negative. The geographic extent is considered local. The magnitude is considered Moderate (negative) with long term (for the life of the mine) and continuous effect. The degree of confidence high.

Closure Phase

During closure the project infrastructure will be dismantled and the footprint eventually rehabilitated. Ground disturbance will be limited to the existing footprint therefore it is considered that no closure impact is anticipated on archaeological sites.

The Impacts unmitigated on the land take from the direct footprint during the Closure phase are considered negligible as the land take has already occurred however during this phase the land will be rehabilitated. The geographic extent will remain local and the magnitude low negative - negligible. As land will be rehabilitated and returned to the community the duration is considered long term. The degree of confidence is considered moderate.

Mitigation Measures and Residual Effects

The following resources are available to support the mitigation of impacts related to land use in the direct project footprint:

- Environmental Impact Assessment (2010)
- Mine Waste Management Plan (2013)
- Community Health, Safety and Security Management Plan (2014) (AMEC Report A150-14-R2257)
- Emergency Response and Preparedness Plan (2014) (AMEC Report A150-14-R2262)
- Eco systems Services specialist study (2014) (AMEC Report A150-14-R2258)
- Operation of info centre in Krumovgrad and Community Liaison Unit
- Stakeholder Engagement Plan, 2014 (SEP Krumovgrad Gold Project, DPMK)
- Mine Closure Plan, 2013
- Water, soil and air quality baseline data collected during pre construction phase and an ongoing monitoring programme established as detailed in the 2010 EIA report.

In addition to the above, the Company has a commitment to the Municipality to construct a recreational area similar to the existing tourist lodge and chalets on Ada Tepe. The location and timing is still to be negotiated.

The objectives of the mitigation are to minimise the impact on directly affected communities surrounding Ada Tepe and along the line of the discharge pipe, users of the Ada Tepe area and on the haul road sensitive locations

The enhancement/mitigation measures set out below firstly indicate general enhancement measures that are applicable for all phases followed by specific measures proposed for each phase.

General Mitigation

Impacts on surrounding land uses are dependent on how the Project is operated to minimise negative social impacts and to enhance positive impacts. Implementation of measures recommended to minimise negative impacts and enhance positive impacts in the approved EIA (2010) as well as recommendations set out in chapter 5 of the Ecosystem Services Report (AMEC Report A150-14-R2258) will reduce impacts on surrounding land uses and will be implemented.

As discussed previously, timely engagement and disclosure with communities and the Municipality will be conducted through a robust community liaison unit (as detailed previously), with establishment of mechanisms to raise concerns e.g. through the project community liaison team, the Company web site email address and a hotline detailed in chapter 8 of the Stakeholder Engagement Plan (SEP Krumovgrad Gold Project, DPMK).

The grievance mechanism will be established and published so that stakeholders in the LSA and RSA are aware of the grievance process. All documents will be kept updated and available for audit purposes by external auditors and internal reviews.

The operational Information Centre in Krumovgrad will comprise a source of up-to-date project related information with a Turkish speaking CL specialist available.

Pre Construction and Construction Mitigation

Entitlements will be established in line with EBRD Requirements as a minimum, as part of an overarching Social Management Plan ²⁶ (to be developed), for the compensation of the four affected people whose partial pieces of land will be temporarily taken along the line of the discharge pipe.

Further entitlements will consider the following;

- Coordinating with the Municipality an alternative location sought for the construction of a tourist lodge and bungalows for the use of the community and school children.
- Local hiring priority policies for directly affected groups and communities such as: residents from the village of Skalak who have been found to use the area for mushroom collection; residents from the villages along the proposed haul road who are existing users of the road to access their hamlets (Zvanarka, Kuklista and Skalak); Ovchari; and Roma populations who traditionally collect mushrooms as a source of

²⁶ The Social Management Plan will define outcomes and actions identified to address the issues raised in the SIA in relation to risks and impacts identification, in built monitoring and evaluation should be established with performance indicators, and targets which can track progress over time and allow for appropriate adjustments as deemed necessary.

income. These hiring policies will be established by the Company and its contractors, to prioritise these directly affected groups and communities. An appropriate human resource tracking mechanism providing a transparent audit trail will support this initiative, monitoring employment levels by gender, age, community and type of contract.

- Establish a Community Development Programme (as detailed previously under Economic Investment and withdrawal mitigation) in consultation with stakeholders, which is directed to beneficiaries within the wider LSA (the Municipality of Krumovgrad) and aims to strengthen and diversify the existing agricultural economy, through training programmes and SME development.
- A vulnerable persons mitigation plan established which identifies the vulnerable groups such as single (female) headed households, elderly, infirm/with disabilities, youth and Roma Populations and targets them for mitigation so as to offset built-in disadvantages, as discussed previously. According to baseline data, the hamlets are predominantly inhabited with an elderly population thus the plan will consider targeting this group in particular with benefits such as social service support (which was reported during baseline consultations to be lacking) in coordination with the Municipality as they would not benefit from the local hiring policies discussed.

Mitigation measures in regard to cultural heritage aspects include the following:

- a chance finds procedure implemented
- sensitive locations of the two Islamic gravesites (Podeba) and the tomb (Zvanarka) avoided
- public taps and animal water wells will not be moved or affected by the implementation of the project (Podeba), when the road has been widened.

Site safety and security will be achieved in part via fencing erected around the Project site as detailed in the project description. In consultation with the municipality and stakeholders, for safety and security the viability will be assessed of erecting a stock proof fence on either side of the haul road from the junction of Zvanarka to Podeba.

Operations Mitigation

Operational mitigation includes the following:

- timely engagement with communities and the Municipality, through a robust community liaison Unit (as detailed previously)
- establish mechanisms to raise concerns e.g. through the project community liaison team, the Company web site email address, and a hotline in addition to the grievance mechanism (Chapter 8, SEP Krumovgrad Gold Project, DPMK)
- Ongoing implementation and monitoring of Social Management Plan.

Closure Mitigation

Closure stage mitigation includes the following:

- implement an updated Mine Closure and Rehabilitation Plan. As part of ongoing mine closure planning consideration of strategies to make the space an attraction for tourism or recreation timely engagement with communities and the Municipality, through a robust community liaison Unit (as detailed previously) and establish mechanisms to raise concerns e.g. through the project community liaison team, the Company web site email address, a hotline and the grievance mechanism, details of which can be found in the Stakeholder Engagement Plan (SEP Krumovgrad Gold Project, DPMK);
- development of a Retrenchment Plan.

Post Mitigation Residual Significance: Impacts associated with Land Use of direct project footprint and project components

Assuming that the above mitigation measures are implemented, the anticipated residual impact as a consequence of the land take on the current land use during Pre Construction and Construction Phases is considered Low (negative). The implementation of closure phase mitigation measures would probably result in positive impacts, which could have Moderate (+) significance if the rehabilitation is well resourced and executed.

Valued Component Indicator: Land Use in the Surrounding Lands of the Proposed Project

Pre-Construction, Construction and Operation Phases

Direct impacts on agricultural based livelihoods are not likely as the proposed development is situated within an area of woodland. However, it is considered that there may be a perception of impacts related to concerns over contamination of cultivated crops such as tobacco, vegetables and bee keeping as well as natural resources such as mushrooms, wild herbs and berries. Stakeholders expressed repeated concern during baseline consultations that contamination could take place, therefore affecting the crops and honey production and their ability to sell produce. Furthermore, both men and women were found to collect wild herbs and mushrooms seasonally from areas throughout the LSA mainly for household consumption, however a few were found to perform this activity as one of a number of sources of income. This too could be impacted in the same way and their ability to sell the agricultural products. It was also stated that even if contamination did not take place, the perception amongst buyers might be otherwise, thereby negatively affecting the ability to sell products. The impact is likely to be more pronounced upon vulnerable community groups such as Roma who rely on mushroom and wild herb collecting as a seasonal source of income but also on individuals whose sole livelihood depends on agricultural production or subsistence existence, which according to the baseline is a large proportion of the population of the LSA.

An assessment of the significance of the unmitigated impacts of perceived effects of contamination of surrounding land uses are considered negative as it has the potential to affect the ability to earn a living for communities and individuals (in particular those deemed vulnerable) locally and regionally (within the LSA). The magnitude is considered Moderate negative. The duration would be Long term and infrequent in effect. The confidence level is estimated to be Moderate.

Closure Phase

During the mine closure phase as people are retrenched there will be a move of the population back into agricultural activities.

Overall impact and significance

The significance of the unmitigated impacts is considered neutral (not changing compared with baseline conditions) and local and regional in extent. The magnitude will be low and long term. The frequency will be continuous in effect. The confidence level is moderate.

Mitigation Measures and Residual Effects

The following are in place by the Company as resources for mitigation measures related to economic activities related to land use in the surrounding lands of the proposed project (as detailed previously):

- Approved Environmental Impact Assessment (2010)
- Community Health, Safety and Security Management Plan (2014) (AMEC Report A150-14-R2257)
- Emergency Response and Preparedness Plan (2014) (AMEC Report A150-14-R2262)
- Ecosystem Services specialist study (2014) (AMEC Report A150-14-R2258)
- Operation of info centre in Krumovgrad and Community Liaison Unit
- Stakeholder Engagement Plan, 2014 (SEP Krumovgrad Gold Project, DPMK)
- Mine Closure Plan, 2013. Water, soil and air quality baseline data collected during preconstruction phase and an ongoing monitoring programme established as detailed in EIA (2010).

General Mitigation

The following mitigation applies to all project phases:

- the mitigation measures set out as detailed under land use on the direct project footprint (above) also apply to this value component's indicator
- Enhance agricultural livelihood opportunities through development of a community development Plan as detailed under previous mitigation (Economic investment and withdrawal).

Post Mitigation Residual Significance: Impacts associated with Land Use in the surrounding Lands

Assuming that the above mitigation measures are implemented, including those cited under land use on the direct project footprint and project components, the anticipated residual impact during Pre Construction, Construction and Operations is considered Low (negative) negligible. The implementation of closure phase mitigation measures would result in Low negligible risks.

3.5 Valued Component: Community Services (Housing, Education, Social Services, Protective Services)

3.5.1 VC Summary of Baseline

Housing

According to baseline data, housing in the RSA is generally constructed from reinforced concrete or with partial concrete elements, many of the buildings having been constructed between the 1970s – 1980s. Housing in the LSA is typified by single storey, brickwork, stone or concrete constructions. In the hamlets surrounding Ada Tepe, houses are more generally in a state of disrepair with many houses seemingly abandoned. A survey was performed by the Company to establish the availability of accommodation and rental options in Krumovgrad as the intention is to house employees in the town. The results found that of the surveyed accommodation there is capacity to house 233 people, of which, 61 people could benefit from single housing family accommodation options. Additional accommodation options in residential buildings could accommodate a further 141 people, of which 89 people could benefit from single housing family accommodation options. There is further housing availability in Krumovgrad, however the survey was based on landlords and hospitality managers expressing interest to the Company.

Education and Industry Training

Baseline data indicate that there is good provision of state run educational services in Bulgaria and in the LSA there are 7 kindergartens, 11 schools (elementary and high) and 1 professional high school. The quality of the educational provision is not detailed however baseline consultations found that households in the hamlets surrounding Ada Tepe preferred to send their children to schools in Krumovgrad because of the perceived quality. The Baseline consultations indicate that enrolment numbers had dwindled over the years due to families moving away from the area, therefore schools have the capacity to take on more students. Although education is state funded the baseline indicates that there are associated costs related to education and of the Ada Tepe hamlets, expenditure on education associated costs is 4.2% (0.7% more than the national average) of their overall annual expenditure.

NSI census data from 2011 indicate that 93% of the population in Bulgaria has graduated from Primary school of which 43% attained a high school diploma and 19.6% benefitting

from tertiary education. In Kardzhali district, 2011 census data indicate that of the year's cohort of students, 11.4% graduated primary school, 35.7% graduated middle school, 32.5% graduated high school and 10.3% graduated university. At Krumovgrad Municipality level, 2011 census data indicate 15.6% graduated from primary school 39.4% graduated from middle school, 27.2% graduated from high school and 6.7% graduated from university. These figures indicate that although more children graduate from primary school and middle school in the LSA, compared with the district level, fewer graduate from high school and significantly fewer graduate from University. This indicates the relatively low level of educational attainment in the LSA.

This is further evidenced in the skill survey commissioned by the Company in July 2014, which found a relatively low level of educational attainment, particularly of the registered unemployed people. However of 1212 people expressing interest to work with the company between 2011 and 2013, 670 people have general or vocational secondary education, 297 people primary education and 245 have university level education (graduation details were not provided). It was concluded that of the 1212 people, the qualifications and experience meet some of the semi skilled job requirements of the project. A training and development database has been created detailing all Project job positions, duration of training for each job position, the organizational structure, training costs, training requirements for senior management, middle management and operational level workers for courses related to continuous professional development (CPD) and health and safety. The database also sets out a time schedule for training and the method of training (professional course, on the job training, on-site classroom tuition, internship at Chelopech, introductory seminars, etc).

Social services

The Bulgarian social support Act defines groups eligible for monthly financial support as minors, working age persons and retired persons receiving a minimum regulated income for a household member, single parents and pregnant women receiving certain minimal incomes, orphaned children and children with caretaker families, disabled children, and children of other nationalities awaiting grant of humanitarian refugee status. Levels of social support in the LSA are high. The Municipality Development Plan identifies those needing social support as pensioners living alone and homeless persons. The socio economic household survey as illustrated in the baseline shows that of the surveyed sample, 58% were receiving a pension and 31% were receiving social support. Baseline analysis indicates that the potentially vulnerable groups within the LSA are the elderly and youth, women, the unemployed, people living with disabilities and Roma populations.

Emergency services (Fire service and Police force)²⁷

²⁷ When enquiries were made related to capacity of protective services as well as crime rates, proponents did not want to disclose information as it was deemed to be in the interest of national security. Based on this it is recommended under the mitigation that a needs assessment of the capacity of the local protective services should take place in collaboration with the respective services.

There are fire stations at Krumovgrad, Momchilgrad and Kardzhali however there are no baseline data to indicate their capacity or effectiveness. There are police stations also in Krumovgrad, Momchilgrad and Kardzhali however again there are no baseline data to indicate capacity or effectiveness. Baseline data and consultations found that there is a low crime rate and no trans boundary issues of significance arising in the LSA and relatively low crime rates in Kardzhali district.

3.5.1.1. Effects Assessment (During pre-construction, Construction, Operations and Closure) Pressure on community services: housing, education, social services and protective services

Table 3-7: Pressure on community services Effects Assessment

Summary	Pre construction/ Construction	Operation	Closure
Project Activity	Increased pressure on community services through increase in population size and as a consequence of project activities	Increased pressure on community services through increase in population size and as a consequence of project activities	Increased pressure on community services through increase in population size and as a consequence of project activities
Impact type	Direct and indirect	Direct and indirect	Direct and indirect
Stakeholders	Local (LSA)	Local (LSA)	Local (LSA)

Valued Component Indicator: Housing

Direct project staff not from the LSA will be housed in Krumovgrad town. It is understood that indirect employees not from the area will also be housed in the town as well.

Pre-Construction and Construction Phases

The rentals and payment made to local businesses for housing of the work force within accommodation such as hotels and apartments in Krumovgrad during the pre construction and construction phases will be economically beneficial to the LSA.

The numbers of people requiring accommodation in the construction phase will be greater than in other phases. The rental housing survey indicates that there is a sufficient amount of accommodation with electricity and running water and of a good standard to house direct employees who will form part of the migrant workforce. The number of contract construction workers have not been made known, however it is estimated, judging by availability in the housing survey, that there is capacity to house more people. Other impacts related to housing and worker health are discussed under health.

The workforce living among the community may cause intermittent disturbance through anti social behaviour and vulnerable groups and individuals may be at higher risk.

As the baseline indicates a poor state of repair of some of the houses in the LSA, there may arise real or perceived impacts related to the pre construction and construction project activities such as heavy vehicle movements affecting building structures.

The extent of the impacts will be both negative and positive, with financial benefits flowing to accommodation owners from rentals, however negative impacts could stem from other elements discussed. The geographic extent will be local, the greatest impacts being felt in Krumovgrad and the magnitude moderate to low. The potential effects will be short term, potentially extending into the Operational Phase and infrequent in effect. The degree of confidence is high.

Operations phase

During the operations phase, because the Company has committed to 90% of the work force being employed from the LSA, it is considered that the need for accommodation will drop significantly as most of the workforce will be living in their own homes. The rentals and payment made to local businesses for housing of the workforce during the operations phase is considered economically beneficial to the LSA.

The direct and indirect employee migrant work force living among the community may cause intermittent disturbance through anti social behaviour to the community and in particular to vulnerable groups/individuals who may be at higher risk.

Again, there may arise real or perceived impacts from heavy vehicle movements and blasting affecting building structures.

The extent of the impacts will be both negative and positive as with the previous phase, with financial benefits flowing to accommodation owners, however negative impacts could stem from other elements discussed above. The geographic extent will be local and regional, the greatest impacts being felt in Krumovgrad and the magnitude will reduce to low, as there will be fewer migrant workers and opportunistic job seekers during this phase. The potential effects will be long term for the duration of the operations phase and infrequent in effect. The degree of confidence is high.

Closure Phase

For the closure phase, the nature of the impacts will be the same as for the preceding phases, although much less significant due to a major reduction of the workforce and activities.

The extent of the impacts will mainly be negative, with some financial benefits still flowing to accommodation owners. The geographic extent will be local, regional the greatest impacts being felt in Krumovgrad and the magnitude will reduce to low, negligible as there will be few migrant workers and opportunistic job seekers during this phase. The potential effects will be short term, within the 3 year period of the closure phase and infrequent in effect. The degree of confidence is high.

Valued Component Indicator: Education and Industry Training

Pre-Construction and Construction Phases

An increase in workforce numbers and potentially their dependents moving to the area, may cause a slight increase in school enrolment numbers. Nevertheless it is considered that existing schools will be able to meet an increase in demand and therefore the impact is negligible. People financially benefitting from the Project directly and indirectly may be in a better position to afford costs associated with schooling. This is considered a positive.

During the pre construction and construction phases, the Company will need to perform robust and extensive industry and work readiness training for employees for the construction phase as well as for potential employees in preparation for the capacity requirements of the operations phase (90% to be recruited from LSA and Kardzhali district). Sourcing semi skilled and non skilled workers from the LSA will be viable, however for the more technical positions, professional training needs to be invested in a timely manner to enable the Company to meet the target. If this target is not met, the more skilled positions will have to be sourced from the wider RSA, nationally and potentially internationally, therefore limiting the LSA benefits.

Investment in education and industry training is considered a positive impact through improving the human capital potential of the LSA and RSA. The Company has provided a training plan and in view of the track record at the Company's Chelopech mine , it is deemed likely that Company will be able to meet the targets. The geographic extent of the skill investment impact will be local, regional, district and national and international, but mostly local and regional if the Company can source 90% of the workforce from the LSA. The magnitude will be high positive if the Company successfully executes the training plan. The duration will be long term as investment in people's skills will last beyond the project life. The frequency will be infrequent and the confidence level high.

Operations Phase

School enrolment (as compared to the Construction phase) may drop as the Company becomes able to recruit more people from the LSA and not rely on candidates from the RSA and internationally. Impacts related to this are considered negligible. People financially benefitting from the Project directly and indirectly may be in a better position to afford costs associated with schooling. This is considered a positive.

Ongoing training of workers and potential employees will take place during the Operations phase. Industry training is considered a positive impact with long term benefits through improving the human capital of the LSA and RSA. Retrenchment planning will initiate during this phase and incorporate retraining benefits.

Investment in education and Industry training is considered a positive impact through improving the human capital potential of the LSA and RSA. The geographic extent of the skill investment impact will be local, regional, district, national and international, but mostly local and regional if the Company does source 90% of the workforce from the LSA. The

magnitude will be high positive if the Company is able to develop a training plan and successfully implement it. The duration will be long term as investment in people's skills will last beyond the project life. The frequency will be continuous and the confidence level high.

Closure Phase

Impacts related to education enrolment will be negligible with numbers returning to baseline conditions. As direct and indirect workers are made redundant, associated costs of education might not be met so easily.

Ongoing routine industry training of the much smaller closure workforce will be conducted. Former direct and indirect workers will be able to compete in the RSA and internationally for job opportunities with their industry training and work experience.

Investment in education and industry training will reduce and eventually stop during the closure phase, with training focusing more on retrenchment objectives, but educational investment is a positive direct impact. The geographic extent will be mainly local and regional, and may extend to the district, national and international level. The magnitude will be high positive. The duration will be long term as investment in people's skills will last beyond the project life. The frequency will be infrequent and the confidence level high.

Valued Component Indicator: Social services

Pre construction and construction phases

As direct and indirect employment opportunities will be made available this will contribute to the reduction in the numbers of unemployed people who are receiving social benefits in the LSA and RSA.

Some segments of the population deemed vulnerable such as elderly or unemployed people who are unable to adapt to the changes and are unable to access benefits that the project offers may be more disadvantaged and therefore require social service support.

The impact direction is both positive in view of unemployment levels reducing but potentially negative in terms of the project activities affecting vulnerable groups and individuals who are unable to adapt to change, locally and regionally in geographic extent. The magnitude of impacts is considered low, the duration short term, potentially extending into the Operations phase and infrequent in frequency. The confidence level is rated at moderate.

Operation Phase

As direct and indirect employment opportunities will be made available, but to a lesser (but longer term) extent than the Construction Phase, this will contribute to the reduction in the numbers of unemployed people who are receiving social benefits in the LSA and RSA.

Identified vulnerable groups and individuals such as elderly and unskilled who are unable to adapt to the changes may be more disadvantaged and therefore require social service support.

The impact direction is both positive in view of unemployment levels reducing and the permanency of the jobs offered during Operations phase but potentially negative in terms of the project activities negatively affecting vulnerable groups and individuals who are unable to adapt to change. The magnitude of impacts is considered low and the duration long term for the duration of the Operational Phase and potentially extending into the Closure phase and infrequent in frequency. The confidence level is rated at moderate.

Closure Phase

Without alternative employment opportunities in the LSA, as direct and indirect employment opportunities will be reduced, the registered unemployed will increase and so too those potentially receiving social benefits.

Identified vulnerable groups and individuals such as elderly and unskilled who are unable to adapt to the changes may be more disadvantaged and therefore require social service support.

The impact direction is negative as the work force will be made redundant and the numbers of vulnerable groups and individuals may increase within the LSA (local and regional). The magnitude of impacts is considered moderate and the duration long/short term depending on how quickly alternative employment can be found and infrequent in frequency. The confidence level is rated at moderate.

Valued Component Indicator: Protective Services (Fire Service and Police Service)

Pre construction, construction, Operation and Closure phases

With increased population and project activities in the area the fire services may be required to respond to more call outs to respond to incidents. As baseline data do not detail the capacity of the Fire service, it not known if the service will be able to respond to the type and frequency of potential incidents as a result of pre construction and construction activities.

The Police service may be required to respond to more incidents (road traffic accidents, antisocial behaviour) in view of an increase in workers and activities in the LSA. Again, as baseline data do not detail the capacity of the Police service it is not known if the service will be able to respond to the type and frequency of potential incidents as a result of pre construction and construction activities. As discussed earlier, the social cohesion of the LSA is reported to be robust and it is unlikely that incidents will affect the social fabric of the communities in the LSA.

As there is limited understanding of the capacity of the protective services in the LSA and wider district of Kardzhali, the report is unable to provide an impact rating.

Mitigation Measures and Residual Effects

The following resources are in place, as established by the Company to mitigate effects related to Community Services:

- Survey of rental accommodation, 2014
- Training and Development Plan database, 2014
- Community Health Safety and Security Management Plan, 2014 (AMEC Report A150-14-R2257)
- Emergency Response and Preparedness Plan, 2014 (AMEC Report A150-14-R2262)
- Social Investment Plan.

The key Objectives of the mitigation measures are as follows:

- Limit the extent of the impacts on community services and the community especially vulnerable groups, specifically in Krumovgrad;
- Meet good industry standards for workforce living conditions.

Valued Component Indicator: Housing

Pre-Construction and Construction Mitigation

The following mitigation measures will be implemented:

- Prepare an Accommodation Management Procedure which forms part of a Human Resources plan. Within such, develop a policy on the quality and management of accommodation and provision of basic services e.g. minimum space, supply of water, adequate sewage and rubbish disposal system, appropriate protection against heat, cold, damp, noise, fire, adequate sanitary and washing facilities, ventilation, cooking and storage facilities etc. in line with EBRD Performance Requirements. Assign an allocated member of staff to oversee housing of workforce and to provide ongoing monitoring including monitoring of housing conditions.
- Develop a code of conduct for workers, which details expectations of conduct in the work place as well as for workforce employees in rental accommodation. Indirect workforce (indirect employees) also required to sign code of conduct.
- Implement a policy of zero tolerance to illegal and antisocial activities for all direct and indirect employees.

- Establish an employee grievance mechanism, which enables workers to raise complaints without retribution. The Company will ensure that contracted workers also have access to a grievance mechanism.
- Provide education awareness raising on healthy lifestyles focusing on alcohol, personal and food hygiene, communicable diseases (including STDs, sexual and reproductive health) and non communicable diseases.
- Vulnerable mitigation plan detailed as discussed under previous mitigation.
- Implement grievance mechanism for the community as discussed under previous mitigation.

Operations Phase Mitigation

Monitoring of housing facilities and conditions.

The following mitigation measures will be implemented:

- Oversee effective implementation of code of conduct for workers, (direct and in direct), review code of conduct and adapt if necessary.
- Ensure that workers have continued access to Company grievance mechanism.
- On-going education awareness raising of work force on healthy lifestyles focusing on alcohol, personal and food hygiene, communicable diseases (including STDs, sexual and reproductive health) and non communicable diseases.
- Monitoring and updating of vulnerable mitigation plan.
- Ensure that communities have continued free access to grievance mechanism and are able to raise grievances without retribution.

Closure Phase Mitigation

The following mitigation measures will be implemented:

- Monitoring of workforce housing facilities and conditions.
- Oversee effective implementation of code of conduct for workers. Continued Company Policy of zero tolerance to illegal activities and antisocial behaviour for all direct and indirect employees will be implemented.
- Ensure that workers have continued free access to Company grievance mechanism.
- On-going education awareness raising of work force on healthy lifestyles focusing on alcohol, personal and food hygiene, communicable diseases (including STDs, sexual and reproductive health) and non communicable diseases (respiratory and mental health).
- Monitoring and updating of Vulnerable mitigation plan.

- Ensure that communities have continued free access to grievance mechanism and are able to raise grievances without retribution.

Post Mitigation Residual Significance: Impacts associated with community services – housing

Assuming that the above mitigation measures are implemented the anticipated residual impact is considered low negligible across the phases.

Valued component Indicator: Education and Industry Training

Pre construction and Construction Phases Mitigation

The following mitigation measures will be implemented:

- Monitor school enrolment to ensure that the demand does not outweigh the supply.
- Work with schools and other education facilities in the LSA and RSA to support industry learning.
- Implement a scholarship programme to encourage the study of subjects of relevance to the Project needs.
- Establish a fair and transparent recruitment policy as part of the human resources policy which is consistent with national law and good industry practice The project will further develop the training and development database plan and skill survey to align skill needs of the project and the skill gaps in the local community. Incorporate monitoring mechanisms with targets for employment of people from the LSA. Targets also established to ensure that women have equal access to training.
- Monitoring of training programme and training service providers. Ensure that training is gender sensitive.

Operation Phase Mitigation

The following mitigation measures will be implemented:

- Ongoing monitoring of school enrolment.
- Work with schools and other education facilities in the LSA and RSA to support industry learning.
- Scholarship programme to encourage the study of subjects of relevance to the Project needs.
- Ongoing implementation and review of the training and development plan to ensure that the needs of the project and the work readiness of the local community are aligned and on target to achieve the 90% employment of work force from LSA during the operations phase. Ensure that targets set to ensure that women have equal access to

training are being met and if not adjust measures to ensure that targets are being met effectively. Initiate retrenchment training planning.

- Ongoing monitoring of training programmes and training service providers, to ensure training is timely and effective. Ensure that training continues to be gender sensitive.

Closure Phase Mitigation

The following mitigation measures will be implemented:

- Ongoing monitoring of school enrolment.
- Work with schools and other education facilities in the LSA and RSA to support industry learning.
- Ongoing implementation and review of the training and development plan and ensure effective and appropriate training provided as part of retrenchment plans.

Post Mitigation Residual Significance: Impacts associated with community services – education and training services

Assuming that the above mitigation measures are implemented the anticipated residual impact is considered high (positive) with negligible risks across the phases.

Valued Component Indicator: Social Services

Pre construction and Construction Phases Mitigation

The following mitigation measures will be implemented:

- Liaising with Municipality monitor unemployment rates and those registered with the Municipality as vulnerable to assess if project activities are increasing the numbers of vulnerable individuals and evaluate if mitigation measures put in place by the Company for vulnerable groups and individuals are effective. Adjust as necessary.
- All Project recruitment and employment policies and procedures publicly disseminated throughout key locations in the project area including at the Municipality.

Operation Phase Mitigation

The following mitigation measures will be implemented:

- Liaising with the Municipality ongoing monitoring of unemployment rates, registered vulnerable individuals/groups. Adjust mitigation as necessary.
- Any updates in Project recruitment and employment policies and procedures publicly disseminated throughout key locations in the project area including at the Municipality.

Closure Phase Mitigation

The following mitigation measures will be implemented:

- Liaising with the Municipality, ongoing monitoring of unemployment rates and registered vulnerable individuals/groups. As this is closure phase, registered unemployment rates are likely to rise. Assistance provided to retrenched workforce to find alternative employment in the industry or elsewhere.

Post Mitigation Residual Significance: Impacts associated with community services – social services

Assuming that the above mitigation measures are implemented, the anticipated residual impact is considered low negligible over the Pre Construction and Construction phases and over the closure phase, Low (negative).

Valued Component Indicator: Protective Services

Pre construction and Construction Mitigation

The following mitigation measures will be implemented:

- In collaboration with the respective services, perform a needs assessment of the capacity of these services to ascertain level of capacity building and infrastructure needed to improve the services.
- Establish an Emergency Response Committee, which consists of company staff and others as deemed necessary. Develop response procedures based on different scenarios.
- Liaise with Municipality to monitor capacity vis a vis needs of the fire service. As deemed necessary, capacity build through training. Make available Project fire fighting resources to assist LSA needs as deemed necessary.
- The company community liaison unit will engage proactively with stakeholders to ensure that timely and accurate project information is available and disseminated through the Municipality, the various Mayor's offices as well as directly to stakeholders in hamlets.
- The Company will invest in social investment activities within the Municipality and in the region as discussed earlier.

Operations Phase Mitigation

The following mitigation measures will be implemented:

- Support Emergency Response Committee as necessary

- Make available Project fire fighting resources to assist LSA needs as deemed necessary
- Continued proactive Community liaison with stakeholders
- Ongoing monitoring of social investment activities as set out in the Community Development Plan.

Closure Phase Mitigation

The following mitigation measures will be implemented:

- Support Emergency Response Committee as necessary.
- Liaison directly with the Fire services and the Voluntary fire group.. Make available Project fire fighting resources to assist LSA needs as deemed necessary.
- The Company will monitor crime rates and potential anti social behaviour on mine property.
- Continued proactive Community liaison with stakeholders
- Ongoing implementation and monitoring of social investment activities.

Post Mitigation Residual Significance: Impacts associated with community services – Protective services

Assuming that the above mitigation measures are implemented the anticipated residual impact is considered low across the phases with negligible risks.

3.6 Valued Component: Infrastructure Services (Roads and Transportation, Utility Services, Recreation and Leisure)

3.6.1 VC Summary of Baseline

Roads

Baseline data indicate that road networks generally in Bulgaria remain in a poor state of repair and there has been little or no recent secondary road improvements in Kardzhali district and only 1% improvement in the primary road system in the district. Communities in the LSA are linked with paved roads, some of which are in poor condition. Access roads to some of the smaller hamlets in the LSA (and of relevance around the project site) are not paved at all such as Ladovo, chobanka 1 and 2, Taynike, Bitovo, Soyka, Kupel, Skalak. Baseline consultations indicate that buyers of livestock and dairy products were often reluctant to buy products in the LSA because of the poor road conditions. To access the project site from Krumovgrad, one of the existing road crosses a bridge over the Krumovitsa River. The bridge appears visually to be in a good state of repair. According

to the Socio economic household survey most households have vehicles. However road traffic is generally considered light in the LSA

Table 3-8 below). Despite low levels of traffic the number of accidents in 2013 in the LSA were recorded to be 14, of which 1 was a fatality. However at district level there were 141 accidents, 5 of which were fatalities (the total number of reported traffic accidents in Bulgaria was 7,015).

A Framework Traffic Management Plan (AMEC Report A150-14-R2244) has been detailed in 2014, that sets out the preferred route (as approved via the EIA 2010 and in consultation with the District Road Management Authority) for project traffic carrying supplies, materials for the Construction and Operation phases and for the transportation of the concentrate during the Operational Phase. The route follows the Road II-59 (Momchilgrad - Kremenets) - Road III-5902 (Kremenets - Tokachka) - Road III-509 (Tokachka – Krumovgrad). This route avoids Krumovgrad. Local access into the site via this preferred route has considered two options, both of which are served from Road III-509:

- Option B1 - A branch of Road III-509 just east of the Izgrev quarter of Krumovgrad, via an unnamed road which runs parallel with the River Krumovitza, through the Kaldzhik Gully to Ovchari village and then uphill to the Ada Tepe mine site:
- Option B2 leaves Road III-509 at Zvanarka village, along Road 5355, then to the Ada Tepe mine site via a dirt road.

The latter is considered the most viable HGV route as set out in the Traffic Management Plan.

Baseline Traffic Flows

Traffic count data, as presented in the Traffic Management Plan, were collected over a period of four days (from Friday 11/06/2010 to Monday 14/06/2010 inclusive) at three count locations near to the site:

- Count 1 located within the centre of Krumovgrad on Road III-59;
- Count 2 located east of the Izgrev quarter of Krumovgrad on Road III-509; and
- Count 3 located in Zvanarka village on Road III-509.

The traffic count survey results are presented in

Table 3-8 below, categorised into light vehicles (LV) (cars, vans, light goods vehicles) and heavy goods vehicles (HGV).

Table 3-8: Count Data Summary.

Count Point	Friday 8 am through 8 pm		Saturday 8 am through 8 pm		Saturday/ Sunday (night) 8 pm through 8 am		Monday 8 am through 8 pm	
	LV	HGV	LV	HGV	LV	HGV	LV	HGV
No1 Knyaz Boris I Street	1000	146	306	70	163	24	747	111
No2 Hristo Botev Street	988	123	190	38	118	12	721	77
No3 Krumovgrad- Tokachka Road	122	13	34	4	27	8	133	15

The count data represents the busiest traffic days of Krumovgrad municipality. Traditionally, Monday is a busy day for shopping, doing business and visits to institutions, whereas Friday has been, for 25 years the day on which Krumovgrad residents have community meetings. It is also a heavy traffic day from a religious point of view, as the local mosque holds Friday prayers. It is also the open market day where locals sell their farming produce.

As can be seen from the above, the highest flows are experienced at Count Location 1 on Friday between the hours of 8am and 8pm. Table 3-9 provides a breakdown of these flows over the 12 hour period.

Table 3-9: Count Data breakdown from Location 1.

Time	Friday: 8 am through 8 pm		
	LV	HGV	HGV %
8am – 9am	65	16	19.8%
9am – 10am	80	8	9.1%
10am – 11am	86	12	12.2%
11am – 12pm	85	12	12.4%
12pm – 1pm	78	12	13.3%
1pm – 2pm	65	9	12.2%
2pm – 3pm	81	10	11.0%
3pm – 4pm	78	9	10.3%
4pm – 5pm	80	11	12.1%
5pm – 6pm	102	24	19.1%
6pm – 7pm	112	23	17.0%
7pm – 8pm	88	8	8.0%
Total	1000	146	12.7%

As can be seen from the above, the existing level of traffic on the local highways is relatively modest with a peak weekday hourly flow of 112 vehicles (6pm to 7pm) and a corresponding HGV % of 17.0%.

Vehicle Fleet

The vehicles required at the mine site are listed in Table 3-10 below:

Table 3-10: Vehicle Fleet.

Vehicle Type	Vehicle Classification/Number
Vehicles that will need vehicle recovery	Drill rigs – 2 Excavators - 2 Dump trucks - 5 Bulldozers - 2 Grader - 1 IT utility vehicle - 1 Front loader – 1
Vehicles that will move under their own power	Water trucks - 3 Fuel truck - 1 Escorting vehicles - 4 Platform tow truck – 1

Sensitive locations located on access roads

Baseline studies have observed that there is a sensitive location on this road; Zvanarka Primary School, which is set back from the Road 11-59. Furthermore according to Baseline consultations, school buses run along this road twice in the morning and twice in the evening. Project related traffic will also flow from Krumovgrad, for example staff travelling to work and buses transporting workers. Krumovgrad is comparatively densely populated and a relatively busy town added to which the road passes Krumovgrad hospital which is located next to the road at Izgrev on the outskirts of Krumovgrad, which is considered a sensitive location (refer to Appendix B).

Utilities services (water and sewerage, electricity, telecommunications, energy, waste)

Water and Sewerage

Access to piped water in the hamlets surrounding the proposed development is limited with most households sourcing their water from wells and springs, however Krumovgrad town has good access to a safe and secure centralised supply. The supply of water is reported to be reliable but some households state their wells dry up during the warmer summer months, when this happens they use alternative wells and springs. Baseline data indicate 76% of respondents in the socio economic household survey believe that the quality of the water is satisfactory.

Sewerage systems in the LSA, according to baseline data, are considered limited or non-existent. The socio economic household survey indicates that of the sample surveyed, 36% of households use a centralised sewerage system, 43% use septic tanks and 19% discharge waste water directly in to the land or nearby river. The latter is carried out predominantly by the villages of Skalak and Zvanarka. The baseline further indicates that the biggest risk to water quality is the underdeveloped sewerage system in the LSA.

Electricity

Baseline data indicate that the electricity grid in the LSA is well developed and provides a reliable and safe flow of electricity.

Telecommunications

Baseline data indicate that there is good coverage of telephone networks and the entire LSA has the capability of accessing internet through mobile devices. However the socio economic household survey shows that 61% of the sample does not access the internet, possibly due to demographics and costs.

Energy

In the LSA the main source of energy used for heating is wood f with a small minority who use gas and electricity. Gas (supplied in canisters) is generally used for cooking purposes.

Household waste

In the LSA, domestic waste is predominantly collected by the municipality and disposed of at a temporary landfill site in Vishegrad, which is a village in the Municipality of Kardzhali. The baseline details that the site has no system to regulate the amount and type of waste being dumped at the site.

Recreation and leisure

Baseline data indicate that there is minimal recreational infrastructure in the Municipality. The town has a public park, sports ground, restaurants and cafes however there is no cinema or theatre. There are a number of cultural centres and cultural dance classes. Recreation and leisure activities are not performed extensively and baseline consultations found that few people had the financial means and time to do so.

3.6.1.1. Effects Assessment (During Pre-construction, Construction, Operations and Closure) Infrastructure Services (Roads and Transportation; Utility Services; Recreation and Leisure)

Table 3-11: Infrastructure Services Effects Assessment

Summary	Pre construction/ Construction	Operation	Closure
Project Activity	Increased traffic volumes and impact to road and transportation, increased pressure on utility services and recreational infrastructure.	Increased traffic volumes and impact to road and transportation, increased pressure on utility services and recreational infrastructure.	Increased traffic volumes and impact to road and transportation, increased pressure on utility services and recreational infrastructure.
Impact type	Direct and indirect	Direct and indirect	Direct and indirect
Stakeholders	Local, regional and district	Local, regional and district	Local, regional and district

Valued Component Indicator: Roads and Transportation

Pre-Construction and Construction Phase

During the construction phase of the Project there will be a need to transfer 14 vehicles to the site via a mix of low-loader and escorted abnormal load vehicles. Further heavy traffic will transport construction related goods, however at time of writing, contractors have not been identified. Workers will be collected from LSA hamlets and transported to the mine site by bus and there will be 1 or 2 bus trips to service the 3 daily shifts. There will be a

number of private vehicles going to the mine site but it is unlikely that the shift patterns will coincide with peak traffic flow periods on the local highway network.

Compared to baseline conditions there will be an increase in traffic travelling in the LSA and the RSA. Villages particularly impacted by vehicle movements along the haul road are; Skalak (including the hamlets of Podeba, Belagush, Skalak and Koprivnik), Kaklista (including the hamlet of Shtarbina Kokoshar), Ovchari (including the hamlets of Taynik, Bitovo, Soyka, Varhushka, Konsko, Chobanka 1, Chobanka 2, Synap), Zvanarka (including the hamlets of Lozino 1, Lozino 2, Lozino 3). Communities impacted along the transport route will include Zvanarka, Tokachka and Momchilgrad.

The increased road traffic movements will be insufficient to cause road congestion but there will be an increased risk of road traffic accidents and collisions between Project vehicles and local vehicles, pedestrians, cyclists and livestock. However accidents may also result in secondary impacts e.g. explosions, fire, oil spills, damage to or blockage of infrastructure networks. Project workforce visiting local communities are also likely to be at risk from traffic related impacts, especially collisions between vehicles and pedestrians. Baseline consultations found that there was particular concern in Izgrev about safety of the community in relation to road traffic movements, as children with little/no traffic awareness freely play in the community near the roads and there are few pedestrian walkways lining the roads in built up areas. Furthermore buses transporting school children travel frequently in the morning and afternoons during the weekdays to Zvanarka Primary School.

Increased traffic volumes will impact negatively on the road quality. However some road upgrades are intended along the access road Zvanarka – Podeba;. This has the potential to improve accessibility of hamlets.

Cattle and sheep roam freely between grazing areas often unaccompanied, especially along the potential haul road amongst the hamlets of Skalak. This potentially could cause additional hazards to project and community vehicle movements.

Noise, dust and vibration²⁸ caused by vehicular movements will cause disturbance to dwellings located next to roads.

The impact on the communities and the roads during the construction phase will be negative and direct as the impact pertains to the Project's transport activities. The geographic extent of the Project will extend nationally but it will be predominantly local and regional. The magnitude will be moderate. The duration of the impact will be continuous over the construction period and extending to the subsequent operational and closure phases of the mine. The level of confidence high.

²⁸ Within accepted limits as set out in approved EIA, 2010

Operations Phase

During the construction phase of the Project, gold/silver concentrate haulage, and haulage of supplies and materials will generate approximately 920 trips per annum. Vehicle types will vary in weight between 3.5 and 20 tonnes. They are listed in Table 3-12 below, with a monthly and annual breakdown for each material type:

Table 3-12: Off-Site Heavy Vehicle Traffic

Materials	Anticipated number of vehicles for a period of 330 days	
	Monthly	Yearly
Concentrate – 10,000 tpa 20 tonne truck	40	500
Reagents and consumables:	10	120
Fuels – 150,000 l/annum. (tank trucks, 500 l)	25	300
TOTAL	75	920

Based on a 28 day month it is anticipated that the Project will generate approximately 3 additional HGVs per day²⁹. In addition, workers will be collected from LSA hamlets and transported to the mine site by bus with one or two bus trips to service the 3 daily 8 hour shifts. There will be a number of private vehicles going to the mine site but it is unlikely that the shift patterns will coincide with peak traffic flow periods on the local highway network.

The impacts described for the construction phase apply to the operations phase.

The impact on the communities and the road infrastructure during operational phase will be negative and direct as the impact pertains to the Project's transport activities. The geographic extent of the Project will extend nationally depending on the end destination of the concentrate options. The magnitude of the impact will be moderate, as road users become accustomed to the heavy haul traffic. The duration of the impact will be continuous over the Operational phase and extending in to the Closure Phase, to a lesser extent. The confidence level is Moderate.

Closure Phase

The nature of traffic impacts will be very similar to those described for the construction and operational phase but with comparatively small traffic volumes involved, commensurate with the fall in activity on the site.

²⁹ The Framework Transport Management Plan will be revised before commencement of each construction, operation, closure and rehabilitation phase on the basis of identified contractors and haulage equipment (for materials and waste).

The impact will be negative and direct. The geographic extent will be national depending on the location of the future closure waste management facilities. The magnitude of the impact will be low by virtue of the activities. The duration of the impact will be short term during the Closure Phase and the duration will change from continuous to infrequent. The confidence level is Moderate.

Valued component Indicator: Utilities services (water and sewerage, electricity, telecommunications, energy, waste)

Pre construction and Construction Phases

Water and Sewerage

Increase in population of migrant workers and opportunistic job seekers to the LSA and in particular Krumovgrad Town will add pressure to the sewerage system, which is functioning at a low level.

The demand for water will also increase with a population influx to the LSA and specifically Krumovgrad Town. Based on baseline data, it is considered that the supply will be able to cope with any increases in demand.

Electricity

The capacity of the electrical grid is considered able to respond to an increase in demand, with a potential increase in population size and the supply needs for the Project.

Telecommunications

The provision of telecommunications infrastructure has the capacity to respond to an increase in demand. The Company will be installing fibre optic cables to the project site, which is considered beneficial for the hamlets within the LSA enabling them to have better access to internet and the Company has committed to providing free internet to 'down town' Krumovgrad. Impacts on telecommunication infrastructure are considered negligible.

Household waste

Project domestic waste will be separated (glass, paper, plastic and metal) and disposed of using contract delivery to companies who have permits for waste management and recycling (refer to EIA 2010).

With an increase in population in the LSA there will be an increase in domestic waste putting pressure on municipality domestic waste collection and the designated tip which has no monitoring measures currently in place.

The impact on the utilities services during pre construction and construction phases will be negative and indirect in relation to sewerage and household waste as baseline data indicate the services are operating at a low level. With regard to water supply, telecommunications and electricity, the impact is considered negligible as the baseline data indicates that service provision has spare capacity. The geographic extent of the negative impacts will be local and regional, limited to the LSA. The magnitude without mitigation is considered moderate. The duration of the associated impacts will be short term but to an extent extending to the Operational Phase and continuous in frequency for the period of the construction phase when it is likely that there will be a population increase. The confidence level is poor.

Operation Phase

Water and Sewerage

The size of the population in LSA will level out during the Operations Phase however there will be a slight increase in the population size compared to the baseline conditions which will contribute to increased sewage in a system which is already malfunctioning.

Likewise the demand for the water supply will drop compared to pre construction and construction phases as the population levels out. Based on baseline data, it is considered that the supply will be able to cope with any increases in demand.

Electricity

The size of the population in LSA will decrease in comparison to the Construction Phase. The capacity of the LSA electricity grid is considered sufficient to supply the electricity needs of the Project.

Telecommunications

Impacts on telecommunication infrastructure are considered negligible.

Household waste

The size of the population in LSA will drop during the Operations Phases however even with a slight increase in population compared to baseline conditions, an increase in domestic waste will put pressure on municipality domestic waste collection and the designated tip which has no monitoring measures currently in place.

Without mitigation, the impact on the utilities services during the operational phases will be negative and indirect in relation to sewerage and household waste as baseline data indicate the services are operating at a low level. With regard to the water, telecommunications and electricity utilities, the impact is considered negligible as the baseline data indicates spare capacity. The impacts will be felt locally and regionally, limited to the LSA. The magnitude without mitigation will drop to Low as it is predicted that

the population size will level out as the work force decreases. The duration of the associated impacts will be long term and continuous in frequency for the duration of the Operational Phase, but extending in to the Closure Phase. The confidence level is poor.

Closure Phase

The pressure on the Municipality utilities services (sewerage system and municipal waste collection and disposal, demand for water and electricity) will decrease during closure as the project closes down and the population returns to baseline conditions.

Without mitigation, the impact on the utilities services during the closure phase will be negative and indirect in relation to sewerage and household waste as baseline data indicate the services are operating at a low level. As before, with regards to the water, telecommunications and electricity utilities the impact is considered negligible. The impacts will be felt locally and regionally, limited to the LSA. The magnitude without mitigation will remain Low as the population size will level out and return to baseline conditions. The duration of the associated impacts will be short term and continuous in frequency for the duration of the closure phase. The confidence level is poor.

Valued Component Indicator: Recreational and Leisure Services

Pre Construction and Construction Phases

Impacts to hunting and hiking activities are discussed under the land take.

With an increase in LSA population, there will be an increase demand for recreation such as sporting, cultural and leisure activities. Baseline conditions illustrate that there is little recreational infrastructure because there is a low demand.

The impact on recreational activities during the pre construction and construction phases will be positive and indirect as an increase in demand for recreational activities will be beneficial for the quality of life of individuals and beneficial economically. The impact will be felt within the LSA - locally and regionally. The magnitude will be Low. The duration of the associated impacts will be short term but extending to the Operational Phase and infrequent in effect. The confidence level is high.

Operations Phase

Impacts to hunting and hiking activities are discussed under the land take.

The population will level out however there will be more people with a disposable income due to employment and therefore there may be an increase in demand for recreational activities such as sports facilities and cultural activities.

The impact on recreational activities during the operational phases will be positive and indirect as the demand levels out and with the local workforce having a disposable income

to spend on recreational activities. The impact will be felt within the LSA - locally and regionally. The magnitude will be Low. The duration of the associated impacts will be long term for the duration of the Operational Phase and infrequent in effect. The confidence level is high.

Closure Phase

As the Project site is closed and the land restored there is potential for rehabilitation to incorporate recreational features, for example, hunting and hiking activities restored upon Project closure.

As the workforce is made redundant, households may potentially no longer have an income that allows spending on leisure activities.

The impact on recreational activities during the closure phases will be neutral. As the work force is reduced and their income stopped, demand will drop altogether. However with the rehabilitation of the site, other potential recreational opportunities could be created. The impact will be local and regional. The magnitude will be Low. The duration of the associated impacts will be short term for the duration of the closure phase and infrequent in effect. The confidence level is high.

Mitigation Measures and Residual Effects

The following measures have been established by the Company to mitigate measures related to the VC:

- Framework Traffic Management Plan, 2014 (AMEC Report A150-14-R2244)
- Emergency Response and Preparedness Plan, 2014 (AMEC Report A150-14-R2262)
- Training and Development Plan database, 2013
- Community Health Safety and Security Management Plan, 2014 (AMEC Report A150-14-R2257).

The key objectives of the mitigation are to:

- Limit the extent of the impact on local infrastructure services in the LSA;
- Meet the bulk infrastructure requirements for the Project and workers for all phases of the project;
- Limit the impact on road quality as well as to decrease the impact on road users;
- Enhance the sustainability of the affected communities beyond closure; and
- Encourage and support the Municipality in improving the levels of service infrastructure in the LSA.

It is important to emphasize that the Project, while meeting its own infrastructure and service requirements, should not take on the Municipality's responsibility to develop local

infrastructure. Instead the Company will form partnerships with the Municipality and other relevant stakeholders to support infrastructure improvements and services.

Valued Component Indicator: Roads and Transportation

Pre-Construction, Construction, Operation and Closure Mitigations

The following mitigations are applicable for all project phases:

- The Framework Traffic Management Plan (2014) (AMEC Report A150-14-R2244) will be updated, implemented and monitored. In particular appropriate signage erected in the LSA as well as at identified sensitive locations e.g. Zvanarka primary school, Krumovgrad hospital and at designated cattle crossings as well as in built up areas throughout the LSA and RSA;
- Install a more robust playground fence around the Zvanarka Primary School;
- All vehicles regularly checked and maintained;
- All drivers will be sensitised about potential accident risks to local users, undergo ongoing driver safety training and periodically checked for alcohol consumption;
- The Company and the appointed contractors will develop an induction programme, including a code of conduct, for all workers directly related to the project (as discussed previously). The code of conduct must address the following with regards to road traffic management
 - Respect for local residents;
 - Compliance with the Traffic Management Plan;
 - Describe disciplinary measures for infringement of the Code and Company rules;
 - Workers found in contravention of the Code of Conduct, face disciplinary procedures that could result in dismissal.
- Road upgrades to include pull outs along single lane roads to enable traffic to pass safely. Liaise with Municipality and the national roads infrastructure agency on monitoring infrastructure quality, infrastructure improvements and cost associations;
- In consultation with the municipality and stakeholders, for safety and security the viability will be assessed of erecting a stock proof fence on either side of the haul road from the junction of Zvanarka to Podeba;
- Bussing of workforce direct and indirect employees to reduce traffic on mine access routes. Heavy loads will be planned to minimize peak flow traffic and school bus times. Movement of heavy vehicles through or close to residential areas in Krumovgrad and built up areas will be avoided or minimised to reduce potential impact on local residents, specifically those deemed vulnerable;
- Emergency response preparedness in the event of accidents and spills of hazardous materials;

- Road safety awareness training of community either through the Company Community Liaison Unit or through a local NGO targeting vulnerable groups such as children (in schools particularly at Zvanarka Primary School) using context relevant multimedia such as role play/theatre, radio etc.;
- Engagement with communities, via Community Liaison Unit and formal grievance mechanism implemented. Raise awareness amongst livestock owners of the potential fatal hazards of animals roaming freely along roads;
- Implementation of mitigations in relation to dust suppression on mine site access road as set out in EIA 2010;
- Directly affected residents of hamlets and villages in the LSA and RSA targeted for employment opportunities and other initiatives, as part of a Community Development Mitigation Plan.

Post Mitigation Residual Significance: Impacts associated with roads and transportation

The residual impact on roads and transportation during construction and Operations with mitigation is considered low. During closure phase this rating will reduce to low negligible risks.

Valued Component Indicator: Utilities

Pre construction, Construction, Operations Mitigation

The following mitigation measures are proposed:

- The Company will liaise with the Municipality to ensure that utilities (water and sewerage, domestic waste disposal) are not overburdened and as necessary provide support in partnership with the Municipality.
- Ongoing monitoring of Contract companies engaged with the Project who have permits for waste management and recycling to ensure that waste is disposed of appropriately.
- The Company investigates the feasibility of reducing its power demand through renewable energy off sets.

Closure Mitigation

Mitigation will comprise the provision of training to Municipality staff (preferably starting in Operations phase) so that there is a clear understanding of the mandate post closure.

Post Mitigation Residual Significance: Impacts associated with utilities infrastructure

The residual impact related to use of utilities during the pre construction, construction, operation and closure phase is considered low, understanding that mitigation measures are put in place adequately.

Valued Component Indicator: Recreation and leisure Services

Pre Construction, Construction, Operations Mitigation

The following mitigation measures are proposed:

- Target recreational capital such as sports facilities, sports teams, sports events, local cultural folk groups (singing and dancing) within the LSA for social investment (as part of a Community Development Plan) ensuring that social investment initiatives are targeted and avoid 'in kind' one off payments.
- Consider establishing a gym for project employees and their families.
- As discussed earlier, under land use, coordinating with the Municipality over a tourist lodge and bungalows for the use of the community and school children.

Closure Phase Mitigation

Mitigation will comprise liaison with stakeholders consider rehabilitating part of the project footprint as a recreational area for the community.

Post Mitigation Residual Significance: Impacts associated with recreational and leisure services

The residual impacts related to recreation infrastructure across the phases are low negligible.

3.7 Valued Component: Health (Health Services, Worker and Community Health)

3.7.1 VC Summary of Baseline

The Bulgarian health system is state run, but there are also private health institutions. The National Health Insurance Fund finances hospitals, clinics and other health care facilities based on obligatory individual monthly contributions via taxation, however medical facilities in Bulgaria are known to be under financed and functioning at a basic level. In rural regions, baseline data indicate that municipal hospitals are ill-equipped and understaffed. There is also a separate network of emergency medical care centres for ambulance services, coordinating with the 112 emergency number and dispatching

qualified emergency care teams. 28 such centres exist in the 28 district centres, including Kardzhali district. There is little medical airlifting capability.

The district centre in Kardzhali has two general hospitals, which together have a capacity of 400 beds. In addition there is a state psychiatric hospital. Krumovgrad hospital has 60 beds and the care covers internal medicine, paediatrics, obstetrics and gynaecology, however there is no surgery department, no mental health care facility and limited emergency response capability. Baseline consultations found that the hospital facilities are functioning below average and some people choose to use facilities in Kardzhali and even Sofia. In addition to the hospital in Krumovgrad municipality, there are a number of general practitioner practices and dental practices.

The health profile of the LSA indicates that the rural population is less healthy than the urban population of Krumovgrad. However the baseline shows that generally the status of health in the LSA is good with only 16% of the socio economic household survey sample experiencing a serious health issue in the last two years. This was corroborated in the baseline consultations with stakeholders stating that there were no serious health issues experienced and it was generally reported that the quality of water and air in the LSA was good. The commonest recorded health issues over the last two years were reported to be high blood pressure, followed by influenza and cardio vascular disease. There were found to be few statistics on diseases, such as HIV/AIDS and STDs. This was corroborated by Krumovgrad hospital administrators. However NSI data indicate that in 2013 there were 10 reported cases of syphilis in Kardzhali district and data indicate that Bulgaria's infection rate is amongst the lowest in the world. This could be attributed to the limited testing capability of hospitals, which was evident during baseline consultations.

3.7.1.1. Effects Assessment (During pre-construction, construction, Operations and Closure) Health Services, Worker and Human Health

Table 3-13: Health Effects Assessment

Summary	Pre construction/ Construction	Operation	Closure
Project Activity/indicator	Pressure on health services Project activities & in-migrants resulting in an increase in health impacts	Pressure on health services Project activities & in-migrants resulting in an increase in health impacts	Pressure on health services Project activities & in-migrants resulting in an increase in health impacts
Impact type	Indirect	Indirect	Indirect
Stakeholders	Mine workers, in-migrants, local communities, medical workers	Mine workers, in-migrants, local communities, medical workers	Mine workers, in-migrants, local communities, medical workers

The Company will provide on-site immediate first aid, however Krumovgrad hospital will be used for all medical care. As discussed earlier, the Project will result in an increase in

population in the LSA which, potentially could increase the risk of communicable diseases and health disorders (including an increase in social ills). Project activities could increase the risk of non communicable diseases and injuries related to road traffic accidents and other project related accidents. The treatment required would lead to further pressure on an already strained system.

Valued Component Indicator: Health Services

Construction Phase

The in-migration of direct and indirect workers (migrant workers and opportunistic job seekers) and worker health issues would increase the potential pressure on the health care facilities of Krumovgrad hospital, which is functioning at a very low capacity.

The impact associated with additional pressure on Krumovgrad hospital infrastructure will be negative as it relates to project activities and workers. At the time of writing it was understood that the Company would provide funding to the hospital to assist in alleviating the pressure on the health infrastructure. However without mitigation the magnitude is considered high as the hospital is functioning at such a low level with little equipment and is understaffed, added to which there are no other medical care alternatives close by. The geographic extent of the impact is regional with the potential to extend to the district level when Krumovgrad hospital is unable to cope with the type of illness or injury and Kardzhali hospital is used. The duration of the impact is short term but will extend beyond the Construction Phase and into the Operational and Closure Phases. The frequency of the impact will be continuous. The confidence level is moderate.

Operations Phase

During Operations there would be a decrease in the population size, therefore there would be less pressure on the health care facility of Krumovgrad hospital. However project activities will still require the medical support of Krumovgrad hospital with worker health issues and in the event of unplanned circumstances.

Without mitigation, the impact on health infrastructure will be negative and the geographic extent will be local and regional, although it is considered that by the operations phase, Company investment in the medical facilities will have established a medical care facility which will better cope with the type and frequency of medical needs. However without mitigation the magnitude is considered moderate. The duration of the impact is long term and will extend into the Closure Phase. The frequency of the impact will be continuous. The confidence level is moderate.

Closure Phase

During the closure period the local community would have grown accustomed to a certain level of service, which would only have been attainable through the Company's

assistance. It is likely that without the assistance provided by the Company the quality of health infrastructure could deteriorate over time.

The impact on health infrastructure will be negative and the geographic extent will be local, regional and possibly district level. The magnitude is considered moderate. The duration of the impact is short /long term and the frequency continuous depending on how long it takes the hospital and the Municipality to adjust to the change of the closure and the withdrawal of funding. The confidence level is moderate. It is important to mention that the sensitivity of stakeholders, notably the municipality will be high. This will be due to the dependency on the Company support to the local hospital.

Mitigation Measures and Residual Effects

The following measures have been put in place by the Company to mitigate potential impacts associated with this VC's indicator:

- The company has committed to renovation of the Krumovgrad hospital building.
- The key objectives for mitigation measures are as follows;
 - Limit the extent of impact on Krumovgrad hospital.
 - Enhance sustainability of the hospital facilities beyond closure;
 - Encourage and support the Government and Municipality in improving the medical infrastructure and services.

Pre-Construction, Construction and Operations Mitigation

Mitigation will comprise the provision of the following:

- Provide financial assistance to Krumovgrad hospital to improve the service provision, equipment and infrastructure in the state facilities. If workers require further specialist attention they will be transported to an appropriate hospital nationally.
- Provide an ambulance facility for the Project, which will be based on-site.
- Liaise with Krumovgrad Hospital and the National Health Authority of Bulgaria to proactively identify future health capacity needs in local communities and worker health issues.
- Establish medevac procedures in the event of a medical emergency.

Closure Mitigation

Mitigation will comprise the provision of the following:

- Liaison with Krumovgrad Hospital and the Municipality to prepare for the cessation of funding from the Project.

- Assist in seeking funding from other sources, if necessary, to enable the hospital to continue providing the same level of service as during Construction and Operation phases once the mine has closed.

Post Mitigation Residual Significance: Impacts associated with health services

The residual impact significance post mitigation during the pre construction/construction and operational phases will be low. During closure the residual impact will be low.

Valued Component Indicator: Worker and Community Health

There are three key potential health impacts during the project life:

- Communicable disease (including bird flu, parasitic worms and sexually transmitted infections such as HIV/AIDS)
- Non-communicable disease (in particular cardiovascular and respiratory disease) and nutritional disorders
- Physical injury in local communities as well as Project workers (including short and long term disability).

Communicable Diseases

An increase in communicable disease such as HIV/AIDS and STDs amongst local residents could occur. This could be from potential socio-economic factors such as an increase in migrants coming to and living in Krumovgrad with undetected or latent diseases, living conditions, poor food hygiene as well as social ills all of which make people pre-disposed to the spread of communicable diseases. The rates of infection in the LSA and RSA of HIV and STDs are uncertain and insufficient evidence during baseline consultations was found to support that commercial sex workers exist in the community. What is certain is that influx of transient migrant workers can increase the risk of infection and prevalence of HIV/AIDS and STDs. Other diseases that could increase in this way are diarrhoea and flu.

Non Communicable Diseases and nutritional disorders

An increase in non-communicable diseases in local communities as well as Project workers could occur. A *potential* factor in this could be emissions to water and soils from the Project and associated transportation activities. Nutritional disorders of project workers or community individuals could also occur.

Physical Injury, Safety and Security

Physical injury to Project workers could occur in the course of work through unplanned hazards such as equipment failure or chemical /waste spills and specific threats to women.

Furthermore, potential for road traffic injuries and deaths due to Project related road traffic and Project workers living in the local town could also lead to worker or community member harm.

Security guards (unarmed) working on site or undertaking roles on behalf of the Company off-site, create an inherent risk that abuse or human rights infringements may occur.

Pre Construction and Construction Phase

With an immediate increase in population size during the construction phase, there is a higher risk of communicable diseases being spread. During this phase the job seekers who migrate to the area are most likely to settle in Krumovgrad and therefore the town is at greater risk. Added to which there is a chance of physical injury occurring through road traffic accidents involving project related vehicles or work related hazards affecting workers and or community. The likelihood of nutritional disorders is low but cannot be ruled out.

These impacts are considered negative and the geographic extent of the impacts is local and regional, limited to the study area as it relates to the impact on the community of Krumovgrad. The duration of the impact will be short term, limited to the construction period while the influx will be at its highest point and the frequency will be infrequent in pattern. The magnitude of the impact is high and the confidence level moderate, however the confidence level would increase to high or possibly decrease to low if more disease profile data was made available by the health authority.

Operation Phase

The Project will be in full operation and the population size will level out to near baseline conditions as redundant construction workers leave in search of other opportunities.

With a decrease in population size, the risk of communicable disease being spread will reduce, however the risk of non-communicable diseases occurring through air emissions and soil and groundwater contamination from the Project activities will arise. So too, the chance of physical injury occurring through road traffic accidents involving project related vehicles or work related hazards affecting workers and or community.

The impacts are considered negative and the extent of the impact will be local, regional and district level as the concentrate is transported to Momchilgrad. The duration of the impact is long term and on-going for the duration of the operations. The magnitude of the impact will remain high despite the potential improvements in standards of living and the levels of education such as road safety awareness sensitisation of the local community because of the nature of the Operations at this phase in the Project life. However some groups and individuals in the community will continue to be disproportionately vulnerable such as the elderly, women and the youth. The frequency of the impact will be infrequent. The confidence level would increase to high as the Company and regional health authorities work together to understand disease profiles better.

Closure Phase

Risks associated with non communicable diseases arising through the unlikely event of potential air emissions and soil and groundwater contamination is expected to diminish, so too the risk of the spread of communicable diseases during the closure phases as the population returns to baseline conditions. There is a risk of physical injury due to project activities of the decommissioning phase.

The impacts during closure phase are considered negative. The extent of the impacts will be local and regional. The magnitude will reduce to moderate, by virtue of the activities. The duration will be short term and infrequent in frequency. The confidence level will be moderate.

Mitigation Measures and Residual Effects

The following measures have been put in place by the Company to mitigate potential impacts associated with this VC's indicators:

- The company has committed to renovation of the Krumovgrad hospital building.
- The company has implemented a water, air and soil testing programme and have established a baseline profile across the three receptors
- The Company has established the following resources:
 - Framework Traffic Management Plan, 2014 (AMEC Report A150-14-R2244)
 - Emergency Response and Preparedness Plan, 2014 (AMEC Report A150-14-R2262)
 - Community Health, Safety and Security Management Plan, 2014 (AMEC Report A150-14-R2257)
 - Stakeholder Engagement Plan, 2014 (SEP Krumovgrad Gold Project, DPMK)
 - Community Development Plan.

The objectives for mitigation are as follows:

- Minimise the transmission of diseases through effective control measures and to reduce the impact of diseases on the health of Project related workers and local communities to the lowest possible degree;
- Minimise the risk of accidents occurring in the workplace and in the local communities and protecting the workforce and the community, in particular those who are deemed more vulnerable from the effects of such an impact;
- Provision of access to safe water, food (soil and nutrition) and air;
- Ensure that human rights abuses do not take place and Security Guards are adequately trained.

General mitigation

Communicable diseases

The following mitigation measures are proposed:

- Support the local health authority in their awareness raising campaigns related to communicable diseases including HIV/AIDs and STDs;
- Understand worker health issues through regular meetings with Krumovgrad Hospital and potentially through the joint and routine collection and sharing of anonymous health care usage data between Krumovgrad Hospital and the Project's occupational health team and worker representatives. This is likely to give a better understanding of the current and future health and social care needs;
- Survey and engage in dialogue with workers to better understand how big an issue unprotected sexual activity is. This should be linked in with Krumovgrad hospital to develop anonymous statistics to better track STDs amongst Project workers. This may require funding specialist sexual health support based at Krumovgrad hospital;
- Implement Grievance mechanism community;
- Vulnerable groups mitigation plan developed and implemented.

Non Communicable diseases

The following mitigation measures are proposed:

- Request joining Emergency Response Committee within the Municipality;
- A clear procedure and protocol for emergency, prevention, preparedness and response arrangements specifically including the procedure to notify the community, roles and responsibilities for key authorities within the communities and the Municipality established;
- Familiarisation and implementation of Emergency Response and Preparedness Plan (2014) (AMEC Report A150-14-R2262);
- Include education, awareness raising on healthy lifestyles focusing on alcohol, personal and food hygiene, nutrition, communicable disease (including STDs, sexual and reproductive health) and non-communicable disease. Monitoring of non local worker rented housing conditions;
- Implement measures set out in the EIA (2010) to mitigate potential impacts to the quality of water, air and soil including ongoing monitoring of receptors and publicising results with community.

Physical Injury, Safety and Security

The following mitigation measures are proposed:

- Establish health and safety protocol and measures in line with good industry practice to prevent accidents and injury arising from, or associated with, or occurring in the course of work. Identify potential hazards to workers, particularly those that are life threatening; provide preventative and protective measures including modification, substitution or elimination of work place hazardous conditions; provide on-going health and safety training of workers; discreet documentation and reporting of occupational accidents, diseases, and accidents.
- The Company will contract an Occupational Health Service provider to monitor the ambient factors of work and their impact on the employees' health. Also development of an occupational health and safety plan.
- A Code of Conduct is developed (as discussed under previous mitigation) and signed by all employees including Contractors.
- A Corporate Human Rights Policy to be developed to ensure that workers and community (where appropriate) rights are not infringed in any aspect of the Company's operations. An annual review process established to ensure Human Rights procedures remain up-to-date and practice is in line with policy developed.
- Undertake regular maintenance and inspection of vehicles as well as driver safety training and ensure strict enforcement of speed limits including phone hotline for residents in local communities to report unsafe driving.
- Include road safety training (employees and for targeted groups in communities e.g. school children) and refresher courses.
- Ensure project related motor vehicles use low emission fuels.
- Reduce levels of commuter traffic through car-pooling.
- All security guards working on site or undertaking roles for the Company either on or off-site will be subject to adequate training by the Company to ensure they operate in an appropriate manner in line with the employee code of conduct and respect of human rights.
- Worker grievance mechanism established to raise workplace concerns. The client will inform the workers of the grievance mechanism at the time of recruitment and make it easily accessible.
- Implementation of community grievance mechanism as discussed earlier.

Pre-Construction and Construction Mitigations

The company will support the local health authority in their awareness raising campaigns related to communicable diseases including HIV/AIDS and STDs.

Operations Mitigation

The following mitigation measures are proposed:

- In the absence of a municipal awareness programme for HIV/ AIDs, the company will make provision for their employees.
- Ensure that air emissions and odours are reduced as low as reasonably possible within the Project through the use of low emission machinery and vehicles and filters/scrubbers.
- Ensure proper management including training of the personal which is dealing with waste.

It is understood that contracts will be awarded for waste disposal transportation. It is recommended:

- Waste disposal lorries, particularly those carrying hazardous waste will not go through Krumovgrad. Lorries should take the longer route that bypasses settlements as much as possible.
- Waste lorries will be inspected before they leave the mine site to ensure containment measures are not compromised. Post Mitigation Residual Significance: Impacts associated with worker and community health

The residual impact expected, understanding that mitigation measures will be implemented, will be low during the construction and operation phase and reducing to low/negligible for the closure phase.

3.8 Valued Component: Culture (Cultural Heritage and Archaeological resources, and cultural values)

3.8.1 VC Summary of Baseline

In terms of archaeological heritage, Bulgaria is considered to be one of the richest countries in Europe, frequently compared to Italy and Greece. It is recorded that prehistoric cultures began developing on Bulgarian lands during the Neolithic period. Its ancient history has seen the presence of the Thracians and later the Greeks and Romans.

In addition to the material historic and cultural heritage, Bulgaria also boasts a significant intangible cultural heritage. The strongest influences come from the national folklore – songs and dances unique in each Bulgarian region (typically based on asymmetrical rhythms), fine woodworking, metalworking and textile crafts, cuisine and rich oral tradition. The folklore and traditions mostly survive today, and are especially well preserved and valued in rural and mountainous areas. The diverse ethnic mix of Bulgaria additionally enriches local traditions by adding significant and valuable contributions from the Turkish, Roma, Bulgarian-Muslim, Armenian, Jewish, Karakatsani and other locally established ethnic and/or religious communities.

Krumovgrad Municipality is also rich in culture with its diverse ethnic population and cultural practices. The cultural practices are an amalgamation of the different ethnic

cultures and their religious denominations, demonstrating the interwoven social fabric of the communities. Baseline data indicate that discoveries of remains of Thracian sanctuaries, temples and medieval fortresses, cemeteries and tombstones abound in the wider LSA. Furthermore, the south western slopes of Ada Tepe is of archaeological significance. During the pre construction phase the Company commissioned an archaeological survey on Ada Tepe as the hill area contains evidence of archaeological structures - an adit (fully surveyed) and two bunds, which are interpreted as an ancient gold mine dating back to the Late Bronze/Early Iron Age. According to the archaeologists engaged in the rescue surveys, the remains exposed on Ada Tepe indicate that currently this is the earliest known gold mine site in SE Europe. Furthermore, sensitive locations such as public water taps, the tomb of Said Baba (a Muslim martyr who led his people into battle and allegedly famous in the region), and Islamic graveyards have been identified alongside the proposed haul and access road near Podeba (refer appendix B). Graveyards are considered particularly important locations as the Turkish Muslim cemeteries are especially respected due to the cultural significance and reverence of ancestors.

3.8.1.1. Effects Assessment (During pre-construction, construction, Operations and Closure) Cultural Heritage and Archaeological Site and Cultural values

Table 3-14: Cultural Heritage Effects Assessment

Summary	Pre construction/ Construction	Operation	Closure
Project Activity/indicator	Disturbance of cultural heritage and archaeological resources through landscape/site change Loss of cultural values and sense of place	Disturbance of cultural heritage and archaeological resources through landscape/site change Loss of cultural values and sense of place	Disturbance of cultural heritage and archaeological resources through landscape/site change Loss of cultural values and sense of place
Impact type	Direct and indirect	Direct and indirect	Direct and indirect
Stakeholders /receptor	Archaeological resources LSA communities	Archaeological resources LSA communities	LSA communities

Valued Component Indicator: Cultural Heritage and Archaeological Sites

Pre-construction, Construction, Operations, Closure Phases

The chronology of the activities which have surrounded the archaeological rescue survey and excavation on Ada Tepe are set out below in Table 3-15.

Table 3-15: Chronology of archaeological activities carried out on Ada tepe

Year	Activity	Main Findings / Outcome
2005	<p>Preliminary archaeological study of four sites in agreement with the National Institute of Archaeology and Museums (NAIM) pursuant to Order P-84/11.08.2005):</p> <ol style="list-style-type: none"> 1. Thracian sanctuary on Ada Tepe 2. A grave located 200 m north from Mezankyoi neighbourhood of Skalak village 3. The Thracian sanctuary on mount Kovanluk 4. The archaeological site beneath Ada Tepe 	<ul style="list-style-type: none"> • The Minister of Culture issued order 184/12.05/2006 approving the removal of the Thracian sanctuary on Ada Tepe from the list of monuments of culture.
2008 - 2010	<p>Joint Bulgarian and German preliminary studies entitled "Iron and Gold". In search of Metallurgical Traces of Ancient Thrace</p>	<ul style="list-style-type: none"> • The Team established that gold mining on Ada Tepe was going on as early as the mid second millennium BC, at the time where the ancient Mycenar and Troy flourished, which means that Ada Tepe is the earliest known gold mine in Europe.
2010	<p>Initiation of archaeological excavation in a concentrated area.</p>	<ul style="list-style-type: none"> • High concentration of structures and materials. Excavation to be continued and finalized in 2011.
April 2011- November 2011	<ol style="list-style-type: none"> 1. Continuation of fieldwork, which began in the autumn of 2010 but across broader frames. 2. Research on 5 main sectors of Ada Tepe on the higher parts 3. Implementation of large-scale geophysical survey in order to focus efforts on the research of certain areas. 4. Completion of research on the eastern slopes of the peak 5. Parallel implementation of a number of interdisciplinary research studies on the ancient gold mine. 6. Planned preservation of all acquired materials and their preparation for final processing after the completion of fieldwork. 7. High concentrations of archeological structures and materials necessitate field work in the central sector to be continued in to 2012. 	<ul style="list-style-type: none"> • High concentration of structures and materials. Excavation to be continued and finalized in 2012.

Year	Activity	Main Findings / Outcome
April 2012- December 2012	<ol style="list-style-type: none"> 1. Continuation of fieldwork of all sectors recommended for completion. 2. Completion the fieldwork of sectors, which were excavated in 2010 and 2011 3. Research of the last unstudied sectors 4. Simultaneous research of remains of ancient mining activities, on processing of ore and on habitation. 5. Completion of final stages of field and interdisciplinary documentation. 6. Simultaneous accomplishment of several interdisciplinary surveys, needed for up-to-date research of ancient gold mine. 7. Planned preservation of all archaeological materials and finds and preparation for their final processing after the completion of the fieldwork 	<ul style="list-style-type: none"> • Completion of fieldwork on the central sectors including remains of gold ore mining activity • Completion of fieldwork on the high northern and north eastern slopes • Completion of fieldwork on the eastern slopes – late bronze age open pit gold mine and waste rock material. • Completion of rescue archaeological excavation of the South-western slope area. • Completion of reconstruction of technological process of ancient gold mining of Ada Tepe • Differentiation of two main periods of habitation – late Bronze age and early iron age. 25 remains of structures dating from both periods excavated, locating numerous ceramic vessels & fragments but also complete vessels, also stone tools, fragments of moulds for casting bronze implements, and flint raw material. • Documentation of all discoveries.

Based on the activities carried out as set out in the table above the following analysis is made.

Table 3-16: Analysis of Company Action in response to EBRD Objectives of Performance Requirement 8 Cultural Heritage.

EBRD Objectives of Performance Requirement 8 Cultural Heritage	Company Action To date
To Support the conservation of cultural heritage in the context of EBRD financed Projects	<ul style="list-style-type: none"> • In agreement with the Ministry of Culture and the National Institute of Archaeology and Museums (NAIM) and on the grounds of art.161 par.1 of the cultural heritage act, the Company commissioned a 2.5 million Leva archaeological survey on the Ada Tepe site. The survey was in full compliance with Bulgaria's cultural heritage regulations. • Largest privately funded single site excavation archaeological project carried out in Bulgaria. • This was the first targeted investigation of an ancient mine in Bulgaria, knowing that the country has many other identified ancient mines. • Scientific research methods used 'montanarchaeology' as well as other specialised interdisciplinary survey methodologies such as; Geology, mineralogy and crystallography, paleobotany, osteology and paleozoology, geomorphology, LiDAR scanning, GIS, • Radiocarbon dating and paleoseismology for the first time in Bulgaria. • Project team conducted an archaeological experiment utilising replica 'tools' and the old gold mining methods. • Archaeological studies found that this is the earliest known gold mine in Europe, which would have remained unknown.

EBRD Objectives of Performance Requirement 8 Cultural Heritage	Company Action To date
To protect cultural heritage from adverse impacts of project activities	<ul style="list-style-type: none"> • Rescue field archaeological studies were performed and numerous artefacts recovered and catalogued; currently they are stored in Sofia. • The excavation has contributed to the protection and promotion of the history of gold mining. • Company will permanently employ a full time archaeologist who will remain at the mine site at all times under Construction, Operation and closure Phases. • Chance finds procedure to be developed as part of Mitigation.
To promote the equitable sharing of benefits from the use of cultural heritage in business activities	<ul style="list-style-type: none"> • Establishment and funding within a museum of an interactive and educational display of the artefacts and to recreate scenes of how the ancient gold mining methods took place. The location is yet to be decided but the Company has allocated funds as set out in the Presentation summary of cooperation with Municipality.
To promote the awareness of an appreciation of cultural heritage where possible.	<ul style="list-style-type: none"> • A brochure has been created on Ada Tepe and the secrets of Ancient Mining. Full publication of results and further multidisciplinary studies to be carried out. • Artefacts to be displayed in a public museum within the district, as yet it has not been decided where exactly they will be displayed. • Two exhibitions were organized (25.01-9.03.2012 in National Archaeological Museum and 5.11.2012-18.01.2013 in Regional Historical Museum in Kardjali). • A professional discussion took place between 4.11.2012 and 6.11.2012 in Krumovgrad and in Kurdjali. Archaeologists from the leading institutes in Bulgaria participated in the discussion on the methods of work on the project and about the results achieved in 2010-2012 campaigns. The review was exceptionally positive.

The construction phase activities will include land clearance and excavation of different parts of the site in preparation of infrastructural development. The primary construction activities will include the following:

- Pre-stripping of the open pit;
- Construction of internal road network;
- Construction of the IMWF and other infrastructure facilities; and
- Widening of haul road access.

Archaeological artefacts are considered a unique and non-renewable resource. It is likely that the construction and operation of infrastructure would contribute to the loss of some archaeological artefacts. In light of this, the construction and operational phase impacts associated with the Project are assessed in an integrated manner, as they are closely linked.

Further sensitive locations have been identified along the haul road;

- 2 Islamic graveyards
- 2 Public water taps

- 2 animal watering wells
- The sacred tomb of Said Baba.

One of the Islamic graveyards and the Said Baba Tomb continue to be used by the neighbouring community of Pobeda, on an infrequent basis. The Said Baba Tomb, has an annual celebration in memory of the martyr, Said Baba. According to the local religious leader these locations are not considered moveable.

The animal watering wells also remain in usage for the livestock that graze freely. The two public taps function and are available for whoever needs drinking water. However these sensitive locations are deemed moveable by stakeholders.

The impacts can be seen as permanent and irreversible, and would likely be experienced throughout all the phases of the Project but predominantly during the construction phase. The impacts related to loss of archaeological resources without mitigation across the project phases are considered direct and negative. The effect will be local and restricted to specific locations. The magnitude will be high. The duration will be permanent and the frequency once off. The confidence level is high.

Consideration was given to potential impacts experienced during the closure phase. However activities will include the removal of existing infrastructure and will be limited to the existing disturbed footprint. Therefore it is considered that no closure impact is anticipated on archaeological sites.

Mitigation Measures and Residual Effects

The company has put in place the following measures to mitigate against impacts related to this VC indicator:

- Commissioned an archaeological survey in 2012 and there has been a commitment made that a museum will be established and artefacts recovered will be displayed and a reconstruction made of how the ancient gold mine would have appeared
- SEP and grievance mechanism (2014).
- A full time archaeologist will be based at the project throughout its life to supervise activities

The objectives of the mitigation measures are as follows;

- Minimise the disturbance to archaeological features
- Where possible avoid receptors considered of cultural value to community
- Promote cultural activities so as to preserve.

Pre-Construction, Construction, Operations and Closure Mitigations

Mitigation measures comprise the following:

- An archaeologist will be on site full time during the life of the mine to advise on all matters relating to protection and management of cultural heritage. He will guide the construction and operation monitoring of the chance finds procedure.
- Implementation of a chance finds procedure in the case of an unexpected cultural heritage discovery on the project site. As such:
- Site personnel trained in recognition, handling, and response to archaeological chance finds
- Archaeologist deployed to monitor active construction fronts and to guide the recognition of and response to archaeological finds
- Protocols established for responding to chance finds, including cessation of work in the vicinity of potential significant finds and notification of relevant authorities;
- Expedited plans used for evaluation and rescue of significant chance finds
- An auditable record of monitoring activities maintained, including negative findings as well as discoveries
- Where sites of importance are identified through the chance finds procedure they will be avoided in accordance with Bulgarian Cultural Heritage Law
- Employee interference with cultural heritage sites prohibited by a Workforce Code of Conduct. If a cultural heritage site is damaged it will be treated as a violation of the Cultural Heritage Law.

The project will take the following measures to protect and mitigate adverse impacts on sensitive locations;

- All Detailed Development Plans will require approval by the Ministry of Culture in order to ensure safe distance from sites of cultural importance (such as identified sensitive locations – Said Baba Tomb and Islamic grave yards located on the proposed haul road) to protect their cultural value, amenity and setting;
- Marked sites inspected regularly to confirm that no inadvertent or unreported damage has occurred and to identify any risk of impact from the Project.

Post Mitigation Residual Significance: Impacts associated with cultural heritage and archaeological sites

The implementation of the above mitigation measures during Construction Phase would result in a moderate (negative) residual impact. During Operational and Closure phase this will reduce to low with negligible risks.

Valued Component Indicator: Cultural values and sense of place

Pre-construction, Construction, Operations Phases

Cultural values and identities are dynamic and are subject to continuous change and adjustments. It is likely that the project will indirectly present small changes to cultural values. The cultural values of newcomers may clash with those held in the LSA as discussed under demography. This could cause tension particularly among those who perceive their sense of identity and sense of belonging are under threat. People who are likely to be most vulnerable identified within the LSA (the elderly and women, the later particularly as it is a predominantly Muslim culture).

Over the project life, cultural values and traditions will continue to change as there is increased exposure to different cultures and World views. The sense of place for the area derives from the landscape and its impact on senses. Baseline consultations found that all stakeholders remarked on the beauty and good quality of life that the LSA presented, but while the LSA evokes a sense of place, it is not unique to the district. However the project will disturb the surrounding landscape through the construction of infrastructure, increased traffic, increased ambient dust and noise levels³⁰ which, may also contribute to further changes to the overall cultural sense of place.

Depending on the level of vulnerability of stakeholders, changes in cultural values and sense of place could have a negative impact as people, particularly the elderly, struggle to assimilate to the pace of change, but for others such as the youth the change will be perceived as positive. The change will be local and regional but restricted to the LSA. The magnitude will be low but long term extending across all the phases and continuous in effect. The confidence level is moderate.

Closure Phase

As the project closes down, the population will return to baseline conditions and project activities will diminish. However the permanent change in the landscape may still continue to impact the sense of place of individuals permanently.

Mitigation Measures and Residual Effects

Mitigation measures are limited to assisting affected stakeholders develop coping mechanisms for changing culture and values.

General Mitigation

General mitigation measures to be implemented are as follows:

- Implement and monitor mitigation measures detailed under demography mitigation

³⁰ Within legal safe limits as set out in EIA 2010

- Develop and implement Code of Conduct to minimize risk of conflict (as discussed earlier)
- Develop and implement a grievance procedure so that stakeholder concerns are addressed and resolved in a timely manner (as discussed under previous mitigation).
- The Project will identify and manage intangible cultural heritage values:
- The Project will seek to understand and respect cultural norms (language, ethnic affiliation, religion, social organisation, gender roles, forms of cultural expression,);
- The Project will maintain effective communication with stakeholders and vulnerable groups such as elderly, women and Roma;
- Foreign workers will be sensitised to local history and cultural and religious practices; and
- The Project will work with the Municipality and community groups to support local cultural events and conserve and reinforce local traditions and culture such as supporting Bulgarian, Turkish and Roma folklore singing and dance groups.

Closure mitigation

Mitigation in the closure phase will involve removal of as much as possible of the mine infrastructure from site during the decommissioning as well as rehabilitating all disturbed areas and reinstating the impacted areas as closely as possible to their original state.

Post Mitigation Residual Significance: Impacts associated with cultural values and sense of place

The residual change will be of low (negative) significance. However over time this change will be negligible as new cultural values assimilate and the communities become used to their environment.

3.9 Valued Component: Visual

3.9.1 VC Summary of Baseline

A visual impact assessment (VIA) was conducted in June 2014 to assess the severity of the visual impacts associated with the Project (VIA, Denkstatt Bulgaria Ltd).

The methodology applied established the theoretical visibility within a 5 km zone for all potential receptors (identified settlements and high traffic points). Based on this, the following receptors were identified:

- Residential Visual Receptors:
 - Town of Krumovgrad and its standalone Izgrev neighborhood;



- Villages of Dazhdovnik, Edrino, Gulya, Golyamo Kamenyane, Polkovnik Zhelyazkovo, Rogach, Skalak, Vransko and Zvanark and their respective hamlets.
- Road Traffic Visual Receptors:
 - Road Edrino-Kamenyane (5904 III class)
 - Road Ivailovgrad-Polkovnik Jelyazovo (59 II class)
 - Road Zvanarka-Lozino 3 (509 III class)
 - Road Krumovgrad-Izgrev (509 III class)
- Other Visual Receptors:
 - Nearby Tobacco field –The potential visual receptor are agricultural laborers at work.

Based on these identified receptors, 40 representative viewpoints were identified which represented the views that were available to at least a proportion of the residents at a particular settlement. From each viewpoint an impact rating was applied which assessed the magnitude of visual and the visual sensitivity.

The VIA adopted the approach of consistently applying a worst case scenario and therefore it has focused upon the visual effects that will be sustained by the visual receptors during the operation of the proposed development. Within the operational period, the assessments at the individual viewpoints were assumed and annotated to show the operational activities at their greatest spatial extent i.e. presence of the fully constructed project facilities on and around the Ada Tepe Hill, these elements being the mining pit, crusher and thickener installations, processing plant and IMWF.

3.9.1.1. Effects Assessment (During pre-construction, construction, Operations and Closure) Visual and Aesthetics

Table 3-17: Visual Effects Assessment

Summary	Pre construction/ Construction	Operation	Closure
Project Activity/indicator	Loss of aesthetic value of the landscape	Loss of aesthetic value of the landscape	Loss of aesthetic value of the landscape
Impact type	Direct	Direct	Direct
Stakeholders /receptors affected	LSA communities (residents, tourists, road users)	LSA communities (residents, tourists, road users)	LSA communities (residents, tourists, road users)

Construction, Operations and Closure phases

The VIA found the following summary observations can be made from the viewpoint analysis:

- Within a 2.5 km radius to the mining development, 10 (Edrino, Kupel, Dazhdovnik, Skalak, Podeba, Belagush, Kremenik, Zvanarka, Soyka, Bitovo, Taynik) of the 18 studied residential visual impact receptors were found to have a high impact. In 5 of these cases the mining development fully dominates the view;
- Between 2.5 and 5 km from the development, only 1 (Kokoshar) of the 15 of the residential visual receptors was found to have high impact and 14 moderate impact;
- Beyond the 5km study area there are some viewpoints where the development is discernible. However, the visual impacts are generally of low magnitude and moderate impact (due to the high sensitivity of residential receptors).
- In almost all residential areas where viewpoints were located, local tree vegetation offered some screening and prevented a view of the project from a significant number of residential buildings.
- No non-residential visual receptors with high visual impact were identified, mostly due to the absence of recreation areas and main highways and/or tourist routes.
- Of the 4 road traffic visual receptors, all indicated that the project elements were discernable but did not significantly affect the overall composition and were rated as moderate or low.
- During the visit many of the smaller hamlets were found to be inhabited by several people and in one case the hamlet appeared completely uninhabited.

Based on the VIA findings, the activities are considered a direct negative impact on the aesthetic value of the landscape, as the character of the existing rural landscape will continue to be degraded. The extent of the impact will be experienced locally and regionally. The magnitude will be moderate – high and duration will be permanent and continuous in effect. The confidence level is high.

Pre-Construction and Construction Mitigation

Mitigation selected has incorporated measures recommended in the VIA assessment (Chapter 5, VIA, Denkstatt Bulgaria Ltd):

- All constructed facilities and buildings will cause minimum visual disturbance through reducing the contrast and blending in with the surrounding vegetated natural area. This could be achieved by painting rooftops and walls of buildings in the hues and tones of the surrounding forest and/or by adding matt paints to highly reflective surfaces, as well as sharp protruding features on the structures. All of these solutions are subject to the technical design of individual buildings and facilities and will be pursued by the

technical design and/or construction team, taking into consideration added value from reduced visibility, engineering feasibility and cost.

- As little vegetation and top soil as possible be removed from building and infrastructure areas.
- Upon choosing the design and specifications of lighting, technical designers and/or construction engineers will be aware of requirements to minimize light pollution beyond the perimeter of the project.
- Once the lighting is installed and is being tested, new measurements will be made in the sensitive locations (surrounding settlements identified in this report). The results will be analysed and recommendations for reduction of light pollution, in accordance with good industry practices.
- Selective lighting fixtures used to minimize the negative effect of night lighting, glare and spot light effects.
- Natural vegetation will be retained as far as possible, keeping clearing of vegetation as close as possible to the footprint of infrastructures and activities.

Operations Mitigation

The progressive restoration of the Integrated Mining Waste Facility will start as soon as possible. The Technical Restoration Project, is planned to start in the first year and carried out in phases until 3 years after closure of operations. The plan, as stated, will be implemented strictly and without undue delays. Its implementation will result in quicker reduction of visual impact for some of the observed locations.

Selective lighting fixtures used to minimize the negative effect of night lighting, glare and spot light effects.

Closure Mitigation

The land restoration, which is intended to be carried out through to the end of the operations and into the decommissioning and closure phase, aims to achieve an optimum quality of the landscape value, which, in terms of the type of vegetation (and also underlying ecosystem services) will in some places be better than the landscape quality before the start of the project.

Selective tree planting of indigenous trees and plants will be carried out within the contours of the project, as part of the land restoration process.

Post Mitigation Residual Significance: Impacts associated with Visual and aesthetics

Due to the scale of the project and the resultant residual feature of the open pit it is not considered possible to reduce the long term negative impact significantly, despite the fact



that people will get used to the altered landscape. Impact rating would remain moderate - high.

4.0 CUMULATIVE EFFECTS ASSESSMENT

In this section the impacts associated with the cumulative effects of the Project and potentially other developments are considered. Evaluation of potential cumulative impacts is an integral element of an impact assessment.

Baseline data do not indicate that there are any significant existing or planned developments in the Municipality other than the proposed Project. The main employer in the LSA is the Municipality and people are mostly engaged in agricultural activities to earn a living. Therefore in light of the key challenges faced in the LSA as highlighted in the baseline study the following valued component indicators are considered in relation to cumulative impacts of the project:

- Economic Investment
- Industry Training
- Population growth and increased demand on Infrastructure services; roads; sewerage; household waste and health services
- Population Changes.

4.1 Summary of Cumulative Impacts

4.1.1 Economic Investment

Over time, the economy of Krumovgrad and the region would be largely influenced by the mine activities. The introduction of the Project in the LSA will result in increased expenditure in the region, thus having benefits for smaller businesses, suppliers and contractors. It would also result in an increase in employment opportunities and potential for secondary businesses. This additional capital expenditure would likely assist the region to improve the quality of living in surrounding communities. However while being positive for the duration of the mine life, the negative aspect is that it has the potential of making Krumovgrad become mono industrial unless diversification takes place. This will make the economies vulnerable to the boom and bust cycle typically experienced in commodity extractive industries and indeed as already experienced in Kardzhali district during the soviet regime when there were a number of mines and quarries that were operational in the district.

4.1.2 Industry Training

Baseline data indicate that the skill capacity and educational attainment of the local population is comparatively low in comparison with national averages. Added to which the key challenge to the LSA is that there are few employment opportunities in the area to reduce the high levels of unemployment. An increase in the levels of skills present in the community will increase the opportunities for employment as well as strengthen local economic development. Development of skills can be transferred to other industrial activities, which increases the potential for alternative employment. However this may

cause people, particularly the younger generation to migrate out of the LSA when the project closes down.

4.1.3 Population growth and Infrastructure and utilities services

Depending on the ability of the Company to train and recruit 90% of its workforce locally, there will be a change in the size of population in the LSA and in particular in Krumovgrad town. With an increase in population, migrant workers direct and indirect and opportunistic job seekers it may result in a minor impact to infrastructure. Key infrastructure such as the hospital facilities, roads and sewerage system are all functioning at a low level. Over time this could put added pressure on the services and their ability to function for the benefit of the community needs.

4.1.4 Population Changes

Further cumulative effects related to population changes post closure could occur in relation to the migration flow out of the Municipality, which is an identified existing migratory trend as discussed under the demography section. The potential migration out of the LSA post Closure could be caused by a change in the livelihoods of those employed directly and indirectly on the Project. Upon Project Closure those former workers would have accumulated transferable skills and grown accustomed to the benefits of formal employment rather than reverting back to livelihoods associated with agricultural activities, consequently they may move out of the area in seek of other employment opportunities. This could have a minor impact on agricultural production However it is quite probable that a migratory flow out of the LSA, will occur as is the case presently.

4.1.5 Health services

The hospital facility in Krumovgrad, as discussed earlier is functioning at a low standard, with limited facilities and a high attrition rate of professional staff forcing many people within the LSA to go elsewhere in the RSA for medical treatment. Whilst the Project mitigation recommends to support the hospital financially, it is considered that increased demand for health services during the life of mine will add to the existing pressure that the hospital faces. Upon Closure of the mine and when funds stop, the cumulative impact of increased pressure on the facilities could be further compounded causing the hospital to function potentially at an even lower standard than baseline conditions.

4.1.6 Mining and Development activities in the District

According to baseline, while Kardzhali district has a relatively small amount of light industry and heavy industrial activity, its mining activities are emerging. There is a gold process plant in Kardzhali town and 10 active quarrying concessions. There are also plans within the district by the Gorubso Company to develop a gold and silver mine processing 80,000 tonnes per year (processing will take place at the plant in Kardzhali) and a further poly metal mine "sedefche" processing 100,000 tonnes per year, the latter having undergone



the EIA process in 2014. The proposed project, along with these intended mining projects will contribute to the cumulative transformation of the district whose economy may become more dependent on mining activities, which as discussed above could result in a boom and bust scenario without mitigation to diversify the economy.

4.1.7 Cumulative Impact Conclusions

It is evident that the Project would have both positive and negative cumulative effects that are closely inter-related with challenges that already exist in the LSA presently. These challenges include improving infrastructure services, encouraging the younger generation to stay in the Municipality, health service improvements, diversifying the economy and increasing the number of employment opportunities. Nevertheless, the development is likely to contribute positively to local economic development, improve employment opportunities, increase the human capital of the LSA and generally increase the quality of life.

Cooperation between the Company, the Municipality of Krumovgrad and other authorities such as the Bulgarian Health Authority is essential in mitigating and managing future cumulative impacts.

5.0 SOCIAL MANAGEMENT FRAMEWORK

5.1 Introduction

The following chapter sets out the framework for the Social Management Plan (which will be developed at a later date), which is established to assure that the mitigation measures proposed in the SIA are effectively implemented during the life of the project and are continually refined and modified as necessary on the basis of actual field conditions and circumstances which may not have been anticipated at the time of the SIA preparation. The following framework covers the organisational hierarchy of a proposed Social Unit; a statement of goals and a schedule of action; a budget for implementation and recommended monitoring and auditing.

5.2 Key Existing Management Plans

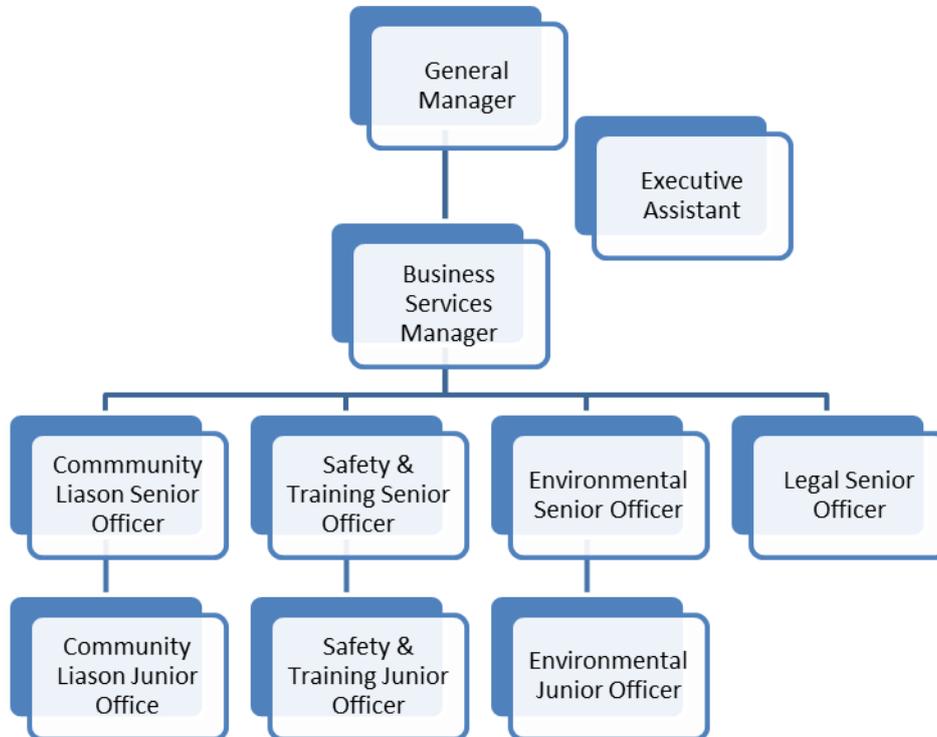
The following Management plans have been detailed:

- Air Quality and Dust Management Plan (2014) (AMEC Report A150-14-R2241)
- Emergency Response and Preparedness Plan (2014) (AMEC Report A150-14-R2262)
- Hazardous Material Management Plan (2014) (AMEC Report A150-14-R2261)
- Framework Traffic Management Plan (2014) (AMEC Report A150-14-R2244)
- Community Health, Safety and Security Management Plan (2014) (AMEC Report A150-14-R2257).

5.3 Implementation of SMP (staffing)

The following organisational chart in Figure 5-1 sets out the proposed staffing of the environmental and social Departments.

Figure 5-1: Social Management Reporting Structure



To implement the Social Management Framework, the following staffing is recommended. It is further recommended that Community Liaison staff should be local to the Municipality/Region.

Community Liaison Senior Officer

Reporting to the Business Services Manager, duties will involve but are not limited to:

- Management of Community Liaison Unit
- Manage all Community Liaison related tasks in the Information Centre (it is understood that the Centre will also be used to advertise employment opportunities & recruitment procedures)
- Coordinate the development of a Community Development Plan based on mitigation set out in the SIA and detailed in the ESIA Management plan in consultation with stakeholders at Municipality level and local level.
- Implement community engagement strategy and oversee all community liaison related matters
- Manage the grievance mechanism set up for the project-affected areas.
- Oversee implementation and monitoring of Community Development Plan
- Establish a monitoring and evaluation plan based on Social Management Plan, and other 'tools' established such as the grievance register, commitment register and consultation register.

- Provide reports to Senior Management for onward submittal to EBRD, lenders and internal CSR monitoring.

Community Liaison Officer

Reporting to the Community Liaison Senior Officer, duties will involve but are not limited to:

- Perform community engagement. Incorporated in this, Coordinate the Company's response to all issues related to the grievance mechanism set up by the Company.
- Provide liaison between Community Development Programme measures and implementing partners
- Manage arising community matters
- Perform monitoring and evaluation to track progress of implementation of mitigation measures and assess if progress and performance of mitigation actions being undertaken by the Company to ensure objectives are met. Liaise with the appropriate company personnel to ensure that grievances are tracked, reported and responded to accordingly as necessary.

Training of the Community Liaison Officers

It is also highly recommended that the Community Liaison Specialists are provided with specific training; implementation of the SMF, effective stakeholder engagement techniques, administration and Information Management Systems (to save documents on project databases in a shared drive), EBRD performance Requirements and World Bank safeguard policies. This training will ensure that the specialist is able to manage effectively and monitor the ongoing social aspects of the Project activities, as well as to meet the reporting requirements stipulated by EBRD.

Implementation of social management framework beyond the community liaison team

It is recognised that the contractors to the Company will largely be responsible for carrying out SIA mitigation measures during construction, operations and closure phases as such it is recommended that the Senior Management of the Company (such as the Mine Manager) oversee contractor compliance and ongoing monitoring of the recommendations made in the mitigation and the social management framework

5.4 Statement of goals and a schedule of action

Table 5-1: Schedule of Actions

Action	Desired outcome	Time line	Responsibility	Oversight
<ul style="list-style-type: none"> Establishment of Community Liaison Unit, Operational Information Centre, Krumovgrad, Establishment of LCCs in affected communities 	<ul style="list-style-type: none"> Establish a Community Liaison Unit with 2 trained Community Liaison Officers working in the communities with directly and indirectly affected people (SEP, including a stakeholder register and database, Grievance mechanism including grievance register, Commitments register established and functioning). Information Centre open 5 days a week from 9:00 am to 13:00 with project related information available, including the grievance process, a telephone hotline, comment box and a member of the Project Staff present at all times. LCFs established in villages (Dazdovnik, Zvanarka, Ovchari, Skalak, Malko Kamenyane, Kaklista, Skalak, Edrino, Izgrev, Guliya and Krumovgrad) and comprising of residents (both men and women) 	Pre Construction Phase	Operations Director	General Manager
<ul style="list-style-type: none"> Independent water, air, soil, noise quality monitoring programmes 	<ul style="list-style-type: none"> Licensed laboratories to perform routine monitoring and publication of results for auditing as necessary 	Baseline established in Pre Construction Phase	Environmental Office	General Manager
<ul style="list-style-type: none"> Human Resource Procedures currently in place updated and expanded upon. National / Local Recruitment Management Plan established Human Rights policy established Code of conduct developed Accommodation Management Procedure 	<ul style="list-style-type: none"> Complete Human Resources Policies and Procedures Including retrenchment policies Fair, formal and transparent recruitment process Awareness of opportunities available Workers and Community member's human rights protected Code of Conduct established inclusive of issues raised in SIA Procedure established for the selection of accommodation indicating standards set for accommodation for employees and management of such. 	Pre Construction Phase	Human Resources Office	General Manager
<ul style="list-style-type: none"> Procurement Procedures updated and Plan established 	<ul style="list-style-type: none"> Fair, formal and transparent procurement process Procurement Plan 	Pre Construction Phase	Procurement Office	General Manager

Action	Desired outcome	Time line	Responsibility	Oversight
<ul style="list-style-type: none"> Social Management Plan developed 	<ul style="list-style-type: none"> Social Management Plan developed covering action required for; Entitlements (PAPS); Community Development plan, vulnerable programme (including targeted initiatives for elderly PAPS); leisure (tourist lodge), SME capacity building and training; cultural heritage mitigation implementation; cultural identity initiatives all of which ensuring mitigation directed for that both (identified) of directly and indirectly affected people including those identified vulnerable . In consultation with stakeholders develop a Community Development Plan agreed and established with monitoring mechanisms built in. 	Pre Construction Phase so to be functioning during Construction Phase	Community Liaison Office in conjunction with Management team and Environmental Office	General Manager /Business
<ul style="list-style-type: none"> Road Traffic Management Plan implemented 	<ul style="list-style-type: none"> Signage erected, fence around school at Zvanarka set up, in consultation with the municipality and stakeholders, for safety and security the viability will be assessed of erecting a stock proof fence on either side of the haul road from the junction of Zvanarka to Podeba, Driver safety training, posted speed limits, bussing workers, pull outs constructed on mine haul road, road safety awareness campaigns in schools and community targeting vulnerable groups. 	Pre Construction Phase	Transport Office	General Manager
<ul style="list-style-type: none"> Internal Training Investment Programme developed 	<ul style="list-style-type: none"> Training and skill development Programme developed for employees 	Pre Construction / Construction Phases	Human Resources / Training Office	General Manager
<ul style="list-style-type: none"> External Skill Investment Programme developed 	<ul style="list-style-type: none"> Training and skill development Programme developed pre employment (for prospective employees) 	Pre Construction / Construction Phases	Human Resources / Training Office	General Manager
<ul style="list-style-type: none"> Emergency Response Committee 	<ul style="list-style-type: none"> The company will request participation in Municipality Emergency Response Committee 	Pre construction	Health & safety office	Business
<ul style="list-style-type: none"> Health Strategy developed Health Office set up within Company Encouraging communicable disease testing. Facilitate voluntary communicable disease testing amongst project work force. 	<ul style="list-style-type: none"> Health strategy established and implemented including <ul style="list-style-type: none"> Health and safety plan Awareness raising campaigns (non/communicable diseases etc) 	Pre construction & ongoing	General Manager Health & safety office	Business

5.5 Monitoring and Auditing

Monitoring will provide the means to track and evaluate progress towards achieving identified objectives within the Krumovgrad Gold Project specified timeframe.

The first task of the monitoring programme is to track if actual socio economic impacts resulting from project activities are different from those identified and detailed in the SIA and EIA (2010). If they are different, alternative mitigation strategies will be recommended for corrective action to address negative impacts or to improve upon positive impacts. Secondly, the monitoring mechanism will assess, using key measurements, targets and indicators, the on-going progress and performance of mitigation actions being carried out by the Company. The monitoring mechanism will allow for periodic reporting of results to Company management, the Municipality of Krumovgrad and affected stakeholders. This will ensure that programme objectives are being met and will allow for adjustments as necessary.

To undertake monitoring of activities appropriate staffing provisions have been incorporated into the proposed social management reporting structure as detailed earlier in this Chapter.

5.6 Key Performance Indicators

The following key performance indicators (KPI) have been developed using the social baseline and the social impact assessment to identify parameters that will be monitored to gauge the project's social impact and performance over the life time of the Project. These KPIs will be incorporated as part of the Social Management Plan and may require adjustment as the Project progresses;

5.6.1 Economy & procurement

- To aim to increase local and district business capacity to participate successfully in competitive bids through the provision of training sessions with local and district companies on the base of procurement opportunities and the procurement management plan.
- To aim for 30% of the procurement opportunities on the Krumovgrad Project to be secured by local and district businesses during the Construction and Operations phases through the transparent competitive bidding process.
- To aim to achieve at least half the workforce needs for indirect employment (through contracted firms) from local and regional locations during Construction phase.
- Achievement of 90% of the work force from local and regional locations during Operations Phase.
- Gender neutral and non-discriminatory human resource procedures to be reflected in a work force breakdown, within the constraint of the mining industry, which is

adequately gender, age, minority group and geographically representative, reviewed biannually.

5.6.2 Demography

- Numbers of those deemed vulnerable as identified in the vulnerable mitigation plan monitored to ensure that project does not impact negatively on such people and that the Project does not increase the numbers of vulnerable individuals or groups (to be reviewed annually).
- Through the community development plan support local cultural and social events that aim to maintain or bolster local cultural and social values measured through numbers of events and initiatives supported quarterly.
- Through the community development plan improve and increase local recreational infrastructure and activities year on year throughout the life cycle of the mine.

5.6.3 Health & safety in work place and living conditions

- To establish Health, Safety and Security procedures and aim to achieve zero work place and community accidents with monthly reviews.
- To establish labour standards that will achieve zero complaints from company employees and sub contractors about labour conditions throughout the project life cycle.
- Aim to resolve any employee grievances raised through the employee grievance mechanism within two weeks of the complaint having been opened.
- Monitor worker health through legal occupational health annual checks.
- To establish Health, Safety and Security procedures for safe and healthy worker accommodation for direct employees living away from home with zero incidents, to be reviewed monthly.

5.6.4 Stakeholder Engagement

- To provide relevant and up-to-date information through the Information centre, LCFs and other identified channels which is reviewed and updated on a monthly basis throughout the Project life cycle.
- To establish strong community relations through a robust stakeholder engagement strategy set targets for each stakeholder group for the number of monthly meetings (or more as necessary) to be conducted throughout the lifecycle of the project.
- To establish a community grievance mechanism and aim to resolve any grievances within two weeks of the complaint having been opened.

5.6.5 Training & Capacity Building

- To aim to increase the skill capacity and educational attainment of employees monitored through the number of continued professional development trainings and courses attended, reviewed annually so that by the end of the project life all employees skilled and unskilled have acquired a transferable skillset.
- Road safety training and sensitization of employees and community aiming for zero road traffic accidents, reviewed annually.

5.6.6 Cultural Heritage

- Through the Community Development plan promote local cultural heritage and archeological heritage, reviewed annually.

5.6.7 Human Rights

- To establish human rights policy and aim to have zero human rights infringements in the work place and community throughout the life of mine.

5.6.8 Community Development

- Promote local economic development through the Community Development Plan to minimize boom and bust. Training through 3 SME training sessions and 2 best practice agricultural training sessions per year. The training sessions will be advertised in the information centre and the local newspaper at least 2 weeks prior to the sessions. Through community development plan establish strategic plans that ensure local health care facilities are maintained beyond project closure.
- Through community development plan, promote and support events and activities that encourage wellness and healthy lifestyles amongst community members, measured through numbers of events and initiatives supported.

5.7 Socio Economic Monitoring Programme

The monitoring programme below in Table 5-2 will need to commence in the construction phase, continue into operations, and throughout the life of mine. This program is not definitive and will be refined and adjusted during the SIA mitigation consultation process.

Table 5-2: Socio-Economic Monitoring Programme

Source	Monitoring Location	Parameters	Frequency
Social Management Plan	Company Senior Management (General Manager & Business Services Manager)	Implementation of mitigation and entitlements	Monthly, and annual review monitoring throughout the life of the mine
Community Development Plan	Local Communities	Commitments in plan, Construction & operation of developments	Quarterly, and annual review monitoring throughout the life of the mine
Community Health, Safety and Security Management Plan	Local Communities, site operation	Health & safety incidents	Quarterly monitoring & reporting throughout life of mine
Procurement Management Plan	Company Procurement & Contracts Management Office	Local /National procurement awards	Ongoing / Monthly reviews
Recruitment (and retrenchment) Plan	Company Human Resources	Recruitment (numbers of local regional/National, international affected populations, gender, age, community, type of employment/occupation) & retrenchment – linked with training programme and continued Professional Development of staff	Ongoing / Monthly reviews Annual Human Resources Audit
Training Programme	Human Resources	Number of trainings and effectiveness of training (employee/community/external institutions)	Ongoing / Monthly reviews
Stakeholder Engagement Plan	Community Liaison Office	Community engagement, grievance register, commitments register Perceptions surveys of Key stakeholders	Ongoing - Weekly/ Monthly reviews to be developed in to annual reports
Health & Safety Plan Occupational Health & Safety Emergency Response Plan	Health and Safety	Numbers of incidents	Monthly
Traffic Management Plan	Health and Safety	Numbers of incidents, Trainings	Monthly
Contractor Compliance	Contracts Management Unit / Procurement Unit	Compliance to clauses set in procurement contracts	Quarterly and Annually
Employee Grievance Mechanism	Human resources	Number of grievances and Numbers of cases resolved/outstanding	Quarterly and Annually
Commitments Register	Operations Director / CLO	Fulfilling commitments made in EIA, SIA as well as those made throughout the stakeholder engagement process	Quarterly and annually



6.0 SUMMARY

6.1 Summary of Project Effects

Table 6-1: Summary of Project Effects during Pre Construction, Construction, Operations and Closure Phases

VCs	Indicator	Magnitude	Geographic Extent	Direction	Duration	Frequency	Confidence	Residual Impact post mitigation
Pre Construction & Construction Phase								
Employment and Procurement	Economic Investment & withdrawal	High +	Local, regional, District & National	Positive	Short term extending in to Operations phase	Continuous	High	High +
	Employment	Moderate +	Local, regional, District , National & international	Positive	Short term extending in to Operations phase	Infrequent	High	High +
	Procurement	Moderate + /High +	Local, regional, District , National & international	Positive	Short term extending in to Operations phase	Continuous	High	High+
Population and Demography	Population Changes	Moderate	Local, Regional	Negative	Long term	Continuous	Moderate	Low -
Economic Activities and Land Use	Land use in direct foot print	Moderate	Local	Negative	Long term	Continuous	High	Low
	Surrounding land use as a source of income generation	Moderate	Local, regional	Negative	Long term	Infrequent	Moderate	Low - /negligible
Community Services	Housing	Moderate	Local	Negative & positive	Short term	infrequent	High	Low /negligible
	Education & Industry Training	High +	Local, regional, district, national, international	Positive	Long term	Infrequent	High	High +
	Social Services	Low	Local, regional	Positive /Negative	short term extending in to Operations phase	Infrequent	Moderate	Low /negligible
	Protective Services	–	–	–	–	–	–	–

VCs	Indicator	Magnitude	Geographic Extent	Direction	Duration	Frequency	Confidence	Residual Impact post mitigation
Infrastructure	Roads & Transportation	Moderate	Local, regional, district, national	Negative	Short term extending in to Operations phase	Continuous	High	Low -
	Utilities	Moderate	Local, regional	Negative	Short term extending in to Operations phase	Continuous	Poor	Low /negligible
	Recreational Activities	Low	Local, regional	Positive	Short term extending in to Operations phase	Infrequent	High	Low/Negligible
Health	Health Services	High	Local, regional	Negative	Long Term	Continuous	Moderate	Low -
	Worker & community Health	High	Local, Regional	Negative	Long term	Infrequent	Moderate/high	Low
Culture	Cultural heritage & archaeology	High	Local	Negative	Long term	Once off/continuous	High	Moderate -
	Cultural heritage & sense of Place	Low	Local, regional	Negative /Positive	Long term	Continuous	Moderate	Low negligible
Visual	Aesthetics	Moderate - high	Local, regional	Negative	Long Term	Continuous	High	Moderate – high -
Operations Phase								
Employment and Procurement	Economic Investment & withdrawal	High+	Local, Regional, National	Positive	Long term	Continuous	High	High
	Employment	High +	Local, regional, district, national & international	Positive	Long term	Continuous	Moderate	High+
	Procurement	High+	Local, regional, district, national	Positive	Long term	Continuous	High	High +

VCs	Indicator	Magnitude	Geographic Extent	Direction	Duration	Frequency	Confidence	Residual Impact post mitigation
Population and Demography	Population Changes	Low/Moderate	Local, regional	Negative	Long term	Continuous	Moderate	Low negligible
Economic Activities and Land Use	Land use in direct foot print	–	–	–	–	–	–	–
	Surrounding land use as a source of income generation	High	Local, regional	Negative	Long term	Infrequent	Moderate	Low - /negligible
Community Services	Housing	Low	Local, regional	Positive/ Negative	Long term	Infrequent	High	Low /negligible
	Education & Industry Training	High+	Local, regional, district, national, international	Positive	Long term	Continuous	High	Low /negligible
	Social Services	Low	Local, district	Positive /negative	Long term	Infrequent	Moderate	Low negligible
	Protective Services	–	–	–	–	–	–	–
Infrastructure	Roads & Transportation	Moderate	Local, regional, district, national	Negative	Long term extending in to Closure phase	Continuous	Moderate	Low
	Utilities	Low	Local, regional	Negative	Long term extending in to Operations phase	Continuous	Poor	Low /negligible
	Recreational Activities	Low +	Local, regional	Positive	Long term	Infrequent	High	Low /negligible
Health	Health services	Moderate	Local, regional	Negative	Long term extending in to Operations phase	Continuous	Moderate	Low/negligible
	Community and worker health	High	Local, regional, district	Negative	Long term extending in to Operations phase	Infrequent	High	Low

VCs	Indicator	Magnitude	Geographic Extent	Direction	Duration	Frequency	Confidence	Residual Impact post mitigation
Culture	Cultural heritage & archaeological resources	High	Local	Negative	Permanent	Once off	High	Moderate -
	Cultural heritage & sense of Place	Low	Local, regional	Negative /Positive	Long term	Continuous	Moderate	Low negligible
Visual	Aesthetics	Moderate / High	Local, regional	Negative	Long term	Continuous	High	Moderate /High -
Closure Phase								
Employment and Procurement	Economic Investment & withdrawal	High	Local, regional, district, National	Negative	Long term	Continuous	High	Low
	Employment	High	Local, regional, district, National & international	Positive/ Negative	Long term	Continuous	High	Low
	Procurement	High	Local, regional, district, National	Positive	Short term	Continuous	High	Moderate +
Population and Demography	Population changes	High	Local, regional	Negative	Short term	Infrequent	Moderate	Low negligible
Economic Activities and Land Use	Land use in direct foot print	Negligible	Local Regional	Negligible	Long term	-	Moderate	Moderate +
	Surrounding land use as a source of income generation	Low	Local, regional	Neutral	Long term	Continuous	Moderate	Low /negligible
Community Services	Housing	Low	Local, regional	Negative	Short term	Infrequent	High	Low /negligible

VCs	Indicator	Magnitude	Geographic Extent	Direction	Duration	Frequency	Confidence	Residual Impact post mitigation
	Education & Industry Training	High +	Local, regional, district, national, international	Positive	Long term	Infrequent	High	Low /negligible
	Social Services	Moderate	Local, regional	Negative	Long term and beyond mine life	Infrequent	Moderate	Low -
	Protective Services	–	–	–	–	–	–	–
Infrastructure	Roads & Transportation	Low	Local, regional, district, national	Negative	Short term	Continuous - infrequent	Moderate	Low /negligible
	Utilities	Low	Local, regional	Negative	Short term	Continuous	Poor	Low /negligible
	Recreational Activities	Low	Local, Regional	Neutral	Short term	Infrequent	High	Low /negligible
Health	Health services	Moderate	Local, regional	Negative	Short/long term	Continuous	Moderate	Low -
	Community and worker health	Moderate	Local, regional	Negative	Short term	Infrequent	Moderate	Low -
Culture	Cultural heritage & archaeology	High	Local	Negative	Permanent	Once off	High	Moderate -
	Cultural heritage & sense of Place	Low	Local, regional	Negative	Long term	Continuous	Moderate	Negligible /Low
Visual	Aesthetics	Moderate/High	Local, regional	Negative	Long term	Continuous	High	Moderate/ High -

APPENDICES

Appendix A
Socio Economic Baseline Assessment
denkstatt Bulgaria Ltd

Social Design

September 2014

Socio Economic Baseline Report

Krumovgrad Project

DPM Krumovgrad



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Annex 2: GIS Spatial Analysis

Annex 3: Sensitive Locations Identified during Baseline Consultations



Glossary of abbreviations

AA	Appropriate Assessment
AoI	Area of Influence
BAFS	Bulgarian Agency for Food Safety
BLG	Bulgarian Leva
DFSA	District Food Safety Agency
DPM	Dundee Precious Metals
EBRD	The European Bank for Reconstruction and Development
ESIA	Environmental and Social Impact Assessment
EU	European Union
GDP	Gross Domestic Product
HHS	Socio-economic Household Survey
HIV	Human Immunodeficiency Virus
IFC	International Finance Committee
MDP	Municipal Development Plan
MRF	Movement for Rights and Freedom
NEET	Not in Education, Employment, or Training
NHIF	National Health Insurance Fund
NSI	National Statistics Institute
PR	Performance Requirements
PISA	Programme for International Student Assessment
SIA	Social Impact Assessment
STD	Sexually Transmitted Disease
STI	Sexually Transmitted Infection
VIA	Visual Impact Assessment
WAI	Wardell Armstrong International



1.0 Introduction

This document presents the social and economic baseline to the proposed Krumovgrad Gold Project using findings from the analysis, evaluation and reviews of secondary and primary data collected from various sources. This document provides a description of the social and economic conditions within the identified project study area, which will be used to inform the social impact assessment (SIA) and will form Annex 1 to the SIA document.

1.1 Krumovgrad Project Background and Regulatory Framework

Dundee Precious Metals Krumovgrad (DPM Krumovgrad) is a Bulgarian based, gold mining company engaged in the acquisition, exploration, development, mining and processing of auriferous ores.

In 2000 DPM Krumovgrad, formerly Balkan Mineral and Mining EAD – BMM was awarded the 130 km² license area. Initial project plans for Ada tepe deposit incorporated a cyanide leaching and tailings dam for disposal of mine waste and covered a project area of 200 hectares. An EIA was detailed and submitted to the Bulgarian Ministry of Environment and water (MoEW) in 2005. There were significant stakeholder concerns voiced and company took back the EIA Report.

In 2007 Bulgaria entered the European Union and a Natura 2000 network was established within all EU countries, with this, legislation was established for an Appropriate Assessment (AA), which applied to investment proposals and plans of programmes, which potentially impacted Natura 2000 sites. As the Krumovgrad Gold Project was located within the boundaries of the Eastern Rhodope,¹ a designated Natura 2000 site, as well as the proximity to the Krumovitza River² an AA was obligatory.

As such fundamental changes were made to the Project design and an alternative project set up was detailed. An EIA for new investment proposal was particularised in 2010 incorporating changes and submitted to the MoEW and resulted in the MoEW EIA Decision No 18-8/2011, which was entered in force in March 2013.

In 2014 DPM Canadian owner of DPM Krumovgrad EAD negotiated an amended financial package with a consortium of banks for which the European Bank for Reconstruction and Development (EBRD) acts as environmental agent. According to the EBRD's Environmental and Social Policy (2008), and its associated Performance Requirements (PRs), a project of this type and scale requires a full Environmental and Social Impact Assessment (ESIA).

As discussed earlier, the Project undertook a local national environmental impact assessment (EIA) to Bulgarian standards in 2010 and an environmental permit was issued. Following an independent review of the local EIA reports, the EBRD required a number of supplementary

¹ (BG 0001032) Under 92/43/EEC Habitats Directive

² (BG00002043) Under 79/409/EEC Birds Directive NATURA areas

³ Krumovgrad Gold Project Environmental and Social Action plan, January 2014, (DENKSTATT)



environmental and social studies and documents to fill the gaps necessary to meet the EBRD Performance Requirements (PRs) and international good practice. As such, this Social Impact Assessment (SIA) report has been detailed to supplement the approved EIA (2010).

In addition to the EBRD PRs, some of the consortium banks refer to the Equator Principles and therefore the Project also references the IFC's Performances Standards (2012). The package of supplementary environmental and social documents as well as the local EIA reports together form the Project ESIA. The Project ESIA is summarised in a Non-Technical Summary.

2.0 Project Area of Influence

According to the EBRD Environmental and Social Policy (PR1) a project's "Area of influence" (AoI) is to be individually agreed between EBRD and the Client for any individual project. PR1 states that the AoI may include some or all of the following elements:

(i) The assets and facilities directly owned or managed by the client that relate to the project activities to be financed (such as production plant, power transmission corridors, pipelines, canals, ports, access roads and construction camps).

(ii) Supporting/enabling activities, assets and facilities owned or under the control of parties contracted for the operation of the clients business or for the completion of the project (such as contractors).

(iii) Associated facilities or businesses that are not funded by the EBRD as part of the project and may be separate legal entities yet whose viability and existence depend exclusively on the project and whose goods and services are essential for the successful operation of the project.

(iv) Facilities, operations, and services owned or managed by the client, which are part of the security package committed to the EBRD as collateral.

(v) Areas and communities potentially impacted by: cumulative impacts from further planned development of the project or other sources of similar impacts in the geographical area, any existing project or condition, and other project-related developments that can realistically be expected at the time due diligence is undertaken.

(vi) Areas and communities potentially affected by impacts from unplanned but predictable developments caused by the project that may occur later or at a different location. The area of influence does not include potential impacts that would occur without the project or independently of the project.

The EBRD 2012 Mining Operations Policy (Section 4.3) further identifies more specific criteria for setting the AoI for mining projects, as follows:



In mining projects, the Area of Influence can include areas and communities potentially impacted by cumulative impacts from further planned development of the project or other sources of similar impacts in the geographical area and other project-related developments. In particular this can refer to power lines, access roads, quarries, processing facilities, and other assets that are included in the security package for the investment...

...Whereas the full requirements of the PRs may not apply to a designated Areas of Influence, the potential environmental and social impacts and issues must be appraised so that the potential impacts of the project are understood and that adverse impacts can be avoided, minimised, or otherwise managed.

To address the significant challenge of setting the AoI in individual cases, the EBRD Mining Operations Policy (Section 4.3) recommends that the decision is based on a thorough baseline appraisal of environmental and socio-economic receptors, as follows: *Due to the large areas of land that can be affected by mining projects, and the potential for significant environmental, health, safety and social impacts to occur, particular attention needs to be given to the appraisal of baseline environmental and socio-economic conditions in the Area of Influence of the proposed project. This forms the starting point for the assessment of the potential impacts, risks, opportunities, and required mitigation measures across all phases of the project life cycle, from initial exploration and pre-feasibility studies through to post-closure care and maintenance.*

As a starting point for establishing the primary AoI for the baseline studies, an analysis of the existing environmental and socio-economic DPM documents was made to identify each document's geographical scope of the proposed project, Table 2-1 presents summary findings and **Error! Reference source not found.** illustrates these boundaries on a map.

Table 2-1: Area of Influence for the Krumovgrad project, as defined in existing DPM studies

Name of Study	Section/Page	Definition of AoI
Baseline Socio-Economic Survey for Krumovgrad Project Impact Area, prepared by Vitoshka Research (2004);	pp.3-6	Immediate project area – settlements within 1000 m of the proposed project (pilot interviews and surveys), as well as wider region (for secondary data analysis) – encompassing Krumovgrad Municipality.
Local Populations Attitude Report, prepared by Vitoshka Research (2005)	p.3	Town of Krumovgrad and the 5 settlements (villages or hamlets) in the immediate vicinity of the project – Polkovnik Zhelyazovo, Edrino, Dazhdovnik, Kuklitsa, Sarnak and Zvanarka.
Final English EIA Report for the Krumovgrad Project (2010)	NA	Impacted area in EIA Report varies for different components of the environment. For the biodiversity component the affected Natura areas are considered. For impacts on the communities – such as noise or health impacts considers the 9 nearby settlements, adjacent to the project site, including one neighbourhood of the town of Krumovgrad.



Net Impact Valuation of Krumovgrad Project, prepared by denkstatt (2014)	Methodology Report Sections 5-6	Various definitions depending on receptor – from global (regarding GHG emissions) to municipal (social impacts) and strictly localized (noise, air pollution, etc.).
Visual Impact Assessment report as addendum to the EIA (2014)	Section 2.2.2	A 5-km zone around the proposed development, including the Krumovgrad, Izgrev and villages of Dazhdovnik, Edrino, Guliya, Golyamo Kamenyane, Polkovnik Zhelyazovo, Rogach, Skalak, Vransko and Zvanarka and their respective hamlets, and traffic and recreational points within the 5-km zone.
Socio-economic household survey – HHS (2014)	Methodology description	Krumovgrad, Izgrev and villages Ovchari, Zvanarka, Dazhdovnik, Edrino, Malko Kamenyane, Kuklitsa, Skalak, Rogach and Guliya

Based on this it was established that the **primary Area of Influence** (hereafter referred to as the AoI) for the Socio-economic baseline includes:

- The Krumovgrad project facilities and all DPM assets related to the project;
- The villages and the respective hamlets in the immediate vicinity of the project facilities, which have been identified during the scoping stage and surveyed in the household survey – Ovchari, Zvanarka, Dazhdovnik, Edrino, Malko Kamenyane, Kuklitsa, Skalak, Rogach and Guliya (understanding that the Mahala system applies as described below);
- The town of Krumovgrad and the outlying Izgrev quarter.

Within the context the Mahala system applies which names only the main village of a cluster of hamlets for administrative purposes. The following Table 2-2 illustrates the hamlets, which fall under the administrative lead villages and are within 2000 metres of the proposed project. The household survey incorporated the hamlets within the main village as set out below. Some hamlets of the administrative lead village were not included as they were beyond a 3000m zone from the project site.

Table 2-2: Illustration of the hamlets which fall under the territorial jurisdiction (administrative) of a nominated village as indicated by the Mahala system. Some hamlets are not included as they are beyond a 3000m zone from the project site

Town/Village	Hamlet with in the village
Krumovgrad	Izgrev (quarter of Krumovgrad)
Edrino	
Ovchari	Taynik
	Bitovo
	Soyka
	Varhushka
	Konsko
	Chobanka 1



	Chobanka 2
	Synap
Zvanarka	Zvanarka
	Lozino 1
	Lozino 2
	Lozino 3
Dajdovnik	Dajdovnik
	Kupel
Malko Kamenyane	Ladovo
Kaklista	Shtarbina
	Kokoshar
Skalak	Podeba
	Belagush
	Skalak
	Kremenik
	Koprivnik
Gulia	Belook
	Pazach
Rogach	Kedikler

Figure 2-1 illustrates the villages and hamlets in the primary area of influence in relation to the proposed project site Figures 2-2 and 2-3 illustrate the Project in municipality and district context.

It must be noted that the AoI may be further expanded or revised, based on new/changed evidence or indications that mine construction/operation/closure impacts are directly impacting communities that were not previously included in the AoI.



Figure 2-1: Primary Area of influence for the Krumovgrad Project

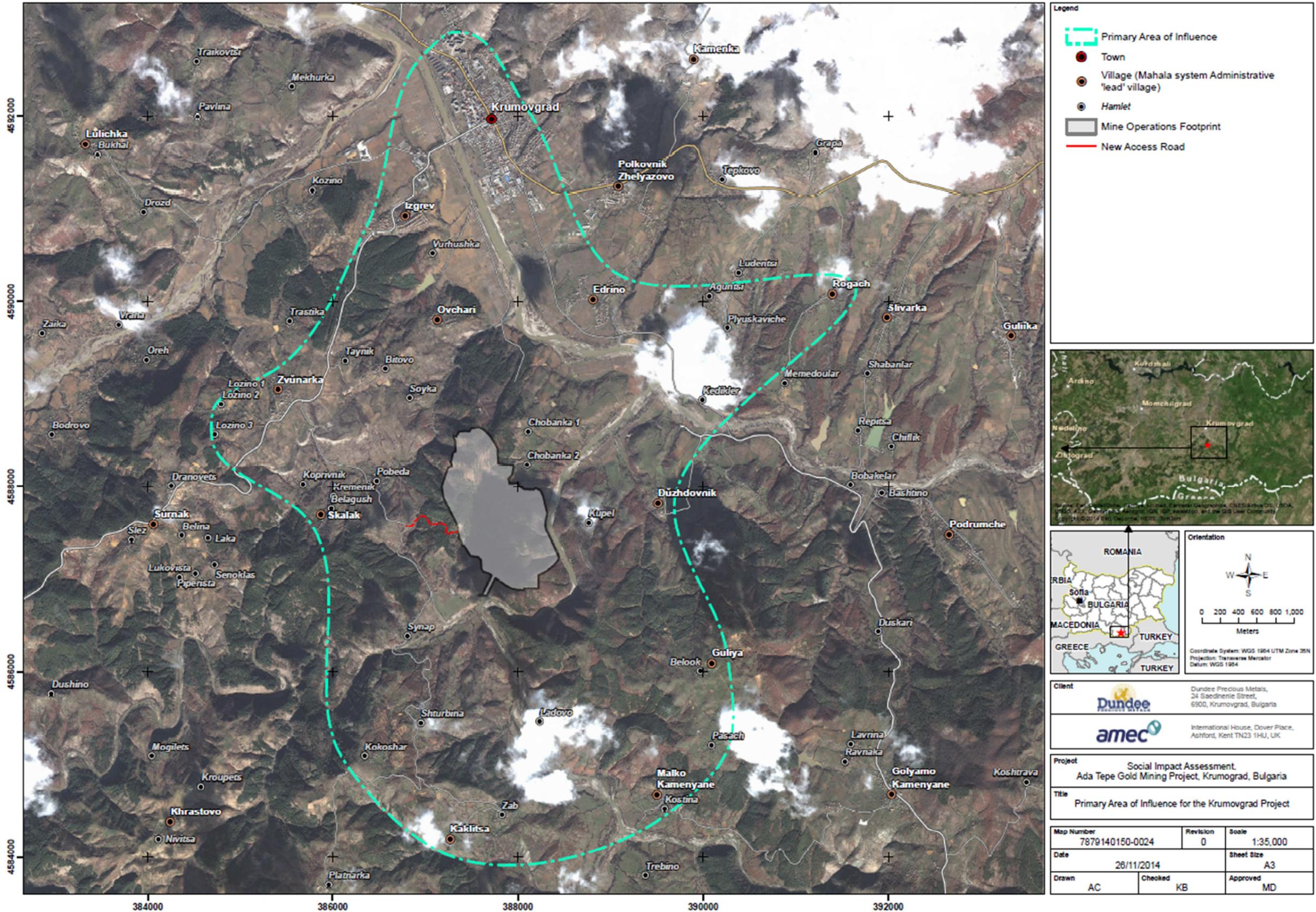
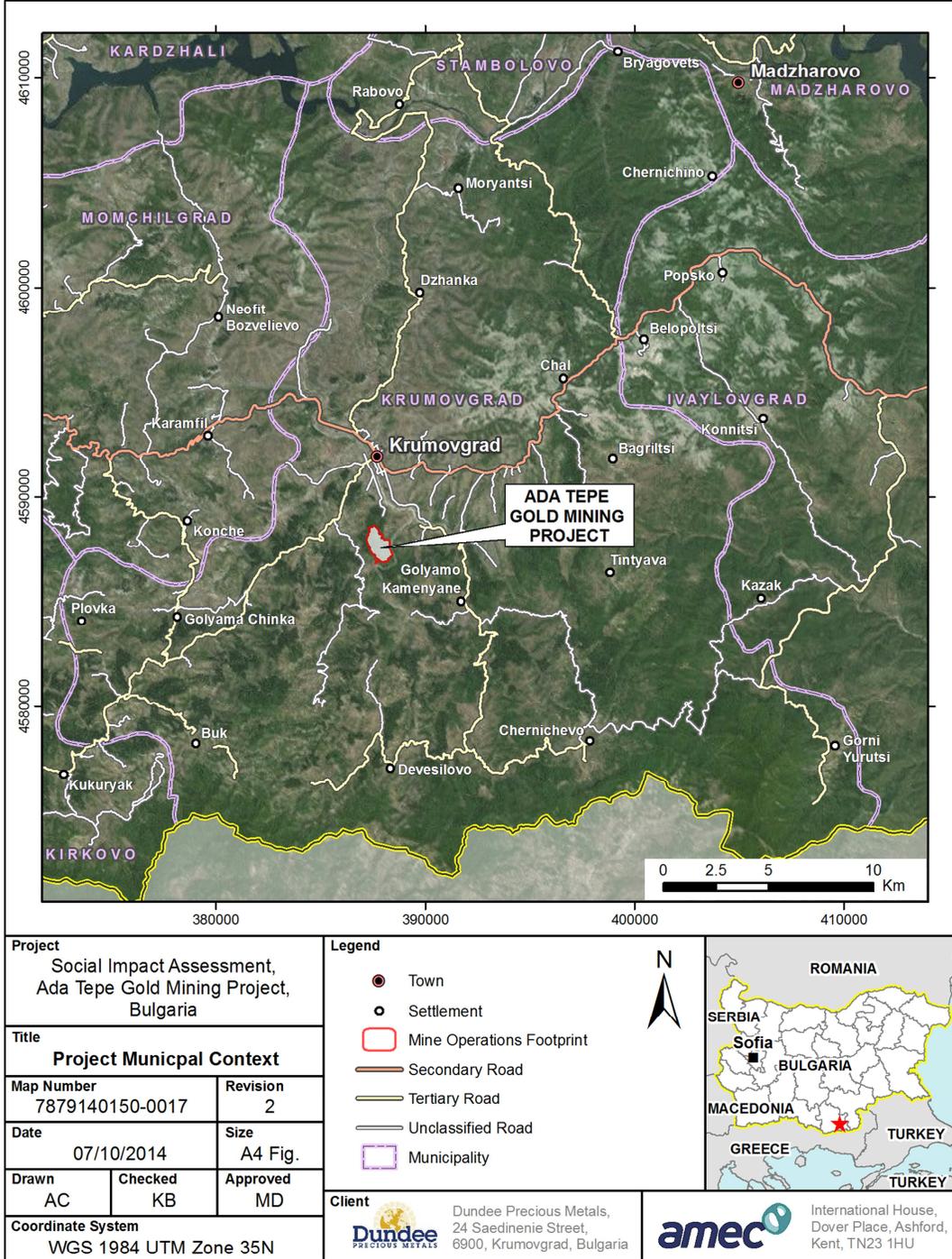




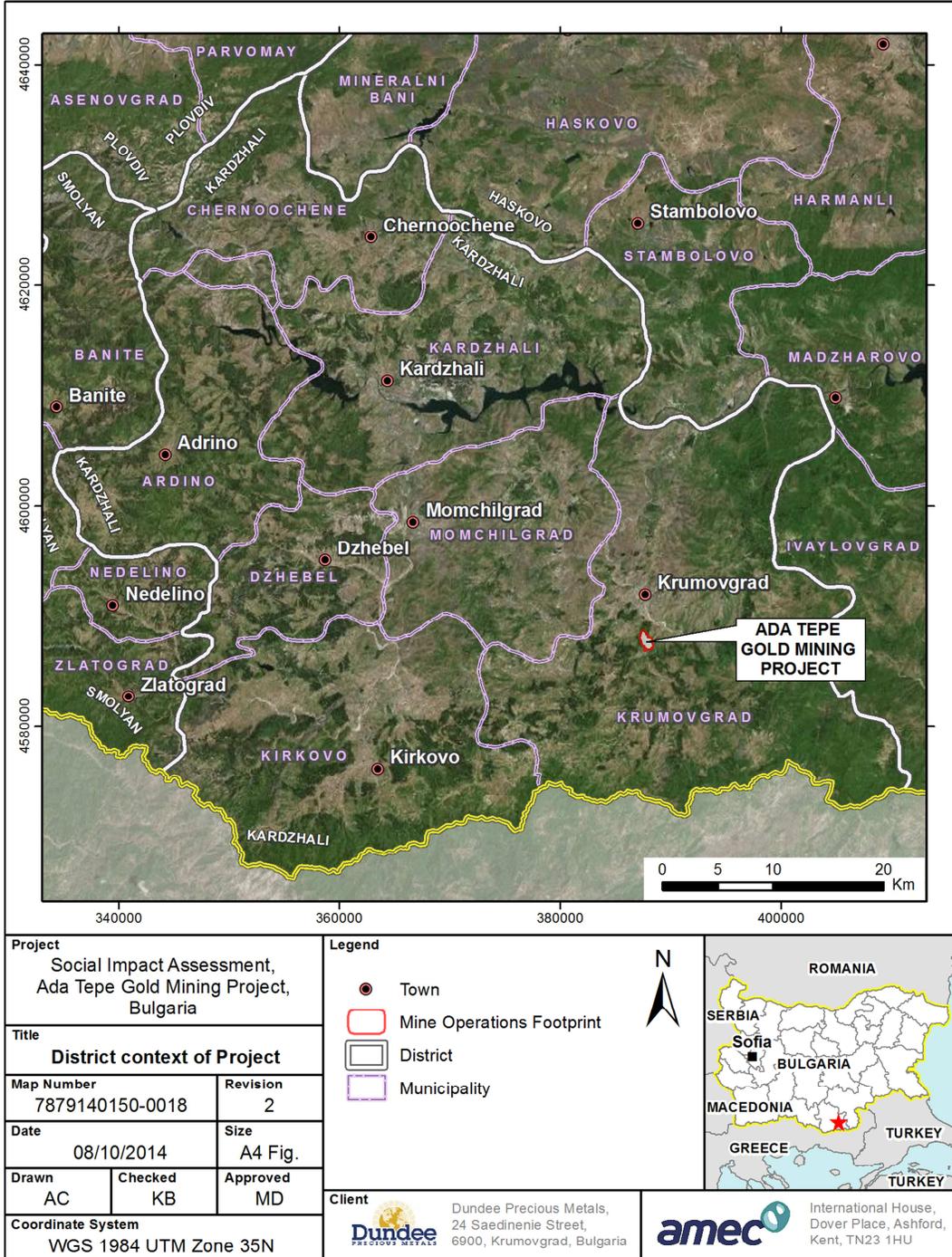
Figure 2-2: Map illustrating the project site within the Municipality of Krumovgrad.



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Figure 2-3: Map to illustrate the project site within the district of Kardzhali.



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



3.0 Baseline Methodology

3.1 Information Sources

3.1.1 Secondary Information Sources

Where National Statistics Institute (NSI) data are available across spatial levels – both national, district and municipal data are displayed and analysed in the report. In addition to providing sectoral and/or topical information, the baseline draws on secondary data from official strategic documents to enrich the analysis by providing important qualitative observations and conclusions about current trends and causal mechanisms. Where possible, inferences from the quantitative data have been supported by interpretations from these official documents. In a few cases, unofficial sources such as media report and documents generated by reputable organizations such as national NGOs have also been used to provide contextual information.

Secondary data sources is provided mainly from municipal strategic documents – the draft Municipal Development Plan (MDP) for the period 2014-2020. This information has been supplemented by DPM's commissioned reports - especially with regard to archaeology (summary information of Ada Tepe excavations), local accommodation (specially commissioned Rental Housing Survey), occupational skills (specially commissioned Skills survey) and ecosystems services baseline and impact assessment (2014). Earlier DPM studies and reports from the period 2004-2014, including opinion surveys, socio-economic reviews, etc., are used to a limited extent, because the information contained there is not up to date or is inferior to the official secondary sources such as NSI and Krumovgrad MDP. The Krumovgrad MDP and DPM studies are cited in each case where quantitative data are used or qualitative inferences from them are made in the report.

3.1.2 Primary Information Sources

The local level information – at the AoI level and also for individual settlements is constructed based on primary sources, which consist of information gathered from baseline consultation meetings (see Baseline Consultations below), conducted in July 2014. Findings of such are presented in a separate Stakeholder Engagement Chapter and are referenced as AMEC 2014. Further more a socio-economic household survey (hereafter referred to as HHS) was also conducted in July 2014 and findings are presented in Annex 1.

3.2 Baseline Consultations Methodology

Baseline consultations were carried out by AMEC to inform both the scoping stage and the baseline information collection, and to verify assumptions on the ground. The scoping fieldwork took place between 2nd – 5th June 2014 and the team consisted of two scoping consultants, a translator and a DPM community liaison officer.

Prior to the baseline stakeholder engagement fieldwork, a plan was developed which identified many of the stakeholders and the most appropriate engagement approach.



The fieldwork took place between July 8 and July 15. The team consisted of a stakeholder engagement consultant and a translator (Bulgarian/Turkish). They worked over a period of eight days (AMEC, 2014).

One-on-one interviews and focus group meetings were used to engage with stakeholders. These were carried out using a semi-structured interview technique. Topic areas and questions discussed were based on the known key impacts associated with similar mining projects in the area (AMEC, 2014).

The translator carried out translations during the meetings. Interview notes were taken as near verbatim as possible and the salient points were extracted and analysed in relation to other consultations so as to distil and validate common issues (AMEC, 2014).

In addition, observations were made of the physical environments in which communities were located. For example, the terrestrial environment, infrastructure, and livelihood activities were noted. Collectively, these findings formed a basis for the baseline study, the impact analysis and identification of potential mitigation measures (AMEC, 2014).

3.3 Socio-Economic Survey Methodology

The household survey was conducted in July 2014, and covered the villages of Krumovgrad, Izgrev, Edrino, Dazhdovnik, Ovchari, Zvanarka, Malko Kamenyane, Kuklitsa, Skalak, Guliya and Rogach incorporated in this sample are the hamlets that fall within the administrative catchment of these villages as set out under above under the paragraph setting out the Project Aoi. The socio-economic household survey (DPM HHS, 2014) was based on a representative sample of 396 households (1 154 persons) at 90% confidence level, (refer annex 1).

Understanding that these communities consist of clusters of small hamlets and villages, the total 'actual' population of the villages and their cluster hamlets collectively were used to calculate the sample size. Proportionate ratios were calculated from the final sample size to work out how many household surveys to perform in each hamlet.

A survey questionnaire was created, covering a range of socio-economic topics, with the purpose of gathering data to characterise the socio economic dimensions of the Aoi. The topic areas within the survey were designed to cover the entire range and typology of variation among households, understood to be typical for Bulgaria and the region during the scoping stage analysis refer Annex 1 for the full household survey questionnaire.

The responses from the HHS were collated and systematized with assistance by Sofia University researchers, and were provided in aggregated and disaggregated form for the present study. This data is presented in Annex 1.



3.4 Limitations

3.4.1 Secondary data sources

The following data limitations have been encountered during the data analysis and elaboration of this baseline report:

- Previous project studies have mostly focused on the impacts and public perception of the Krumovgrad project, with relatively little analysis of the baseline situation, with the exception of the national EIA report. Also, data from DPM studies are not always relevant (some studies date back from to the early 2000s). This problem has been remedied by sourcing baseline information primarily the recent socio-economic studies and including external sources – especially NSI data (see NSI data limitation below) and information from the draft of the Municipal Development Plan (MDP) for the period 2014-2020;
- Public NSI data are mostly available at national and Kardzhali district level – few relevant NSI statistics are available at municipality level;
- There are no comprehensive National Statistics data on the prevalent economic sectors and activities for the municipality or district. Furthermore the MDP has very little, information on economic activities within the Municipality and businesses, included in the report.

3.4.2 Primary data sources

Both the HHS and stakeholder consultation interviews have their own limitations– mainly, the anecdotal nature and inherent biases of the accounts of interviewees, and the limitations placed by the formulation of the survey questions and answers. Where the respondents' statements can be directly cross-checked with relevant answers from the survey, this has been done for objectivity.

Also, many of the hamlets, as studies revealed are largely depopulated. Although the baseline consultations and HHS survey were undertaken during the summer months of June and July, when a lot of the hamlet households historically return from Turkey to spend their summer holidays in Bulgaria, it was found that few households had actually returned this year or in recent years. The studies endeavoured to reach as many potentially affected stakeholders as possible by going door to door and requesting the Mayor to contact all village and hamlet dwellers, however due to absence of household residents not as many were consulted with, as had been intended. The household survey intended to reach 418 households however the survey was performed on 396 households.

Other considerations with regard to the completeness and objectivity of primary data:

- Stakeholder consultation is a fairly new phenomenon in Bulgaria and as such the population especially in some of the small hamlets is generally unwilling to talk in a participatory consultative forum. This is compounded by the occurrence of past



negative campaigns against the mining project inclusive of door-to-door anti-mining lobbying against the project (mainly in Krumovgrad). This appears to have resulted in generation of suspicion and an unwillingness to talk to external parties about the project. This was overcome by the consultant providing a detailed description of the purpose of the consultation and an emphasis was made on the independent nature of the SIA process and the requirements of the recipient organizations such as EBRD. When parties were unwilling to participate, this was respected;

- Some concepts and discussion points could have been distorted through the process of translation, thereby influencing the validity of responses from the stakeholders to the SIA consultant's questions. To counter this, checks were incorporated to ensure the reliability in the translation and the consultation process.

3.5 Report Structure

The structure of the Baseline report presents each socio-economic aspect starting with a brief national overview, followed by elaboration of the main findings from the secondary information sources and the HHS and stakeholder interviews, ordered in sub-sections pertaining to particular topics. In the demography section, the sub-sections follow the basic demographic traits of the population, also discussing the main identified vulnerable groups. The infrastructure section presents the main types of engineering infrastructure assets, such as those related to housing, transport and energy. The land use and natural resource section details the land use statute, regimes and actual utilization of land and natural resources in the AoI. The education and health chapters provide separate description of the function and state of the respective service provision system, and the health and education status of the local population. The Economy section focuses on the main identified sectors of economic activities – industry, tourism, agriculture and services. The cultural heritage section presents the local archaeological findings and intangible cultural assets, such as traditions. The report ends with a brief conclusion sections, outlining the main findings for each of the analysed aspects. The report is set out in the following chapters; Governance (Section 4); Demography (Section 5); Infrastructure (Section 6); Natural Resources and Land Use (Section 7); Education (Section 8); Economy and Livelihoods (Section 9); Health (Section 10); Cultural Heritage (Section 11) and finally report conclusions (Section 12).



4.0 Governance

4.1 Formal Structure

National Overview

Bulgaria is a parliamentary democracy and the legislative system is divided into three independent branches – legislative, executive and judicial.

The legislative branch is represented by the National Assembly (Narodno Sabranie) that is composed of 240 members, elected in parliamentary elections for a four-year term and representing the 28 districts – one of which, Kardzhali district, includes Krumovgrad municipality and the footprint of the project. The National Assembly has powers to adopt legislation, it elects the Prime Minister and the government, approves the national budget, and ratifies international agreements, among other duties.

The Constitution provides the opportunity to convene a Grand National Assembly (Veliko Narodno Sabranie) that has special powers such as the adoption of a new Constitution, amendments to certain articles of the Constitution that are related to basic civil rights and territorial changes. The Grand National Assembly consists of 400 members.

The executive branch on a national level is represented by the President and the Council of Ministers (government).

The President is elected in a direct election for a five-year term and serves as the head of state and commander in chief of the armed forces. Apart from largely ceremonial and representative functions the President may veto legislation. In such cases the draft legislation is returned to the National Assembly for second review, but the MPs can pass it again by qualified majority.

The Council of Ministers is the principle executive organ and is elected by the National Assembly. It is responsible for managing the budget, the state administration and maintaining law and order. The Council is chaired by the Prime Minister and is comprised of ministers, who head the different departments (Ministries) of the government.

The Council of Ministers appoints 28 District Governors who are responsible for the implementation of national policies on local level – i.e. management of state property. They governors also oversee the decisions by Municipal Councils and mayors within their District and have powers to either veto the decisions or send a signal to the Administrative Court.

Each district is composed of Municipalities that are the basic form of administrative division. Municipalities are run by a Mayor (elected by the population for four-year term) and a Municipal Council (local parliament). There are 264 Municipalities in Bulgaria, and each Municipality is composed of one or more towns and villages. Each town or village within a municipality also has a Mayor elected by the citizens for a four-year term. The Municipal



Council approves the yearly budget, adopts strategies and plans for development, and exercises control on the Municipal Administration.

The judicial branch is constitutionally independent of the executive branch of government. The Supreme Judicial Council is the highest body responsible for managing the judiciary and ensuring its independence. It appoints judges, prosecutors and other categories of employees and manages judiciary affairs without interfering with the independence of the bodies concerned.

The district courts are the main courts for examining cases in the first instance. Their decisions are subject to appeal before the provincial court. The provincial courts act as courts of first instance, where they examine a predefined type of case involving significant financial resources or substantial societal interests. They also act as a second (appellate) instance for re-examination of decisions taken by the district courts.

The 28 administrative courts have jurisdiction over cases related to issuing, amendments, repeal or annulment of administrative acts; a declaration that an agreement covered by the Administrative Procedure Code is null or void; redress against unwarranted actions and omissions by the administration; protection against unlawful coercive enforcement; compensation for injury resulting from unlawful acts, actions or omissions by administrative authorities and officials; compensation for injury resulting from coercive enforcement; the annulment, invalidation or setting-aside of judgments rendered by administrative courts; a finding that an administrative act covered by the Administrative Procedure Code is not authentic. (European e-Justice Portal, 2014)

Local Overview

The AoI is located within the district of Kardzhali and the municipality of Krumovgrad. The district of Kardzhali is one of 28 administrative districts (aka "oblasts"). It includes 7 municipalities – Kardzhali (the district center), Ardino, Chernoochene, Dzhebel, Momchilgrad, Kirkovo and Krumovgrad. The district has a total population of 152 808 persons, based on the 2011 census (NSI, 2011). The district administration has adopted a total of several strategic documents of the district level, which also apply to Krumovgrad municipality – the most important of these concerning general economic development, the provision of social services, and social integration of the Roma minority and other vulnerable groups (Kardzhali district, 2014)

The municipality of Krumovgrad is composed of the town of Krumovgrad, the administrative center and 79 villages. The Municipal Council has 29 members divided in eight permanent committees: Finance and Budget; Territorial; Development and Environment; Legal Affairs and Regional Policy; Municipal Assets and Investment Policy; Education, Culture, Sports, Youth and Tourism; Healthcare and Social Policy; Agriculture and Forestry, and Ethics. The municipal administration employs some 140 people in the Municipality with the aim to increase its efficiency and overall capacity.



Several governmental institutions have local offices at district and municipal level.

In the Kardzhali District:

- Regional Health Inspectorate (under the Ministry of Health);
- Regional Inspectorate for Environment and Waters (under the Ministry of Environment and Waters, based in Haskovo, responsible for both Haskovo and Kardzhali districts);
- National Revenue Agency regional office;
- National Social Security Institute regional office;
- District Police Directorate (under the Ministry of Interior);
- Regional Inspectorate for Education (under the Ministry of Education and Science).

In Krumovgrad Municipality:

- Labour Office (under the Ministry of Labour and Social Policy);
- Municipal Agricultural Office (under the Ministry of Agriculture and Foods);
- National Social Security Institute municipal office;
- Police office (under the Ministry of Interior).

At district level there are two types of courts in Kardzhali: Provincial Court and Administrative Court. In Krumovgrad there is a District Court.

4.2 Informal Structures

Informal structures of self-governance are not typical for Bulgaria. Few such structures exist, most notably in the Roma minority. The Roma informal “meshere” institution functions as a hybrid between an extrajudicial settlement body and an elders council, and typically settles small disputes between Roma. Such councils exist at both local and national level, but cover only some Roma (Darik, 2011). It is not known if any meshere councils function in Krumovgrad municipality.

4.3 Political Overview

Politics in the District of Kardzhali is dominated by the Movement for Rights and Freedom (MRF) party that has achieved decisive victories in the region for all recent parliamentary and local elections. Although it is not a strict ethnic party, MRF is nationally recognized as the political defender of the rights of ethnic and religious minorities, including the Turkish and Muslim Roma minorities, which is the basis of its support in ethnically and religiously mixed regions of Bulgaria, such as Kardzhali district and Krumovgrad municipality. In the past three parliamentary elections MRF has sent the majority of the five MPs from the District (CEC, 2014). On a municipal level MRF has won all mayoral seats in the seven municipalities in the past three local elections.



5.0 Demography

5.1 National Review

The following national review has been largely constructed based on national analysis of demographic trends, conducted in 2012 and presented in Revised National Strategy for Demographic Development of Bulgaria, elaborated by the Bulgarian Ministry of Labour and Social Policy (MLSP, 2012).

According to the Census of 1.02.2011 the population of Bulgaria is 7 364 570 people. In the period between the two censuses of 2001 and 2011, the population of the country has decreased by 564 331 people at an average annual rate of decline of 0.7%. Some factors influencing the population of the country are the natural growth (births and deaths) and the international migration, in territorial aspect - internal migration of the population and administrative and territorial changes. About two-thirds of this population reduction is due to negative natural growth (more deaths than births). For the period 1.03.2001 – 1.02.2011 the population has decreased by 389 087 people due to negative natural growth. Almost a third of the reduction in the population for the period between the censuses of 2001 and 2011 is due to emigration, which is estimated at 175 244 people.

Socio-economic changes after 1989 have accelerated the decrease of the birth rate, resulting in a rate of 7.7‰ in 1997. After this minimum is registered a process of stabilization is observed leading to a birth rate typical for most Western European countries (between 9‰ and 11‰.). Over the past two decades of transition a decrease is reported in the birth rates of all major ethnic groups, but it is not uniform. Roma and Turks have relatively higher birth rates than the national average, but there is a trend of convergence. The current considerably younger age structure of these populations is an important factor for maintaining and even increasing their share in the younger population in the medium term.

With regard to migration in the period between the last censuses of 2001 and 2011, 379 181 persons have changed their address in the country from one place to another - mostly moving to national and regional centers such as Sofia, Varna, Plovdiv and Burgas. The process of opening up of the Bulgarian economy and EU accession has also led to increased outward migration – as already stated.

With regard to ethnicity, as of 2011, the Bulgarian ethnic group comprises of 5 664 624 or 84.8% of the people who have voluntarily declared their ethnic self-determination. The Turkish ethnic group is the second largest with 588 318 persons who have identified themselves as ethnic Turks, representing about 8.8% of the total population. The Roma ethnic group traditionally is third largest. As of 01.02.2011 it amounts to 325 343 people according to their self-determination with a share of 4.9%. Other ethnic, national and religious minorities include Russians, Armenians, Greeks, Jewish, Macedonians, Ukrainians and others totalling 49 304 people or 0.7% of the total population. The dynamics of the ethnic groups have been relatively stable over the past decade, with the notable exception of



significant migration of the Turkish population (especially in Kardzhali district) to Turkey in the late 1980s, which has been slightly reversed since then.

Language and religion are closely related to ethnicity - among Bulgarians 99.4% indicate Bulgarian as their native language, with 96.6% of the Turks indicating Turkish. For the Roma minority 85% indicated Roma as mother tongue, 7.5% - Bulgarian and 6.7% - Turkish. With regard to religion, a similar division exists - persons who have identified themselves as Eastern-Orthodox make up the biggest group – 4 374 135 people, or 76% of respondents. Another 577 139 persons, or about 10%, have identified themselves as Muslim. Of them 546 004 people identify as Sunni Muslims, and the rest as Shiite Muslims - 27 407 people. Catholicism is practiced by 48 945 people, Protestantism by 64 476 people, respectively 0.8 and 1.1% of the respondents, with other religious beliefs being much less prevalent.

The population of the country is distributed into 28 districts and 264 municipalities, in which there are in total 255 towns and 5 047 villages. In 2011 5 339 001 people, or 72.5%, lived in the towns⁴, while the rural population was 2 025 569, or 27.5% of the total. In the period 2001-2011 there was a distinct trend of depopulation in all the districts of Bulgaria with the exception of Sofia and Varna. In some areas of northwestern Bulgaria the population has decreased by a remarkable 20% in the 10-year period, but in the areas of South Central and Southwest Bulgaria, the reduction of the population was at or below average. The minority ethnic groups are concentrated in rural areas, such as Kardzhali district. In 2011, 44.6% of the Roma population and 62.3% of the Turks lived in villages.

With regard to the gender structure of the population there is a trend of dominance in the number of women. In 2011 out of the total population of 7 364 570 people – 3 777 999 (51.3%) were women and 3 586 571 people (48.7%) were men, or for every 1 000 men there were 1 053 women. In some lower and middle age cohorts men predominate, while there are significantly more women in the age groups above 60 which contributes to the higher poverty rates in these groups taking into account the lower incomes received before retirement and consequently lower pensions. In rural areas there are almost as many women aged 60+ years as women aged 40 or less. Rural population is significantly older than the urban population, with a predominance of women in the higher age groups. This predetermines some negative economic trends – while labour participation of active age women compared to men in Bulgaria is not dramatically low in the EU context, a predominance of women at the higher age group and traditionally low pension incomes impede access to health care, and goods and services for women in rural areas.

⁴ In Bulgaria “town” status (referring to both large cities and small towns) is based upon special designation of the settlement by the Council of Ministers. By general conventions only settlements over approximately 3 500 inhabitants receive town status, and new town designations are very infrequent due to the prevailing trend of depopulation of small settlements. Some national cultural or tourist centers with populations as low as 1 000 people are designated as town due to their importance and there are a few other exception. Generally all smaller settlement are designated as villages.



5.2 Population characteristics

5.2.1 Demography

Krumovgrad municipality covers an area of 836.75 km² and consists of 1 town (Krumovgrad) and 79 villages. According to the Census conducted in February 2011 the population size of Krumovgrad municipality is 17 823, which is 11.66% of the total population of the Kardzhali district and forms 0.24% of the population of Bulgaria, refer Table 5-1 below.

Table 5-1: Population- Census 2011(Sources – NSI, 2011 and ESGRAON, 2014)

Territorial Unit	NSI Census- 2011	2014 ESGRAON ⁵
Krumovgrad Municipality	17 823	18 233
Krumovgrad (town only)	5 070	4 943
Kardzhali district	152 808	160 931
Bulgaria	7 364 570	

More up-to-date information is offered by ESGRAON, which refers to the number of inhabitants having their current address in the municipality or district, refer to Table 5-1 above. In 2014 the number of inhabitants in the municipality and the district has increased according to ESGRAON by up to 18 233 people to 160 931, while in the town of Krumovgrad there was a decrease in population.

In terms of population density the municipality and the district are below the National average of 66 inhabitants/km². As presented in Table 5-2 below, the population density in the municipality is, in fact, 2 times lower than the density of the Kardzhali district and 3 times lower than the national average.

Table 5-2: Population- density, absolute numbers for 2001 and 2011, and changes in population

	Population 2011 (NSI)	Population 2001 (NSI)	Change (%)	Area (km ²)	Population density
Krumovgrad Municipality	17 823	19 907	-10.47	836.75	21.30
Krumovgrad (town)	5 070	8 480	-40.21	5.144	985.61
Kardzhali (region)	152 808	164 019	-6.84	3 209.1	47.62
Bulgaria	7 364 570	7 928 901	-7.12	110 994	66.35

Source: National statistical institute

A trend can be seen in the figures above, especially in the town of Krumovgrad, where there was a 40% decrease in the population for the period 2001-2011. The population decrease of the entire municipality was lower, with a 10.47% decrease between 2001 and 2011. Some of

⁵ ESGRAON is the National resident registration system and main source of information for physical persons. Every citizen has a Personal registration chart. The system is the most frequently updated source of statistics on the population.



the reasons for this decrease are the negative natural growth and the negative net migration.

The overall categorization of the villages in the AoI is that they are small, which is typical for the villages in the Municipality of Krumovgrad. Villages within the municipality also usually consist of clusters of hamlets, as discussed previously. Baseline consultations found that the mine site hamlets were largely depopulated and dwellings remained unoccupied, indeed 2 of the hamlets within the Aoi and closest to the proposed project site, Chobanka 1 and Chobanka 2 (Ovchari village) are abandoned, with only one household rented off an absent owner and their land used for cattle grazing, refer to Figure 5-1 below. The depopulation of rural villages in Krumovgrad and in other parts of Bulgaria was due to the outward population migration during the late eighties. As discussed under the data considerations, when performing the household survey it was found that registered data of population sizes of the mine site villages and hamlets, provided by the Municipality, did not correspond to the actual population size. Table 5-3 shows the distribution of registered citizens in the villages of the AoI and compares it to actual numbers. The actual data differs a lot from the registered data in some cases, such as for Ovchari village or Zvanarka, where the official population is claimed to be almost 3 times bigger than found in the HHS. Five of the villages of the AoI are very small, having less than 100 residents. The biggest shares of the population live in the town of Krumovgrad and in Izgrev. The next biggest is the village of Edrino (380 residents), which is near to Krumovgrad followed by Ovchari and Zvanarka.

Figure 5-1: Abandoned Village dwellings of Chobanka 1 and 2





Table 5-3: Population size of the villages and Towns in the AoI, 2014 (NSI Demography, 2014; DPM HHS, 2014)

Municipality of Krumovgrad- Area of Influence		
Village	Registered	Actual*
Krumovgrad	6 183	4 662
Izgreve	1 174	1 174
Ovchari	421	169
Dazhdovnik	99	46
Edrino	342	380
Malko Kamenyane	50	25
Kuklitsa	50	38
Skalak	41	36
Gulia	65	48
Zvanarka	371	150
Rogach	291	No data

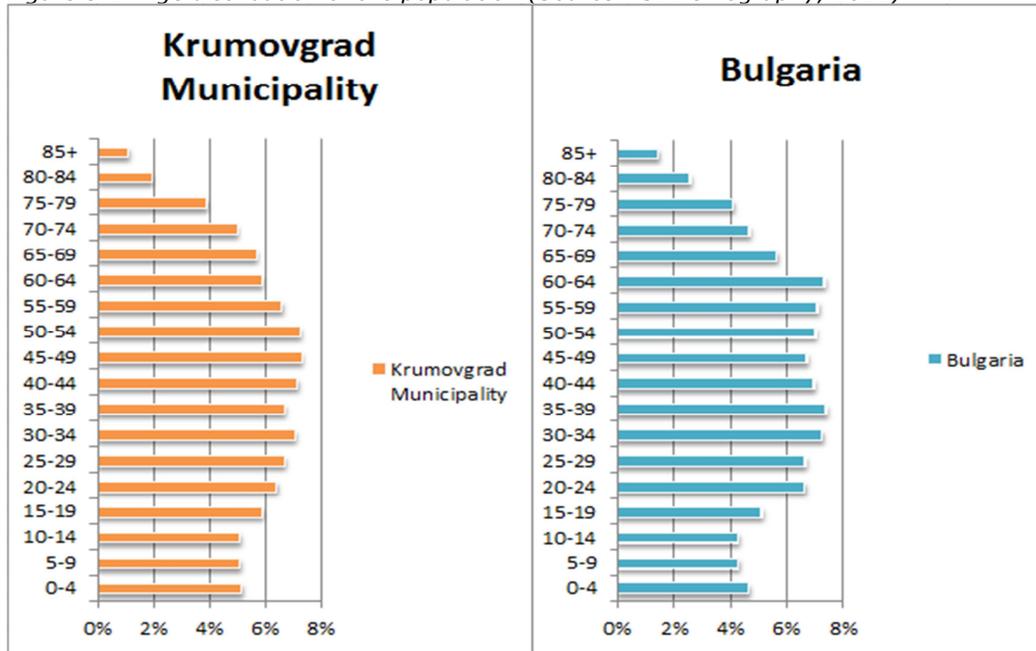
*Figures provided by DPM to SIA Consultant June, 2014

5.2.2 Age

As indicated in the national overview section above, while the populations of Kardzhali district and the Municipality of Krumovgrad are ageing, this is representative of the typical situation of Bulgaria, and the age trends of Krumovgrad Municipality, although predominantly aged, the population is actually younger than other rural regions. The age distribution is close to the average for the country as can be seen on Figure 5-2. Compared to the National average the number of children below 19 in the Municipality of Krumovgrad is slightly higher with 21.25% compared to the national average 18.37%. Similarly the inhabitants of the municipality above 60 years old are 2% less than the National average. Additionally, the percentage of citizens of working age within the municipality is similar to the national average at 55.24% compared to 55.8% nationally.



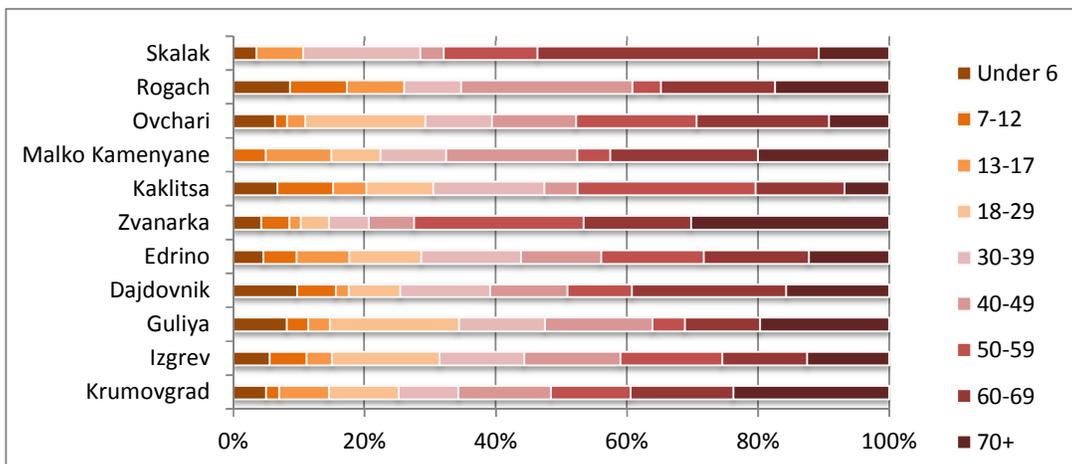
Figure 5-2: Age distribution of the population (Source NSI Demography, 2011)



The reasons for the slightly younger population could be traced to the ethnic structure of the region and in particular the age structure of the Turkish and Roma minorities, confirming the trend explained for the national level. During baseline consultations a consultee described a tendency among teenage Roma for “extremely high rate of births and women get[ting] married at a young age” purported to be motivated by the state social security support.

A more detailed picture of the age structure in the AoI settlements is displayed in Figure 5-3. According to the household survey the village of Kuklitsa is the one with the biggest share of population of working age (between 18 and 60), while the village of Skalakov has the smallest share of people of working age and the biggest share of people over 60 years old.

Figure 5-3: Age of the population in the AoI by villages, Source: HHS, 2014





5.2.3 Gender

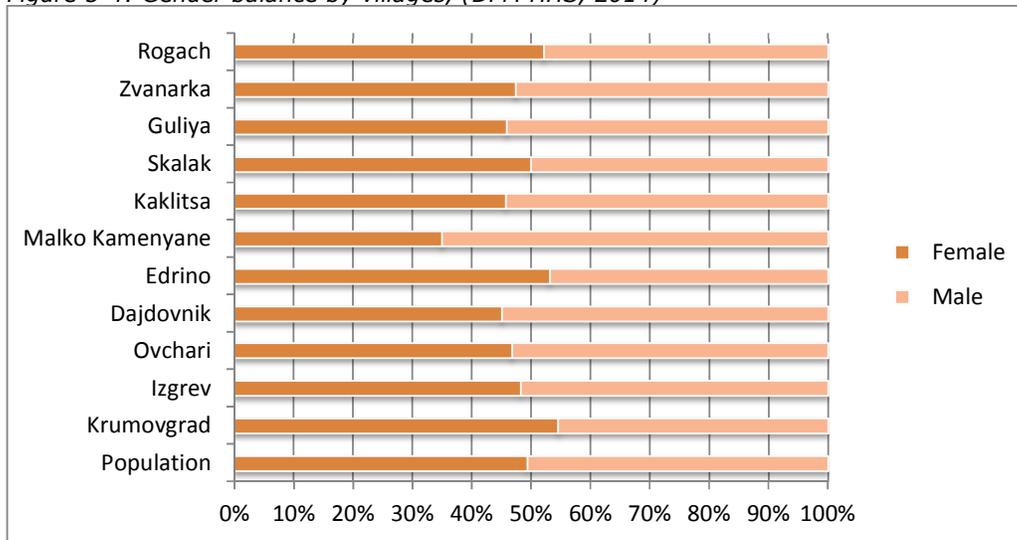
According to the Census of 2011 there is a comparatively even distribution of men and women in the Municipality of Krumovgrad - see Table 5-4 below. Krumovgrad Municipality actually has more male than female inhabitants, which is not representative for the district and for rural regions and the country as a whole, although the deviation is not extreme.

Table 5-4: Gender distribution at national, district and local level (NSI Demographics, 2011)

	Total			Urban population				Rural population			
	All	Men	Women	All	Men	Women	% of total	All	Men	Women	% of total
Krumovgrad	17269	8709	8560	4888	2370	2518	28,31%	12381	6339	6042	71,69%
Kardzhali	150605	74806	75799	62991	30464	32527	41,83%	87614	44342	43272	58,17%
Bulgaria	7245677	3524945	3720732	5291675	2555342	2736333	73,03%	1954002	969603	984399	26,97%

Baseline consultations found that a proportion of the male population in the municipality is employed as seasonal workers abroad, as stated by women interviewees particularly from Edrino during the stakeholder meetings. The HHS results do not indicate such a trend, as for the entire AoI a near parity is established with 51% men and 49% women – see Figure 5-4 below. The biggest deviation is seen in the village of Malko Kamenyane where there is a significant gender imbalance with almost twice as many male residents than female. These findings could to some extent be attributed to the fact that HH survey respondees incorporated absent male members of the household in the count.

Figure 5-4: Gender balance by villages, (DPM HHS, 2014)



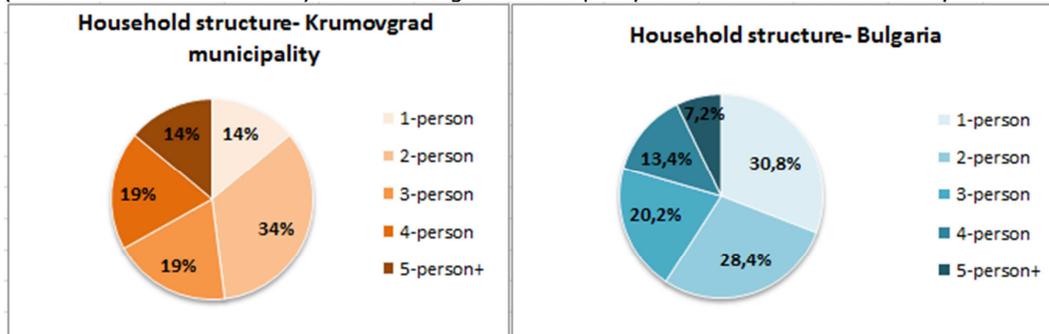
5.2.4 Household composition

The HHS determined that an average household in the AoI consists of 2.9 persons. This is slightly higher than the average of 2.4 persons for the country, as detailed by the National Statistics Institute, and 2.4 persons in urban areas and 2.5 persons in rural areas (NSI Census, 2011). The possible reasons for the difference in the average household size is perhaps related to the age composition and a relatively higher percentage of the population



under 19 than elsewhere in Bulgaria, as discussed earlier. Figure 5-5 below gives the breakdown of household sizes, as identified by the household survey compared with the average national breakdown for 2011 published by NSI. HHS data on individual settlements cannot be interpreted objectively due to the small number of households in each village.

Figure 5-5: Distribution of household sizes in the AoI compared to the national level (sources: household survey for Krumovgrad municipality and NSI for national level)



The proportion of households consisting of 5 or more inhabitants is twice as big as the national figure for this type of households. In addition the proportion of single-person households (14%) is more than twice smaller than national (30.8%). The biggest proportion is for the 2-person households with 34% of interviewees living in such a household. Opposite to the national trend the smallest proportion is of the single-person households with around 14% of interviewees living in this type of household.

5.2.5 Urban/rural population distribution

As referenced in Table 5-4 above, the population size of the rural villages is much higher than those living in towns which is a trend at district level as well as for Krumovgrad municipality. More precisely 71.69% of the population of Krumovgrad Municipality live in rural areas, with the rest living in Krumovgrad. Likewise at district level 58.17% of the residents live in villages and the rest in urban areas. This is a marked difference to the national distribution presented in Section 5.1 above, defining the AoI as definitely situated within a rural area. The fact that many residents live in the smaller settlements could also indicate lack of economic opportunities on a regional level, and especially in the district city of Kardzhali.

Although a higher number of the municipality residents live in rural areas, within the AoI itself, the residents of the town of Krumovgrad and Izgrev quarter significantly outnumber inhabitants of the small villages and their hamlets, some of which were found to be completely deserted during the field visits, such as Chobanka 1 and Chobanka 2. Figure 5-6 and Figure 5-7 below present this strong contrast at the village level.



Figure 5-6: Population size of each village of the AoI (DPM HHS, 2014)

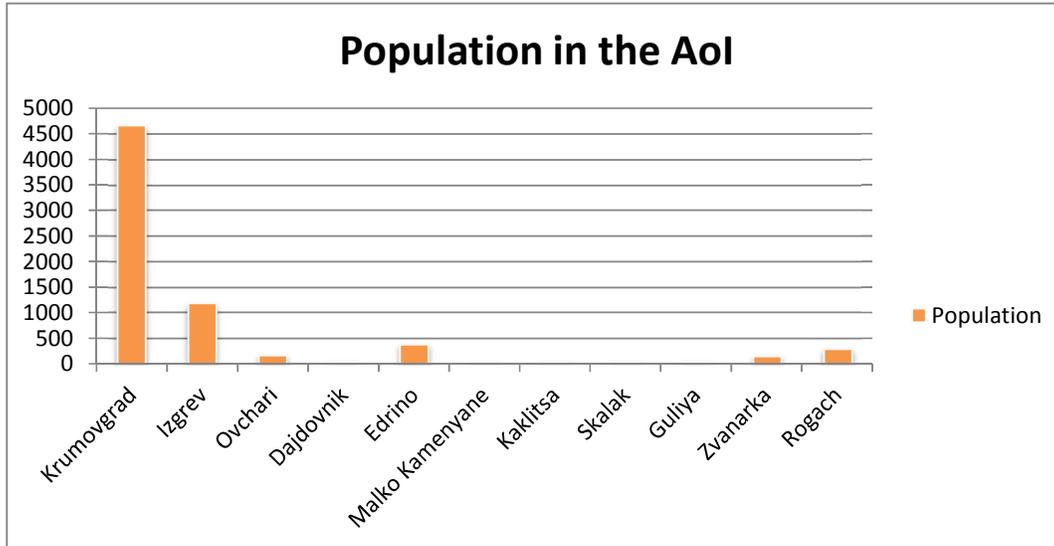
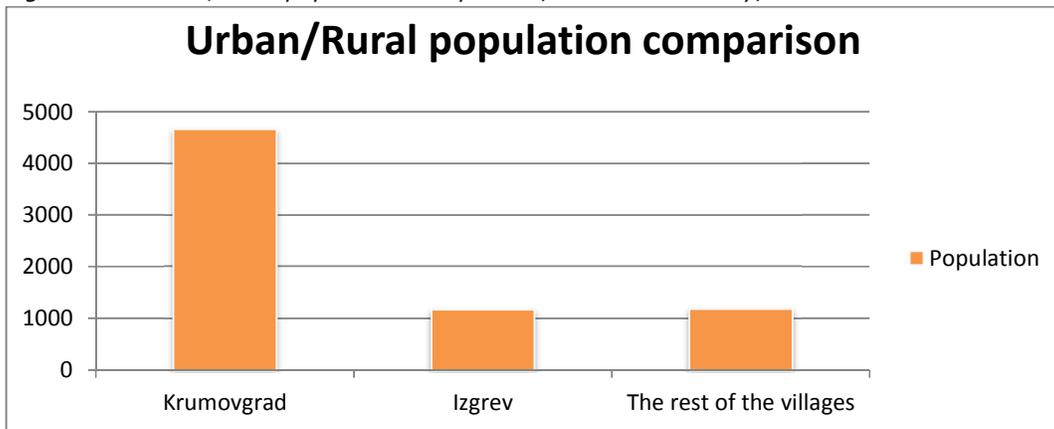


Figure 5-7: Urban/Rural population comparison, household survey, 2014



As the findings from the household survey indicate the population size of Krumovgrad (and Izgrev neighbourhood) is almost 5 times bigger than the rest of the villages taken together. This emphasises the importance of the town of Krumovgrad to the AoI and indicates strong concentration of human resources within the AoI.

5.2.6 Population Growth and Migration

There is a clear tendency of reduction in the population, both in terms of natural growth and migration processes, which reflects the national trends, as noted in Section 5.1 above. In

Table 5-5 below the trends in both of the categories for the past 10 years are presented.



Table 5-5: Net migration of the population (Source: NSI, 2001-2013)

Krumovgrad Municipality	Inward migration			Outward migration			Net Migration		
	All	Men	Women	All	Men	Women	All	Men	Women
2013	111	56	55	293	125	168	-182	-69	-113
2012	127	56	71	280	146	134	-153	-90	-63
2011	134	59	75	242	125	117	-108	-66	-42
2010	194	99	95	552	289	263	-358	-190	-168
2009	235	122	113	450	237	213	-215	-115	-100
2008	517	245	272	671	309	362	-154	-64	-90
2007	269	125	144	449	204	245	-180	-79	-101
2006	138	58	80	368	185	183	-230	-127	-103
2005	290	124	166	543	252	291	-253	-128	-125
2004	300	132	168	540	259	281	-240	-127	-113
2003	262	122	140	472	227	245	-210	-105	-105
2002	233	102	131	430	203	227	-197	-101	-96
2001	556	259	297	755	351	404	-199	-92	-107

As seen in the table above, the size of the outward migration from Krumovgrad Municipality is high for the actual population size of the municipality and remains consistent for all the years of the period 2001-2013. Interestingly, of the total numbers migrating, there is a similar number of men and women. This was evidenced in baseline consultations, where stakeholders stated there was significant migration out of the municipality of youth and men. This leads to the conclusion that most of that outward migration is by people of working age.

While the precise reasons for migration cannot be determined specifically for the locality, it may be deduced that these also correspond to the main motivators present at national level. According to the National strategy for demographic development of Bulgaria 2013-2030 (MLSP, 2012), the biggest group of people migrating within or out the country is of people between 20 and 39 years old, followed by the 40-59 years old group and then those under 20. According to a related survey of the National statistics institute, nearly 59% of emigrants move for the purpose of finding permanent occupation, for 20% leaving the country is related to education opportunities and for 13% it is due to marriage decisions.

Interestingly, however, this trend of emigration for occupational reasons is not evidenced in the household survey target group, as only 3% of the household members over 18 years of age are reported to be seasonally employed abroad, while another 4% are stated to be seasonally employed elsewhere in Bulgaria (See Section 9.2). This may signify that many locals with more permanent employment abroad and in the big city centres of Bulgaria are considered to have permanently left the households and community.

While occupational migration could be permanent, some residents state that there are whole families registered in a particular village, while they are occupying their houses mainly during the summer, which is further evidenced by HSS and VIA findings that even in the summer months many residents are absent from their houses so that actual population



figures were found to be significantly lower than officially registered residents. The reason for this absence mainly has to do with the Turkish residents moving semi-permanently to neighbouring Turkey in the 1980s due to the integration policies of the Bulgarian communist government. Since the advent of democracy in 1989, Turkish inhabitants have been provided dual-citizenship and return to Bulgaria relatively frequently, but do not live there for most of the year, as is indicated in the AoI.

With regard to natural population growth (birth/death) rates, the male death rate is higher than the female death rate. With regard to the birth rate of boys, it is higher than the birth rate of girls for most of the years between 2001 and 2013. Compared to the migration out of the municipality there is a relatively high percentage of birth rates reaching 48% of the total outward migration (average for the period 2001-2013). This probably accounts for the higher number of residents below 19 years old, as evidenced in the population size analysis – see Table 5-6 below. Yet the natural growth of the municipality is negative, due to the higher level of deaths. The current dynamics of death rates and birth rates largely follow the expected long-term trends indicated by the late stages of the demographic transition process in developed countries, as is also indicated by the analysis of the National strategy for demographic development of Bulgaria (MLSP, 2012).

A further assumption can also be made that the reason for higher number of deaths among the male population, which is evident both in the Municipality and at national level, with males from the age group 40-59 being particularly vulnerable, is because of unhealthy lifestyles and exposure to occupational stress (MLSP, 2012). In rural areas, child mortality is also a problem, due to poor access to healthcare and poor social services for the vulnerable groups (MLSP, 2012). Unfortunately, the health data available at municipal level (as stated in the survey and MDP, see Section 10.3) are not conclusive for those particular groups.

Table 5-6: Natural growth of the population, (2001-2013), Source: National Statistical Institute

Krumovgrad Municipality	Live births			Deaths			Natural growth		
	All	Boys	Girls	All	Men	Women	All	Men	Women
2013	191	105	86	194	110	84	-3	-5	2
2012	162	87	75	217	117	100	-55	-30	-25
2011	173	81	92	244	123	121	-71	-42	-29
2010	189	96	93	242	134	108	-53	-38	-15
2009	223	102	121	221	120	101	2	-18	20
2008	216	111	105	238	127	111	-22	-16	-6
2007	209	115	94	249	133	116	-40	-18	-22
2006	219	110	109	231	125	106	-12	-15	3
2005	205	109	96	223	113	110	-18	-4	-14
2004	205	98	107	205	126	79	0	-28	28
2003	200	111	89	192	106	86	8	5	3
2002	203	98	105	225	136	89	-22	-38	16
2001	266	159	107	252	142	110	14	17	-3



5.2.7 Ethnicity, Religion & Language

As indicated in the national overview above, ethnicity and religion in the AoI settlements are interconnected, as ethnicity to a great extent determines religious identity. In the local case that means that ethnic Bulgarians are mostly Orthodox Christian - 13% of the households surveyed by the HHS indicate Orthodox Christianity, while ethnic Turks and Roma are predominantly Muslim (81% of the surveyed households). This corresponds roughly to the ethnic makeup of the population in the municipality, from the 2011 census – see

Region	Total	Ethnic group				No self-definition or response	Total respondents
		Bulgarian	Turkish	Roma	Other		
Bulgaria	7364 570	5664 624	588 318	325 343	49 304	736 981	6680 980
Kardzhali district	152 808	39 519	86 527	1296	753	24 713	130 781
Krumovgrad Municipality	17 823	3 968	10 161	36	97	3 561	14 485

Table 5-7.

Table 5-7: Ethnicity in Bulgaria, Kardzhali and Krumovgrad, (Source: NSI Census, 2011)

Region	Total	Ethnic group				No self-definition or response	Total respondents
		Bulgarian	Turkish	Roma	Other		
Bulgaria	7364 570	5664 624	588 318	325 343	49 304	736 981	6680 980
Kardzhali district	152 808	39 519	86 527	1296	753	24 713	130 781
Krumovgrad Municipality	17 823	3 968	10 161	36	97	3 561	14 485

Only 6% of the surveyed households have stated they are non-believers, a trend, which is nationally more common among the Bulgarian ethnic group.

According to MDP statistics, the district of Kardzhali has an ethnic makeup which is typical of the Eastern Rhodopes illustrating a majority Turkish population. The Municipality of Krumovgrad is also representative of the district with 57% of the total population identifying themselves as Turkish at municipal level (NSI, 2014), and more than 70% of the HHS respondents within the AoI identifying themselves as Turkish (DPM HHS, 2014). It must be noted that there is a high number of people recorded in the NSI statistics who have not responded or have chosen not to disclose their ethnicity, which distorts the results from the national census study for Krumovgrad and Kardzhali.

It is further noted that whilst the majority population in the AoI is ethnic Turkish, the household survey established that the level of Bulgarian language proficiency among the

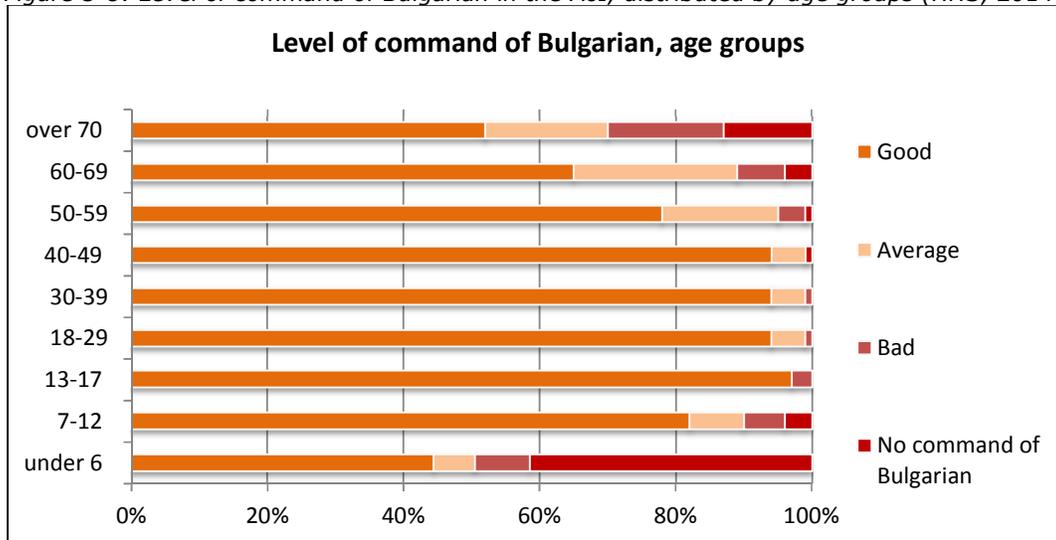


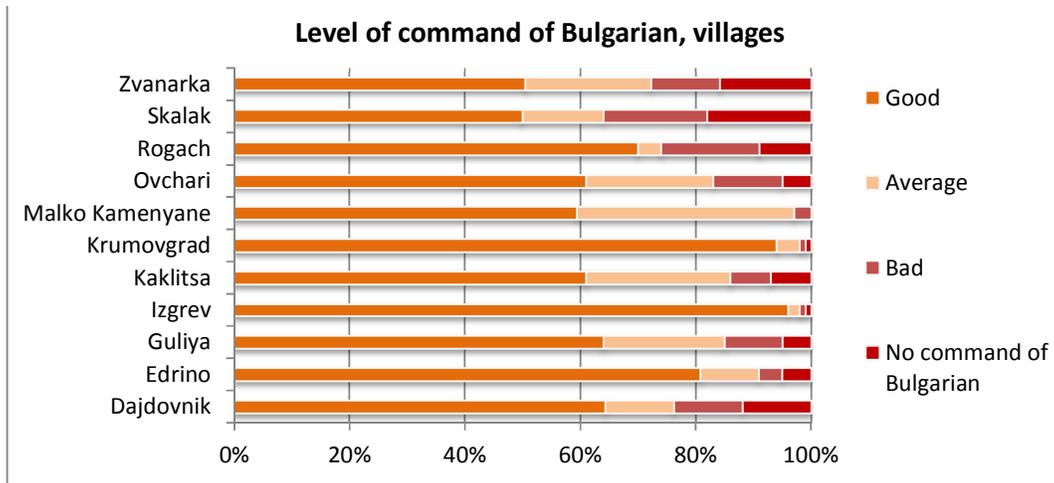
active population (aged 18-59) is good. Only 5% of the surveyed household members do not speak Bulgarian at all, while 6% have poor knowledge of the language.

As illustrated in Figure 5-8 below, the non-Bulgarian speakers mostly come from the oldest age group of the Turkish community, as well as children who are only now entering the school system and speak Turkish at home. Interviewees during baseline consultations confirm that the level of Bulgarian understood in the AoI communities was low, especially amongst the older generation of women. The level of Bulgarian language proficiency of individuals is important for obtaining better education, work and social integration opportunities, as only limited primary schooling in Turkish is available. Figure 5-8 and

Figure 5-9 below present a detailed picture of the level of command of Bulgarian of the population per age groups and villages. The village with the highest number of residents with bad or no command of Bulgarian is Skalak with almost 40% of the population unable to understand the national language. This is followed by Zvanarka with 30% of the population with bad or no command of Bulgarian and joint third both Dajdovnik and Rogach with approximately 25% of their populations in the sample having bad or no command of Bulgarian. Krumovgrad and Izgrev have the highest number of people who have good or average Bulgarian but every community in the sample has a proportion of the sample of respondees who have bad or no command of Bulgarian.

Figure 5-8: Level of command of Bulgarian in the AoI, distributed by age groups (HHS, 2014)





The figure above presents the level of command of Bulgarian, for population in the AoI distributed by villages. It can be concluded that the residents of the villages of Skalak, Zvanarka and Rogach have the largest share of the population with poor or no command of Bulgarian, amounting to around 35% of the respective settlements' population.

5.2.8 Social cohesion

The Baseline consultations found that within the AoI there is a robust social fabric with stakeholders stating that communities are very closely knit. Stakeholders claimed that there was a tolerance towards people coming from outside the municipality as well as from Greece and Turkey. It was stated that as it was relatively close to the border, the municipality was used to outsiders passing through the communities. Furthermore crime rates were reported to be very low with only petty crimes and a low level of traffic accidents being reported as incidents.

National Statistics Data confirm that the crime rate is relatively low in Kardzhali district with a total of 526 criminal judicial procedures resolved in 2013 resulting in 237 effective and 199 suspended sentences, with the rest of the cases acquitted or dismissed. In comparison, other Bulgarian districts with comparable population such as Shumen, Montana or Yambol have well over 1 000 criminal procedures each (NSI Crime, 2014). Again, this may reflect the fact that regional crime rates are low, while more common petty crimes, such as theft of agricultural produce or household items might often go unreported.

Baseline consultations found that there were no ethnic tensions reported, illustrating that the different ethnic groups within the municipality coexist peacefully. As the community is small and closely knit, people are supportive of each across ethnic and religious divisions. According to opinions stated during the baseline consultations for some of them the poverty and the similar living conditions play an important role in uniting the community. There are also various formal cultural institutions and traditional gatherings that allow people to socialize, utilising local community hall/cultural centres. Baseline consultations found that



domestic violence was not reported to be common but it was reported to be present. Some stakeholders responded that domestic violence can be witnessed in the Roma families, but it was not a common phenomenon in the communities as it is not in alignment with the cultural traditions. National information on domestic violence is also lacking, although each year the programme for tackling the problem is approved at national level.

Related alcohol and drug abuse are reported not to be typical for the population of the municipality, therefore there were almost no incidents related to them reported by stakeholders.

According to multiple reports and analyses Bulgaria is a source country for sex trafficking by women and children (USDS, 2011). Added to this problem is a recent trend for trafficking refugees and economic migrants across Bulgaria's southern borders. It may be expected that some sex trade and human trafficking activities occur within Kardzhali district, which is a border district, but these are probably concentrated around border towns and traffic checkpoints in the district.

5.2.9 Vulnerable groups

There is no single national definition of a "vulnerable group" in Bulgaria, although the term is used in a different context to denote various categories and degrees of social and economic vulnerability. For instance, physical and mental disability is categorized by the state and afforded financial support, while certain categories of low-income households are eligible to receive various forms of financial and in-kind assistance, such as food, schooling supplies and energy aid. The implementation code of the Bulgarian Social Support Act (Art.9), defines people eligible for monthly financial aid, as follows:

- Minors, working age persons and retired persons receiving certain fractions of the minimum regulated income for a household member (set at BGN 65 as of 2014);
- Lone parents and pregnant women, receiving certain minimal incomes;
- Orphaned children and children with caretaker families;
- Disabled children;
- Children of other nationalities, awaiting granting of humanitarian refugee status.

The Municipal Development Plan (MDP) of Krumovgrad also provides a list of the vulnerable groups, which are also target groups for social services, such as admittance to adult day care centres, home assistance and food aid and social worker counselling. In addition to persons defined as vulnerable by national disability or income criteria, these include:

- Pensioners living alone and families depending on a single minimal pension;
- Homeless persons.

Perhaps, most difficult to define and least understood and accepted are vulnerabilities stemming from exclusion, segregation and discrimination based on ethnicity, gender or age – phenomena, which are not uncommon, and are not adequately addressed. At national level



no encompassing definition for these vulnerabilities exist, although there are multiple national strategic documents targeting gender equality and integration of the Roma minority.

Based on the above definitions and considerations, the potential vulnerable groups within the AoI can be grouped into categories, applying vulnerability criteria –age, gender, poverty, minority status and disability. Therefore as discussed in detail below those deemed vulnerable in the AoI are, elderly, youth, women, unemployed, Roma minority group and those people with disabilities.

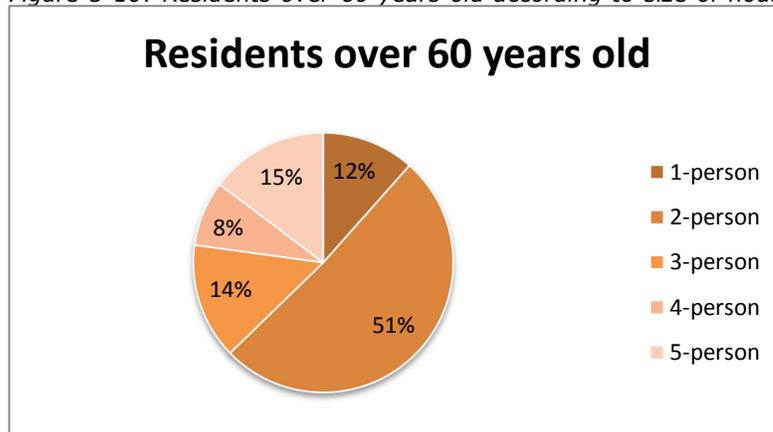
Age

Two categories of age-related vulnerable groups can be defined - elderly persons (retirees) and unemployed youth (the so called “not in education, employment or training – NEET”).

With regard to the elderly, people above the retirement age (which now varies between 60 and 65 depending on gender and type of work and is gradually being increased) are customarily considered as vulnerable persons. The Krumovgrad Municipality MDP, makes a particular distinction in this regard, that pensioners living alone and those receiving the minimum pension are especially at risk. This is further corroborated by the baseline consultations in which stakeholders also identified these people as being potentially vulnerable.

Overall, according to the HHS retirees constitute on average 33% of the household, which is a significant percentage. The survey also discovered that around 12% of the residents over 60 years old live alone and another 51% in 2-person households (See Figure 5-10 below). The figure below shows the distribution of the population over 60 by type of household. HHS data indicate that the actual population of 60+ age is around 33% of the total population of the municipality. As such, Krumovgrad Municipality places the elderly retirees as a focus of social programs in the municipality, also noting a particular problem with people who are just below the retirement age threshold, because “for these people finding employment is most difficult” (Krumovgrad MDP, 2014).

Figure 5-10: Residents over 60 years old according to size of households (DPM HHS, 2014)

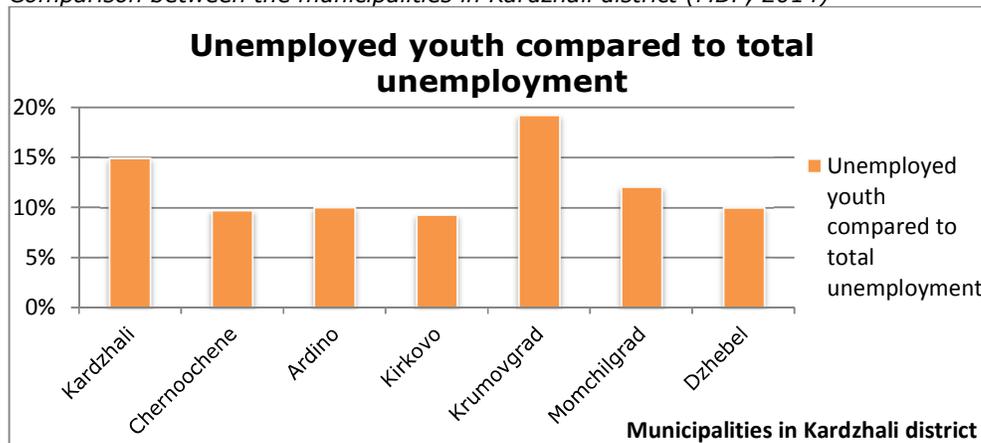




According to Krumovgrad MDP unemployed youth (under 29 year olds, falling in the NEET category) is the other vulnerable age cohort because of the unemployment risk. The draft plan notes that for the municipality and the district additional unfavourable factors are the low level of education and qualifications of young people (MDP, 2014). The proportion of unemployed young people in the municipality of Krumovgrad is 19.2%. Compared to the rest of the municipalities in the district of Kardzhali, Krumovgrad takes first place in youth unemployment.

The HHS and baseline consultations confirm that this trend is present for the settlements in the AoI – according to the respondents 32% in the 18-29 age group, are unemployed – See Figure 5-11 below. In Baseline consultation interviewees pointed out unemployment and the lack of employment opportunity to be major reasons for youth emigration. Other interviewees shared their concerns that even if there were to be better employment opportunities, the young population is currently under qualified to benefit for them.

Figure 5-11: Unemployed youth (age 18-29) compared to the total unemployment, Comparison between the municipalities in Kardzhali district (MDP, 2014)



Another problem contributing to the NEET youth unemployment trend is the rate of school-dropouts for school age children. Children around the age of 15-16 who disengage with school and drop out before they have graduated are deemed a vulnerable group as they have not accumulated sufficient skills to be able to take care of themselves. This problem has been acknowledged both by Krumovgrad Municipality (MDP, 2014) and by HHS respondents. In the draft MDP, a special focus has been set at improving the engagement of children with school, providing them with extracurricular activities related to their interests.

Gender

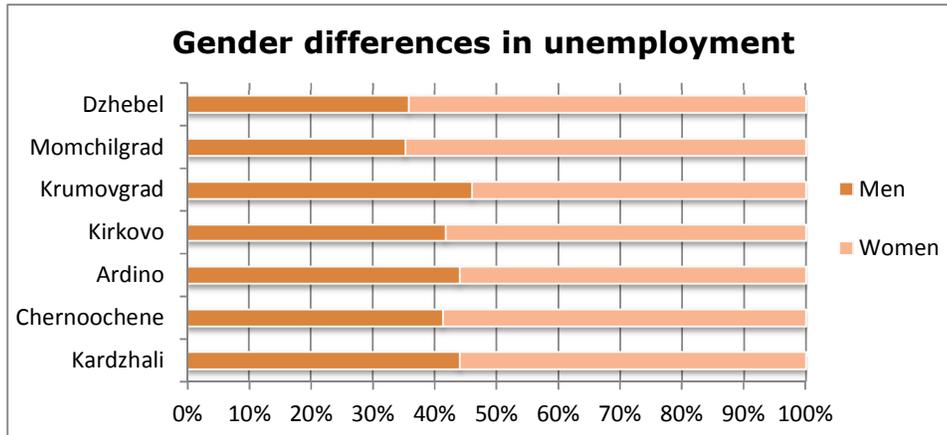
According to interviewees women in general are not considered a vulnerable group, as they are well respected in the community, they often receive better education than men and sometimes have better professional opportunities. However, a high proportion of HHS survey respondents categorized or self-categorized women in the household as “housewife”, indicating potential vulnerability and constrained opportunities for personal and professional



realization. In fact, national experience in terms of women employment (especially in rural regions), level of pay and access to educational and career opportunities generally indicates inequality – men outnumber women in the workforce, indicating women are less active in seeking employment. Women are hampered by high expectations and demands of combining household and child-rearing duties with active work, and they are also at a disadvantage in regard to pay levels on a national level (MLSP, 2012). On a local level, these trends are also likely evident. According to MDP low education and qualifications of women” are the reason for their higher unemployment among women, officially reflected in municipal statistics and also typical for other municipalities in Krumovgrad district - See Figure 5-12 below.

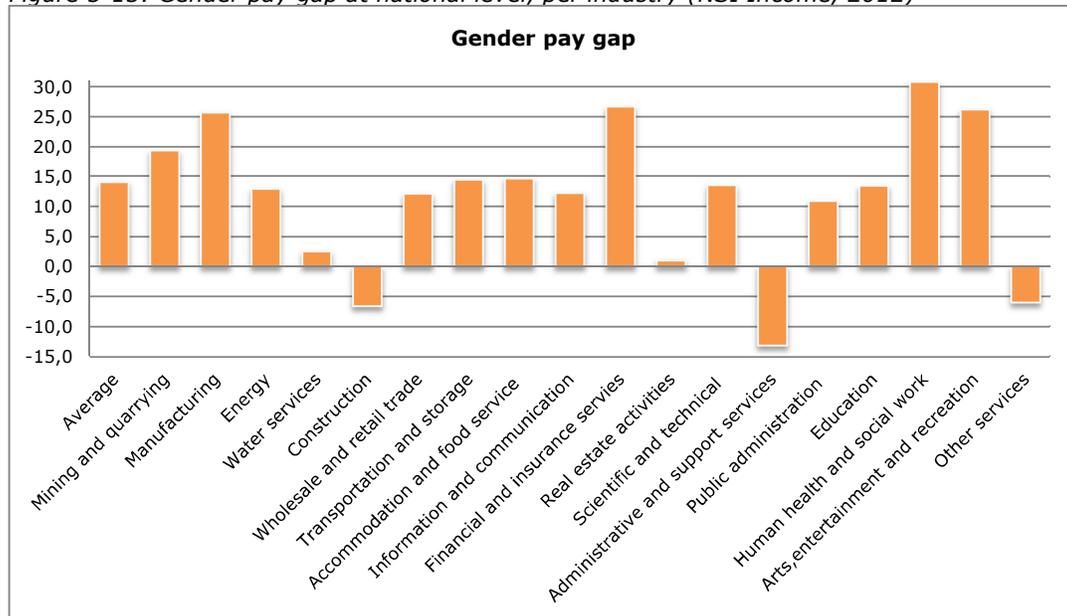


Figure 5-12: Gender differences in unemployment across municipalities in Kardzhali District, (distribution of the total unemployment by gender) (Krumovgrad MDP, 2014)



According to data from the National statistical institute there still exists a gap between the salaries of women and men in Bulgaria. In Figure 5-13 below the gender pay gap across sectors is presented comparing the salaries of men and women for 2012. The biggest gaps are observed in the sectors "Human health and social work", "Financial and insurance services", "Manufacturing" and "Arts, entertainment and recreation", in which the salaries of men are higher by between 25% and 30%. On the other hand there are several sectors in which women are reported to receive higher salaries than men, some of which are "Construction" and "Administrative and support services". It should be pointed out that this is a basic comparison of the average salaries of men and women across sectors and some factors have not been taken into account, such as the ratio men/women working in different industrial sectors, and their expected qualification and positions.

Figure 5-13: Gender pay gap at national level, per industry (NSI Income, 2012)





It is a national trend of having a more women than men struggling with poverty, especially for women from minorities. According to a national survey, Roma women are in the most unfavourable situation (MLSP, 2012). The findings from the survey point out that 69% of Roma women do not have any profession and are unable to contribute to the family incomes. Almost half of the Roma women are permanently⁶ unemployed (MLSP, 2012).

Economic status

According to the HHS, 26.4% of household members aged 18-59, and 32% in the 18-29 age group, are unemployed. This illustrates a much higher rate than the national and regional registered unemployment figures, described in Section 9.1. This discrepancy may be attributable to unemployed people within the Municipality not officially registering with the municipality.

Underemployment is also a problem as only 30% of working age household members are reported to have a permanent work contract (DPM HHS, 2014). The findings also indicate a specific gender problem with a high percentage of unemployment/underemployment of women in the municipality - only 25% of the women of working age are permanently employed. Furthermore the HHS responses indicate that the primary occupation of 29% of women is agriculture. Baseline consultations respondents indicate the plight of people without income is worst for those within this category of vulnerable groups who do not have a safety net such as parents or relatives capable of taking care of them or family members abroad sending remittances (AMEC, 2014). Remittances from abroad contribute an average of 5.4% of household income, according to the survey (DPM HHS, 2014).

Another typical vulnerable group related to poverty is homeless people. There are no official data available for their number in Bulgaria. According to the Social Agency register there are more than 1300 homeless people in Sofia alone, who have received support from the Agency. The police reports them to be around 200. On the contrary NGOs claim the number to be higher than 2000, having in mind the challenges of tracking the migration of homeless people. According to some statistics homelessness tends to be lesser in rural communities but does still exist. In the AoI there is no indication of a problem with homeless people. 77% of the residents who participated in the HHS gave a positive answer to the question if they possess ownership documents for their dwellings.

In addition to the urban homeless, Bulgaria also has a significant Roma nomadic population, who live in mobile camps, and poorly built structures near or on the outskirts of settlements (see sub-section on Roma below).

⁶ Permanently unemployed are considered persons who have been unemployed for more than 5 years.



Minority Status

Many Roma have no incomes and subsist in deep poverty. Roma families nationally have problems with teenage marriages and births, and consequently abandoned children, low levels of literacy and poor social integration, all of which render this minority group as potentially vulnerable. Kardzhali district has adopted a District Strategy for Roma integration (District Administration Kardzhali, 2013),, which states that in Krumovgrad municipality “compact clusters of socially vulnerable Roma communities” are located in the villages and hamlets in Zvanarka (Kozino hamlet), Pelin, Podrumche, Oreh, Slivarka (Bashitno hamlet), Vransko (Papur hamlet), Baratsi and Strandzhevo. Of these, only Zvanarka and the hamlets of Lozino 1, 2, and 3 are among the settlements adjacent to the Krumovgrad project, which have been included in the household survey and considered directly impacted as they fall within 2000m of the project site, whereas Kozino is located 3000m away from the site.

In the District strategy the Roma population has been reported to live mainly in illegal dwellings of poor quality and sanitation, this was not verified during the baseline consultations. It has also been outlined that there is overpopulation in those dwellings, which additionally increases the health risks for the residents. Furthermore, unemployment in the Roma community in Kardzhali district is evaluated at 67.3%. Most of the Roma population is reported to rely on social welfare, although baseline studies found that they also engage in seasonal subsistence activities such as mushroom and wild herbs collecting. According to the District strategy for Roma integration, it is reported that tensions in the Roma communities are attributable to delays of social welfare payments or domestic quarrels.

A high rate of school-dropout is reported in the Roma population leading to very low education levels. Only 0.15% of the Roma population in Kardzhali district is claimed to have higher education and 3.55% have graduated from high-school. In addition 19.6% of the Roma have never attended school and 33.41% are illiterate. This decreases the chances of finding work opportunities and further improvement of the economic status of the Roma population. Baseline consultations found that there was an EU funded adult literacy scheme targeting Roma populations, where students are paid to attend and transported to the school. The project is running in Zvanarka primary school during the afternoons when the school is closed to children.

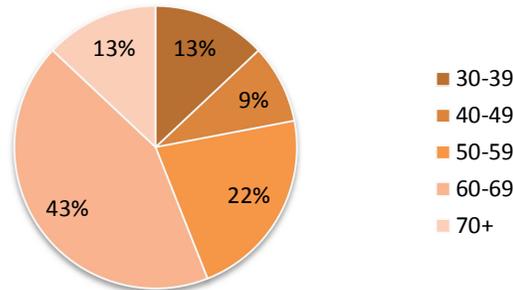
Disability

People living with varying degrees of disabilities have been identified by the Municipality as needing social support. During 2012 in Bulgaria a total of 6 802 children and 62 047 adults (over 16 years old) were newly categorized as disabled, of which 33 children and 25 094 adults had a lifelong disability (NSI Health, 2013). For the district of Kardzhali the number is 4 608 adults with disabilities registered in 2011 (NSI Census, 2011), which 7.3% of the total district population. Information at municipal level is scarce, not publicly available.



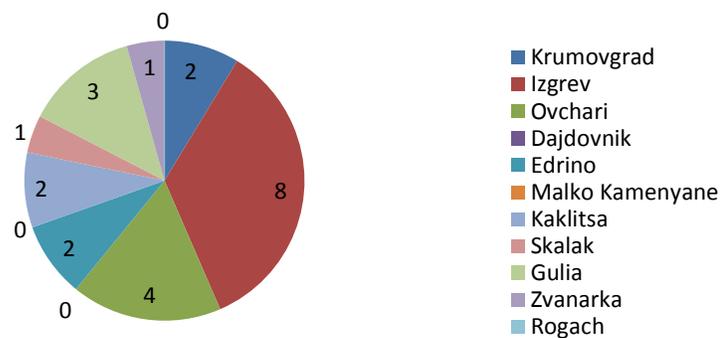
The household survey indicates that 2% of household members are disabled and need social care. More than half of these 2% are of 60+ age and there were no young people (below 30 years old) with disabilities identified from the HHS responses. Figure 5-14 below shows a picture of the age distribution of the people with disabilities included in the sample of the survey.

Figure 5-14: Residents with disabilities in AoI, according to age structure, (HHS 2014)



In total the HHS found 23 cases of people with disabilities in the AoI. Figure 5-15 below shows the distribution of the total number of residents with disabilities by villages. The largest proportion of people with disabilities is situated in Izgrev neighbourhood with 35% of the total number of disabled people in the AoI. This is followed by the villages of Ovchari and Guliya with 17% and 13% respectively. In the villages of Dajdovnik, Malko Kamenyane and Rogach there are no reported cases of people with disabilities. Considering the small sizes of the villages and the small size of the samples of interviewed residents in each one of them, there is opportunity for distortion of these data, leaving some residents with disabilities in the villages unrecorded.

Figure 5-15: Residents with disabilities by villages – number and % of total (HHS, 2014)



With regard to providing adequate social services for persons with disabilities and the elderly, it must be noted that the delivery of such services is concentrated in the town of Krumovgrad, while the majority of the people in need of such services are situated in the villages. Krumovgrad Municipality also warns of a general shortage of experts and NGOs who can deliver social services (MDP, 2014).



6.0 Infrastructure

6.1 National Overview

The general state of infrastructure assets in Bulgaria can be characterized by a relatively high level of completion, but also plagued by poor maintenance and need for rehabilitation.

Over 91% of the housing stock in Bulgaria is constructed from reinforced concrete panels or solid construction with partial concrete elements. Over 20% of homes are in prefabricated buildings. Amortization of most buildings is accelerated by poor maintenance, and most of them are not renovated. According to expert assessment, the homes in three or more storey buildings in need of urgent renovation to 2020, number about 680 000 homes, of which about 360 000 are concrete panel homes, 150 000 concrete homes and 170 000 reinforced brick homes (NPRRBB 2006-2020, 2005). There is no national level information on the condition of low-density brick and stone houses in rural areas, but general observation confirms many of these residential homes are also in a poor state of repair and not properly maintained.

The transport network in Bulgaria is relatively well developed but also in need of significant investment. As of 2012, the national road network consists of 19 512 km of roads (2 970 km first class, 4 030 km of second class and 11 766 km of third class roads) and road density of 0.175 km/km², which is comparable to the average density for EU member states (NDP, 2012). However, Bulgarian road network density is mostly related lower grade roads with only one completed highway and several other highways and express motorways under construction. The railway system consists of a total of 4 098 km of rail track as of 2010, with 68% of those tracks electrified and much of it in need of rehabilitation (NDP, 2012). Some basic problems of the entire transport network are the lack of intermodal terminal capability, lack of modernized sea ports and need to further develop the Trans-European Transport Corridors (NDP, 2012).

Energy infrastructure is also well developed with almost universal electrification of settled areas, however low building and industrial energy efficiency, and over reliance on households for heating by electricity, wood and low-grade lignite drives up costs and pollution, and prevents switching to more efficient alternatives such as natural gas (NDP, 2012). An on-going boom in renewable energy production alleviates some pollution but increases costs.

Ecological infrastructure has been under intensive modernizations since 2008, focusing on a new regional landfill system with separate recycling installations and modern wastewater treatment facilities financed by the European Union (NDP, 2012). The rate of construction of the sewerage network in Bulgaria as of 2011 is 61% serving 74% of the population. (Partnership agreement, 2014).

ICT infrastructure such as mobile coverage and broadband Internet is well developed in all urban and most rural areas.



6.2 Local Overview

6.2.1 Housing

Most of the housing in Krumovgrad municipality consists of one-family privately owned houses, which are generally in a poor state of repair and need significant improvement to meet modern construction and utility standards.

According to information in the MDP, most of the residential housing in the municipality is of solid construction, made by brickwork, stone or adobe with concrete columns. Under 2% of the buildings are prefabricated panel buildings (mainly high density blocks in Krumovgrad).

Typical houses in the region have a garden with vegetable plots and fruit trees. Some of the houses also have trellis vine for grapes.

Figure 6-1: Examples of single-family residential houses in the AoI (AMEC, 2014)



In the town of Krumovgrad there are several multi-story residential blocks, which are also privately owned. As in other Bulgarian cities and towns, these apartment buildings were mostly constructed in the 1970s-1980s and consist of prefabricated concrete panels, which are now in general state of disrepair and need structural rehabilitation in order to extend their life beyond 2020-2030 (see discussion in Section 6.1).



Figure 6-2: Prefabricated panel apartment blocks in Krumovgrad (Source: Google StreetView)



Both single-family houses and apartment blocks in Bulgaria, constructed between the late 1960s and early 1980s are likely to have contamination problems arising from the existence of asbestos-containing materials in their construction elements – roof shingles, pipe insulation, door frame, plasters and others (NCPHP, 2007).

6.2.2 Transport infrastructure

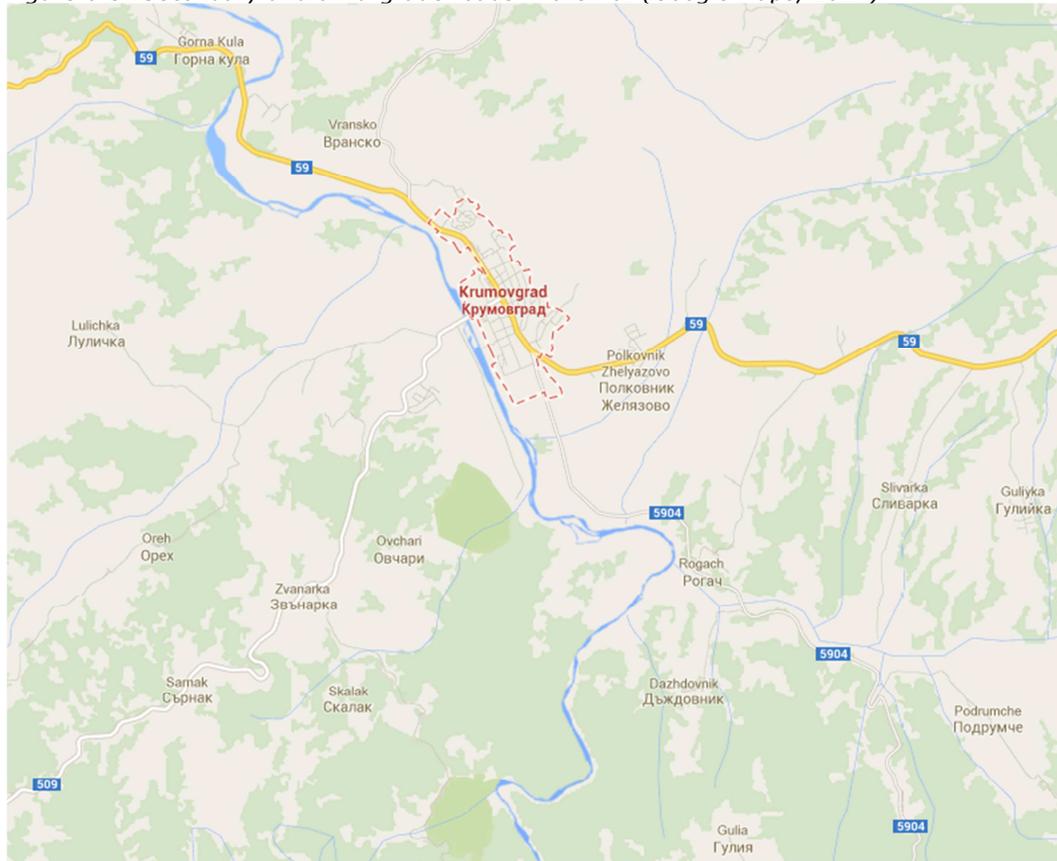
The road infrastructure in the municipality plays a major role in the transport infrastructure since there is no other mode of transport such as a railway system, airport or sea port in the municipality (MDP, 2014). The nearest railway station with facilities for passenger and freight transport is located in Momchilgrad which is 32 km from the town of Krumovgrad. The nearest airports are located in Plovdiv 133 km northwest and in Alexandroupolis (Greece) 136 km southeast from Krumovgrad.

The municipal road network has a length of 261 km, of which 66 km is in good condition and 78 km is in average condition, with the remaining 117 km in poor condition (MDP, 2014).

According to the draft MDP the roads are in need of repair as the asphalt in places is highly deformed and does not meet current requirements for a secure, modern and fast transport. According to municipality lack of funds for road repairs in combination with increased intensity of water erosion, especially on gravel and unpaved roads, are the reasons for the poor condition of the local road network (MDP 2014). HHS respondents corroborate that the quality of the roads is very poor with very difficult access during winter (DPM HHS, 2014). Some baseline consultations with stakeholders in the remote mine site hamlet of Kupel stated that the municipality will not repair the road as the population is so small and the road only provides access to land plots (AMEC, 2014). On the most used roads in the AoI – second-grade road II-59 and third grade-roads III-509 and III-5904, there appears to be insufficient signage and faded road markings in many locations.



Figure 6-3: Secondary and third-grade roads in the AoI (Google Maps, 2014)



The traffic management plan of Ada Tepe Gold Project describes the main roads in the municipality in more detail. The main thoroughfare is a secondary road II-59 length 27 km. It passes through the municipal center - Krumovgrad and connects the municipality with the neighbouring municipalities Ivaylovgrad and Momchilgrad. This road connects the regional center to the border checkpoint Makaza – Nymfaia and links Bulgaria and Greece. The main road II-59 links Krumovgrad to the checkpoint Ivaylovgrad - Kipronos. The road is twin-lane, surfaced with asphalt and in good condition. The road has a typical width of the roadway from approx. 9 m, with sidewalks on both sides. In Krumovgrad the road has a speed limit 50 km/h. Between Krumovgrad and Momchilgrad the carriageway width narrows to approximately 6m and the road is subject to a 90km/h speed limit (with the exception of sections that pass through settlements, where the speed limit reduces to 50km/h). The road is mostly surrounded by agricultural fields and woodland, and there are no footpaths present (DPM TMP, 2014).

The other main road in the municipality is road III-509 that routes along a north-east south-west alignment, from Krumovgrad to the north-east and Kukuryak to the south-west. The road passes through a number of villages and hamlets including Zvanarka, Kandilka, Topolka and Tokachka. Within settlements the road is subject to a 50 km/h speed limit; outside settlements it is subject to a 90km/h speed limit. Within Krumovgrad the road is of urban type with an approximate carriageway width of 8 m. It has intermittent street lighting and



footpaths. The remainder of the road south-westwards is of a rural nature, with an approximate width of 6m. The road is predominantly surrounded by agricultural fields and woodland, and there are no footpaths present (DPM TMP, 2014).

Since January 2014 the project "Reconstruction of part of the road infrastructure in Krumovgrad" including reconstruction of the Podrumche local road and the road III-593, Oreshari – Madzhari, is reported to be in implementation (DPM TMP, 2014).

Despite relatively low traffic volumes, road accidents in Krumovgrad municipality occur. According to NSI statistics there have been 14 serious traffic accidents in the municipality in 2013, resulting in 14 casualties, of which 1 fatality. For the entire Kardzhali district there have been a total of 141 serious accidents with 175 casualties, of which 5 fatalities. A comparison of the serious accidents on per capital basis reveals that Krumovgrad Municipality is slightly less prone to traffic accidents but still representative of district and national levels – See Table 6-1 below.

Table 6-1: Traffic accidents at local (NSI Traffic Accidents, 2013; NSI Census, 2011).

2013	Traffic accidents	Per inhabitant (2011 Census)	Fatalities	Injured
Krumovgrad Municipality	14	7.86×10^{-4}	1	13
Kardzhali district	141	9.23×10^{-4}	5	170
Bulgaria	7 015	9.53×10^{-4}	601	8 775

The NSI accident data also profiles the most common serious accidents for Kardzhali district. These tend to occur mostly within settlements, primarily involve private light vehicles, and result in higher pedestrian than car occupant fatalities. There are no distinct seasonal peaks, associated either with work commute or holiday travel (NSI Traffic Accidents, 2013).

6.2.3 Energy Infrastructure

Electricity

In the municipality of Krumovgrad there is one hydro-electric power (HPP) plant - "Studen Kladenetz". It is part of the Arda cascade consisting of HPP "Kardzhali" and HPP "Ivaylovgrad." The HPP "Studen Kladenetz" has the highest average annual production of electricity as of 2010. The average annual energy output is 170 GWh and the annual energy output for 2010 was 253.7 GWh (MDP, 2014).

According to the MDP the maintenance of transmission and distribution systems and its facilities in the municipality of Krumovgrad of electricity is carried out by "EVN Bulgaria". The plan also states that all settlements within the municipality are electrified. The Plan describes the grid of the municipality as relatively well developed, with few problems in some places with the quality and security of supply (MDP, 2014). This was further corroborated during the baseline consultations which found that every settlement visited in the Aoi had access to



electricity even the less populated hamlets such as Kupel as well as the one dwelling rented in the Chobanka had an electricity connection. HHS survey respondents report no complaints about the supply of electricity (DPM HHS, 2014).

Perhaps, the biggest problem related to electricity is the cost – due to low incomes and living standards, electricity costs form a relatively large percentage of household expenditures on a national level – approximately BGN 276 annually per household member, or approximately 4.7% of the annual household member income for 2013 (NSI Income and Expenses, 2014). While the actual tariffs are the lowest in the EU, for the last several years electricity tariffs have been on the rise necessitating drastic measures on behalf of the national regulator to contain the price hikes, with further gradual increase nevertheless expected (SEWRC, 2014).

There are no completed industrial scale renewable energy installations (either PV or wind) on the territory of Krumovgrad municipality, despite a 2012 investment announcement for a local wind farm, which has likely been dropped by the investor.

Natural Gas

As significantly low percentage (<1%) of the respondents of the HHS stated that they heat their home with gas. This source of energy is generally used for cooking purposes. Gas supplies are not piped to individual houses in the municipality, rather it is typically supplied in cylinders which can be bought/exchanged at filling stations and distribution networks (sometimes CNG/auto gas filling stations). According to the draft MDP, the Municipality does not intend to develop gas supply infrastructure in the imminent future. Using natural gas sourced from filling stations for household cooking and heating is associated with accident risks due to poor maintenance of gas bottles and has caused many deaths and injuries in past accidents in small towns in Bulgaria. At least 2 such incidents in Krumovgrad municipality have been reported by local and national media since 2012 with one of them completely demolishing a village house and seriously wounding 5 persons.

In Bulgaria, natural gas (CNG/auto gas) has also become a popular form of fuel used for vehicles fitted with CNG systems, due to low cost. This form of fuel is also associated with increased incidence of fire accidents with the Bulgarian fire service reporting 230 such incidents on a national level in the period January-August 2014. Despite the recent uptake in auto gas usage rise petrol and diesel remain the most used fuel for vehicles.

Other Energy Sources

From the MDP data can be concluded that major sources used by the residents for heat energy during winter are solid fuels – wood and lignite coal. This was corroborated during baseline stakeholder consultations, where stakeholders stated that they relied on wood for heating houses (AMEC, 2014). The HHS provides quantitative data for the AoI settlements, as depicted in Table 6-2 below. 4% use electricity as the main or one of the main sources of heating energy. It was further found that 97% of households in the survey buy firewood for



heating (97%). Further afield 19 households in kuklitsa, 16 in households in both Guliya and Zvanarka. These settlements are a further distance away from the site where there are alternative forest areas available for collecting wood.

Table 6-2: Energy sources used for heating – breakdown by AoI villages (DPM HHS, 2014)

Type of fuel	Total	Krumovgrad	Izgreva quarter	Ovchari village	Dazhdovnik village	Edrino village	Maliko Kamenyane village	Kuklitsa village	Skalak village	Guliya village	Zvanarka village	Rogach village
Baseline: All respondents	396	67	65	37	17	80	19	23	11	25	44	8
Firewood		65	63	36	17	80	17	23	11	25	40	8
		97%	97%	97%	100%	100%	89%	100%	100%	100%	91%	100%
Electricity		6	5	-	-	-	-	-	1	-	4	-
		9%	8%	-	-	-	-	-	9%	-	9%	-
Gas		-	-	-	-	-	1	-	-	-	-	-
		-	-	-	-	-	5%	-	-	-	-	-
Other		1	1	-	-	-	-	-	-	-	1	-
		1%	2%	-	-	-	-	-	-	-	2%	-
No response		-	-	1	-	-	1	-	-	-	1	-
		-	-	3%	-	-	5%	-	-	-	2%	-

6.2.4 Communication Infrastructure

Krumovgrad is served by a regional telephone network with main automatic telephone system Kardzhali consisting of 13 terminal stations distributed across the municipality.

The three national mobile operators M-tel, GLOBUL and VivaCom provide coverage in the municipality. Baseline consultations found that the mobile networks were reliable and there was a sufficiently good coverage across the municipality.

The MDP states that all settlements in the municipality of Krumovgrad are able to access the Internet through the mobile internet offered by the three operators (MDP, 2014). The Bulgarian Telecommunications Company also provides ADSL high-speed Internet access. Krumovgrad is served by an Internet service provider offering cable internet. However baseline consultations found that few people in the AoI accessed the internet (AMEC, 2014). This may be attributed to the associated costs. Some interviewees mentioned that they used the internet in an internet cafe in Krumovgrad (AMEC 2014). Although access to the internet via mobile phones is available across the municipality with the three mobile internet operators, few people during the consultations were found to use this, again most probably due to the associated costs. The results from the household survey show that 61% of the respondents do not have an internet access, 38% use home internet and very few use mobile internet or internet in Internet cafes, schools or community houses (1%).



6.2.5 Water supply

Water supplies to the town of Krumovgrad and 37 villages in the municipality (82% of the population) are provided and maintained by the state and municipality owned company ViK OOD Kardzhali. According to the NSI 2010, the proportion of the population on a reticulated central supply has grown to 82.8% (NSI Water supply, 2014). The remainder relies on local water sources (well, local springs). The HHS confirmed that around 90% of households are supplied with drinking water from the mains water system with the remainder relying on wells (10%) or a local water source (6%; DPM HHS, 2014). Water supply in the villages Kuklitsa and Skalak is mostly from wells and local sources.

The technical condition of the water supply system is reported to be poor and some 90% of the infrastructure requires replacement (DPM, 2014), with some rehabilitation activities for Krumovgrad and its settlements having been initiated in 2013 (Krumovgrad Municipality, 2013).

HHS results indicate that between 8% and 36% of the surveyed households for different settlements have problems with water supply (DPM, HHS 2014). During stakeholder consultations the residents of Izgrev stated that the lack of access to water prevents them to capitalizing on their fertile soils (AMEC, 2014). About 90% of the households surveyed by the HHS use drinking water piped from the mains system, while the other 10% use drinking water from a well. About 76% define the quality of the drinking water as satisfactory, and 24% of them state that the quality is unsatisfactory (DPM HHS, 2014). Most dissatisfied with water quality are the residents in Izgrev Quarter and in the village of Zvanarka. About 8% of all households experience difficulties with the water supply (the majority of them in Zvanarka - 36%). The main problems, particularly with the drinking water, are associated with high tariffs; there are also water supply interruption and contamination issues (DPM HHS, 2014). During stakeholder consultation meetings, some Ladovo hamlet residents stated that there is no drinking water available so they need to buy bottled water, and that local wells have not been quality tested (AMEC, 2014).

6.2.6 Sanitation and Flood Protection

According to the MDP the biggest risk to water quality is the undeveloped sewerage system of Krumovgrad that allows wastewater from households to directly be discharged into Krumovitsa River (MDP 2014). Krumovgrad municipality has constructed a sewerage collector system for the town of Krumovgrad, and a modular wastewater-treatment installation for Izgrev quarter. The municipality, in partnership with a newly formed regional Water and Sanitation Association, of which it is a member, is constructing sewerage collection systems and small-scale modular wastewater treatment facilities for some villages and hamlets in the AoI such as Golyamo Kamenyane, Ovchari, Polkovnik Zhelyazovo and Rogach (Krumovgrad Municipality, 2013).



The HHS results for AoI settlements indicate that only 36% of the households use a centralized sewerage system. Another 43% use a local septic tank and a relatively high percentage - 19% - discharge the waste water directly into the land or river. This illicit practice appears to be most common in the villages of Skalak and Zvanarka, while all of the surveyed Dazhdovnik residents report they use a legally compliant septic tank – see breakdown by settlement in Table 6-3 below.

Table 6-3: Breakdown of utilized sanitation solutions by settlement (DPM HHS, 2012)

Settlement \ Solution	Krumovgrad	Izgreva quarter	Ovchari village	Dazhdovnik village	Edrino village	Maliko Kamenyane village	Kuklitsa village	Skalak village	Guliya village	Zvanarka village	Rogach village
Septic tank (regular pumping by the household)	-	-	49%	100%	64%	68%	91%	55%	64%	55%	75%
Sanitary/combined sewer	99%	95%	32%	-	-	5%	-	-	-	5%	13%
Direct discharge into the environment (stream/soil)	1%	-	11%	-	39%	26%	9%	55%	36%	41%	-
Septic tank (regular pumping by the Municipality)	-	-	8%	-	-	-	-	-	-	-	-
Other	-	-	8%	-	-	-	-	-	-	-	-
No response	-	5%	3%	-	-	-	-	-	-	-	13%

According to the DPM EIA report, there are no sources of industrial wastewaters, nor any areas that are identified as potentially impacted by agricultural sources (Dango, 2010).

With regard to flooding risk, the project EIA report indicates that the soils, which are mainly cinnamon low saline and sandy and clayey-sandy, and stony in composition, have eroded severely in the conditions of deforestation, and their water regulation capacity is very poor, which causes rapid runoff from precipitation (Dango, 2010). 2014 has been a disaster-prone year in Bulgaria, characterized by multiple extreme precipitation events and flash floods in many parts of the country, generally attributed to badly designed and maintained modified floodplains, agricultural irrigation and urban sewerage systems. Krumovgrad municipality has been relatively unaffected with no reports of flood events, casualties or property damage.

6.3 Household waste

At present, household waste for the AoI settlements is disposed of in a temporary landfill site in the village of Vishegrad. This dumpsite has no system to record the amounts of incoming waste (MDP, 2014). This service is reported to be reliable and the majority of baseline interviewees stated that they rely on this service to dispose of their waste (AMEC, 2014). According to the HHS respondents, 80% of households state that the municipality regularly



collects solid waste. 17% of households state that burn them (regularly or occasionally), and 17% dispose of them close to their home in self-designated areas (DPM HHS, 2014).

Construction waste is disposed of at the municipal landfill, where they are used for blinding material for the municipal landfill cells. There is no municipal service for collecting this waste. This waste is transported to the landfill by the owners (MDP, 2014). Medical waste generated in the municipal hospital is temporarily stored in a special repository and then transported to Sofia for incineration (MDP, 2014).

6.4 Emergency Services

According to information publicized by Ministry of the Interior information the Krumovgrad fire brigade was founded in 1969 and had 2 modern fire engines delivered in 2006, and 3 older ones. In addition to the brigade has formed 4 volunteer teams of young people to help them in case of emergencies – numbering some 30 volunteers (MI, 2009).

According to the Kardzhali Police Directorate, the total number of local police staff in Krumovgrad – 59 persons, and it is indicated that 11 of these have university degree (Kardzhali Police Dept, 2014). No information about police equipment is available.

The hospital in Krumovgrad (see further description in Section 10.2) had two functioning local ambulances as of the latest hospital renovation in 2010 (Klassa, 2010). The nearest fully equipment emergency service centre is located in the district town of Kardzhali.

6.5 Leisure and recreational infrastructure

There are no theatres or cinemas in Krumovgrad municipality. In the summertime, one outdoor amphitheatre scene in the city park is modified as summer cinema. There are 12 cultural centers, known in Bulgaria as “chitalisthe” (“reading house”) in the municipality. There are several dance classes in the popular culture centre “Hristo Botev” in Krumovgrad. Other events organized by “Hristo Botev” centre include holiday celebrations and concerts. There are some sports ground, a few child playgrounds and a small park.



7.0 Natural Resources and Land Use

7.1 National Overview

Bulgaria's farmlands cover some 51.2% of the country's area, compared to 42.67% for forests and 4.9% for urban areas. The land use regimes and land cover is relatively stable according to statistics (EEA, 2011), although a pervasive problem with illegal logging of state forest lands has been frequently reported. By some unofficial estimates, this accounts for 45% of annual logging (WWF, 2005) - as of 2014 this problem remains unaddressed (WWF, 2014). Another nationwide problem with farming and forestry land is high soil acidity – which affect 1.5 million hectares, or 11 % of total farmland. Around 500 000 hectares have acidity levels toxic to most farm crops. This is attributable to a combination of naturally occurring mineral substrate, a history of antropogenic acid rain mostly from coal powerplants and application of nitrogen fertilization to agricultural lands(EEA, 2011).

7.2 Land Use Statute

The Bulgarian Spatial Planning Act formally recognizes 7 types of territories, associated with particular regimes of land use – urbanized territories, agricultural territories, forest territories, protected natural areas, disturbed territories (including landfills, landslides, mines, tailing ponds, etc.) and transportation territories (roads, railways, ports and airports).

Land use regimes within most of the above mentioned types of territory, are governed by special Acts (either addressing the territories themselves or the purpose of their use regimes and restrictions). These Acts include:

- **Act on the Ownership and Use of Agricultural Land** - regulating the ownership rights and regime of use of territories, designated as agricultural land;
- **Forest Act** – regulating procedures for change of designation and exemption of lands and forests from the so called forest fund (public forest lands), as well as establishing rights of way and easements for construction and technical infrastructure facilities in forest fund lands;
- **Protected Territories Act** – regulating the national system of protected territories, such as national parks, reserves and nature monuments;
- **Biodiversity Act** - regulating the parallel system of protected biodiversity areas under the EU NATURA 2000 network, including Sites of Community Importance (SCI) and Special Protected Areas (SPAs);
- **Hunting and Wild Game Protection Act** - defines the so called “hunting territories”, which includes all the lands, forests and surface water bodies outside of urbanized areas where wild game can be found and hunting may proceed.
- **Underground Resources Act** – regulating the prospecting, exploration and mining/quarrying activities in the country.



7.3 Local Land Use Overview

According to the Krumovgrad Environmental Impact Assessment report, Krumovgrad municipality comprises of 48.8% forest area, 47.8% agricultural lands, 2.2% towns, villages and hamlets, and 1.2% surface water bodies, transport and other infrastructure (Dango, 2010). Nearly half (47%) of the land used for agriculture is privately owned and is divided into small farms. With few formal employment opportunities, most livelihoods in the area depend on local agriculture and pastoral activities, such as tobacco growing, livestock grazing (cattle and sheep), bee keeping, and production of other crops such as peppers, onion, potatoes and tomatoes. With regard to agricultural usage, plant growing is dominated by tobacco - traditionally the majority of small farms are engaged in tobacco growing (see more detailed description in Section 9.2.2). Tobacco growing is a formal income generating activity with growers establishing contracts with buyers at the beginning of the seasons and revenues taxed at source. According to the Kardzhali Regional Directorate for Agriculture there are also smaller areas used for wheat (135 ha) and 12 ha barley (RDA, 2014). Agricultural produce (vegetables and livestock) is generally sold to buyers who travel from beyond the Municipality and as buyers travel to the producers there is little bargaining on prices, therefore income generated is low

According to the baseline studies as well as GIS analysis, to the east and to an extent the south of the proposed mine site the agricultural lands are predominantly cultivated intensively for tobacco growing owing to their proximity to the Krumovitza River and the need for irrigation. Towards the north, west and to an extent the south of the Project site the land use is used for tobacco on a lesser scale but also for livestock grazing, refer Annex 2.

Table 7-1: Types of land in the Kardzhali District municipalities, 2011 (RDA, 2014)*RDA data does not specify exact usage

Municipality	Total Agricultural Lands	Including:			Forests
		Fields	Pasturage	Other Agricultural usages*	
	ha	ha	ha	ha	ha
Ardino	13 192	4 964	6 244	1 984	18 942
Dzhebel	7 633	4 294	1 552	1 787	14 348
Kirkovo	20 034	10 187	8 478	1 368	31 176
Krumovgrad	38 378	14 631	17 423	6 324	43 036
Kardzhali	22 731	12 218	6 714	3 799	22 501
Momchilgrad	15 927	6 256	8 185	1 486	17 899
Chernoochene	12 059	5 303	5 214	1 542	19 458
Total Kardzhali District	129 953	57 853	53 811	18 289	167 360



7.4 Land ownership

According to NSI data, the real estate market for agricultural land is poorly developed in Krumovgrad. In 2011 there were only 11 land purchases (22 in 2010) for a total amount of 56.5 decares⁷ (330.7 decares in 2010). The selling price for a decare in Krumovgrad was BGN 265 in 2012, compared to the national average of BGN 547. In 2013 there were 4 deals for rent of agricultural land of 403 decares and an average price per decare of BGN 9 per annum. This price was significantly lower than the average for the district – 14 BGN per annum and the country – 38 BGN per annum (NSI Land Market, 2014).

The HHS, focusing on the target group of households in the AoI, established that 31.6% of the households owned land, and that the total owned arable land is 55.3 ha, giving an average area per household of 0.464 ha. No large landowners among the survey respondents have been identified. It must be noted that, the majority of respondents do not count their house plot in the owned land, as it is typically urban regulated land within the settlements – however, house plots in Bulgaria are used for vegetable and fruit growing for subsistence and in the Rhodopes region house open plots may also be used for drying tobacco leaves. Hhs data did not capture the average size of household plots however it was observed that generally the garden plots adjacent to houses were small with a vegetable patch and fruit trees. The arable land referred to by the target group is typically located less than 1 km from their home, providing relatively easy access, with another 14% located between 1 and 5 km from the home (DPM HHS, 2014).

The HHS reveals that 88% of privately owned arable land is cultivated by the household – this is a big difference from other Bulgarian agricultural regions, such as the Northeast, where most of the household land is rented to large farming companies for crop growing, supplying a stable and secure income from annual rent fees. Cultivating smallholder land plots by the household is much more laborious and less efficient and implies smaller earnings and higher costs of production. The survey responses also indicate about 7% of arable land is not used at all (this is better than other Bulgarian rural regions such as the Northwest), while only 3% of arable land plots are shared with another households (DPM HHS, 2014).

Pastureland is owned by 12.9% of the households – an average household in the target group typically owned 0.886 ha of pastureland. Pastures are also relatively easily accessible with 62% located within 1 km and 88% within 5 km. They are used by the households who own them in 76% of the cases (DPM HHS, 2014).

Only 2% of the surveyed households own forest lands - a total forest area of just 4.5 ha, which corresponds to a national trend of primarily state and municipally owned forests. Uncultivated lands – bad lands and non-arable plots constitute the remaining 2.1 ha of agricultural land owned by households with only 0.8% of households reporting owning such lands (DPM HHS, 2014).

⁷ 10 Decares (daa) equals 1 Hectare (ha)



An analysis of the landownership in relation to gender revealed that more women in the sample owned dwellings than men, with 78% female owners and 76% male owners. However the sample represented that marginally more men owned land (plots separate to houses) than women with 39% male land owners and 32% female land owners. Likewise ownership of arable land showed that 4% of the sample was owned by men and 3% was owned by women.

7.5 Natural Resources Overview

7.5.1 Water

Municipal infrastructure and use of centrally supplied drinking water has been described in Section 6.2.5 above. As much as 91% of the HHS respondents state that in addition to using water for drinking/domestic purposes they also use it to irrigate crops – it is assumed that this applies both to water from the central supply and household wells (DPM HHS, 2014).

With regard to use of local water resources (non-drinking) local rivers, streams and several small local reservoirs are used. The project area is located in the west watershed of the mid-stream portion of Krumovitsa River, a right-hand tributary of Arda River between the Studen Kladenets and Ivaylovgrad water reservoirs. The Krumovitsa River source is on the southern border ridge (Maglenik) of the Eastern Rhodopes and flows northwards. Its total length is 58.5 km, and its watershed area is 670.8 km². There are several reservoirs in Krumovgrad Municipality – “Slivarka” 1 and 2, “Golyamo Kamenyane”, “Chernichevo”. At the border of the Krumovgrad and Kardzhali Municipalities there is the large national dam “Studen Kladenetz” (Dango, 2010).

According to stakeholder consultations the best agricultural lands for tobacco and vegetable is highly dependent on the location of the land with regards to its vicinity to the Krumovitsa River (AMEC, 2014). More fertile soils located further from the river are less attractive as, according to respondents of stakeholder consultations meetings, there are no means for irrigation. This has been further evidenced by the GIS analysis of the land use, which found that most intensive agriculture took place to the east of Ada Tepe, whereas to the west of Ada Tepe, with no means of irrigation, there is more cattle grazing refer Annex 2. Responses from the HHS indicate that for irrigation needs, 64% of the surveyed households use water from the mains system, while others rely on water from wells, rain water and boreholes.

Several sensitive locations related to drinking water - public water taps and water wells for animals, were identified. It must be noted that stakeholder interview respondents were particularly protective of these taps (AMEC, 2014). This attitude is rooted in the cultural traditions of the mixed population in the area. During Ottoman times it has been a tradition that well-to-do community members construct public water taps close to settlements (often inscribing the year and initials of the benefactor family), and these were of great value as they shortened the distance women had to traverse to get water and also water troughs were important for watering domestic animals. The taps themselves were an important place



of socialization in the small settlements. To this day, local communities in the region and Bulgaria are very attached to their public water taps and still use them as a source of drinking water even while household wells and central water supply is almost universally installed in the houses. It must be noted that public taps also pose risks of contamination by pathogens and harmful substances with many recent cases nationwide, including contamination of multiple taps in Kardzhali district, identified in 2014 (RHI Kardzhali, 2014).

7.5.2 Soils

The leached forest cinnamon soil is the prevalent soil type in Krumovgrad Municipality (EIA). They are suitable for thermophilic intensive crops such as sunflower, tobacco, vine, among others (MDP 2014 – also see Section 9 description of these livelihoods). The intrazonal soils – rendzinas are rare and the alluvial soils are even rarer. There is no local public information on specific use practices for local soil resources or the erosion rates of soil cover.

7.5.3 Forests and Biodiversity

According to the publication Review of Ecosystem Services (2007, Zarvudakis, Rashev) the following ecosystems are present in the Municipality of Krumovgrad: forests (38 867 ha), meadows (21 560 ha) and inland waters and wetlands (475 ha). The total valuation of ecosystem services in Krumovgrad is estimated at approximately 115.7 million BGN per year. As forests represent nearly half of the overall land they account for 87.8 million BGN. The majority of woods are deciduous (26 426 ha), and there are also coniferous (4 724 ha) and mixed forests (7 716 ha). More than 90% of forests in the municipality were planted and are now logged commercially. Apart from their industrial use forests are important for households. It is estimated that some two thirds of the population in the Rhodopes Mountain use wood for heating, as discussed earlier under infrastructure (2007, Zarvudakis, Rashev). Meadows and open spaces are evaluated at 13 million BGN per year. Inland waters and wetland bring 9.2 million BGN per year. The valuation includes material benefits along with supporting and cultural benefits.

In addition to timber, the local population utilizes a range of forest products and services such as mushrooms, herbs and fruits, wild game and fish that abound in the local forests and waterways, and also aesthetic ecosystem services in the form of ecotourism activities (see Section 9 on the economy for description of this usage and the associated livelihoods). Unfortunately, no credible inventory of wild growing forest resources exists (artificial herb plantations inventories from the MDP are listed in Section 9.2.2).

Almost 80% of the territory of Krumovgrad municipality is in the European ecological network Natura 2000 with 4 protected areas under Council Directive 2009/147/EC (Birds' Directive) - "Krumovitsa", "Studen Kladenetz", "Arda bridge" and "Byala reka"; and one under the Council Directive 92/43/EEC (Habitats' Directive) - "Rodopi – Iztochni" (MoEW NATURA 2000, 2014) refer Figure 7-1 below. On the territory of Krumovgrad Municipality

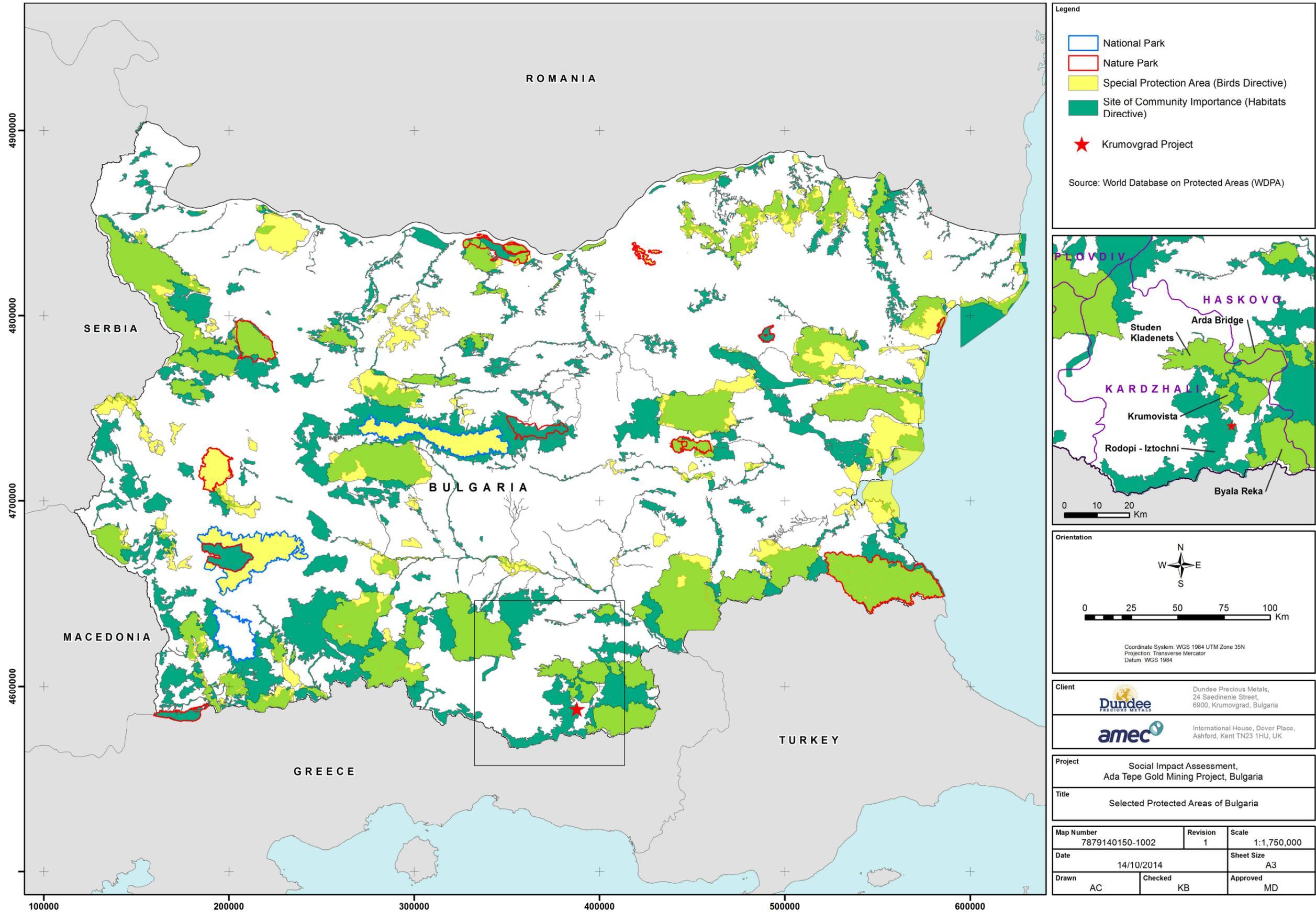


there is also one Important Bird Area – Krumovitsa, which is of a global importance (BirdLife, 2014).

There are three protected areas under the Bulgarian national network of protected areas: “Oreshari”, Ribino” and “Molina skala”, and three natural phenomena: Stone plateau (between the villages of Kovil and Dzhanka), Eagle Rocks (northwest of Krumovgrad) and the evergreen oak near Skalak are situated in the region of Krumovgrad (EEA, 2014).



Figure 7-1: Protected areas of Bulgaria.



Legend

- National Park
- Nature Park
- Special Protection Area (Birds Directive)
- Site of Community Importance (Habitats Directive)
- ★ Krumovgrad Project

Source: World Database on Protected Areas (WDPA)

Inset Map: Krumovgrad Region

Regions: PLOVDIV, HASKOVG, KARDZHALI

Locations: Studen Kladenets, Arda Bridge, Krumovista, Rodopi - Iztochni, Byala Reka

Scale: 0 10 20 Km

Orientation

N
W E
S

Scale: 0 25 50 75 100 Km

Coordinate System: WGS 1984 UTM Zone 35N
Projection: Transverse Mercator
Datum: WGS 1984

Client

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Ada Tepe Gold Mining Project, Bulgaria

Title
Selected Protected Areas of Bulgaria

Map Number 7879140150-1002	Revision 1	Scale 1:1,750,000
Date 14/10/2014	Sheet Size A3	
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7.6 Natural Resource-Based Livelihoods

Collection and growing of mushrooms, herbs, fruits

The gathering of wild herbs, berries and mushrooms is a traditional activity undertaken by both men and women in Bulgarian households. For a minority it forms one of series of income generating activities but it is also often done informally. For Krumovgrad this group of people is relatively small compared to such groups in the Western Rhodopes, Central Balkan and other parts of Bulgaria. An in depth ecosystems services report has been detailed and forms Appendix B of the SIA, to establish the extent and reliance of the collection of natural resources in the study area as a livelihood and or a subsistence activity.

Figure 7-2: Men sorting Chanterelle mushrooms in Shtarbina (Left). Mushrooms found on Ada Tepe N41 25'59" E25 39'12" (Right).



The HHS findings indicate that 54% of all 396 surveyed households practice more or less regularly activities for natural resources utilization provided by the local ecosystems such as wild fruit gathering, wild plant collection, firewood collection or hunting. Wild fruits and wild plant collection is practiced by 29% of the households. People use the local natural resources mostly for household consumption and do not consider it as an important income for their households. The types of herbs and mushrooms collected are illustrated in Table 7-2 below as disclosed during the baseline consultations. Furthermore the consultations found that during the season mushrooms and wild herbs were in abundance throughout the Municipality and people collected them from various areas and were not limited to one specific spatial area, refer Figure 7-3 illustrates the woodland areas where forest mushrooms would grow in the Municipality. Indeed one baseline consultation resposdee stated that usually people kept their locations secret so as not to disclose the exact location of the wild produce. It should be noted, however, that of the 5 Roma people whom were resposdees in the HHS 4 Roma people stated that collection of wild herbs during the right season was one of the 5 sources of income they depended on.



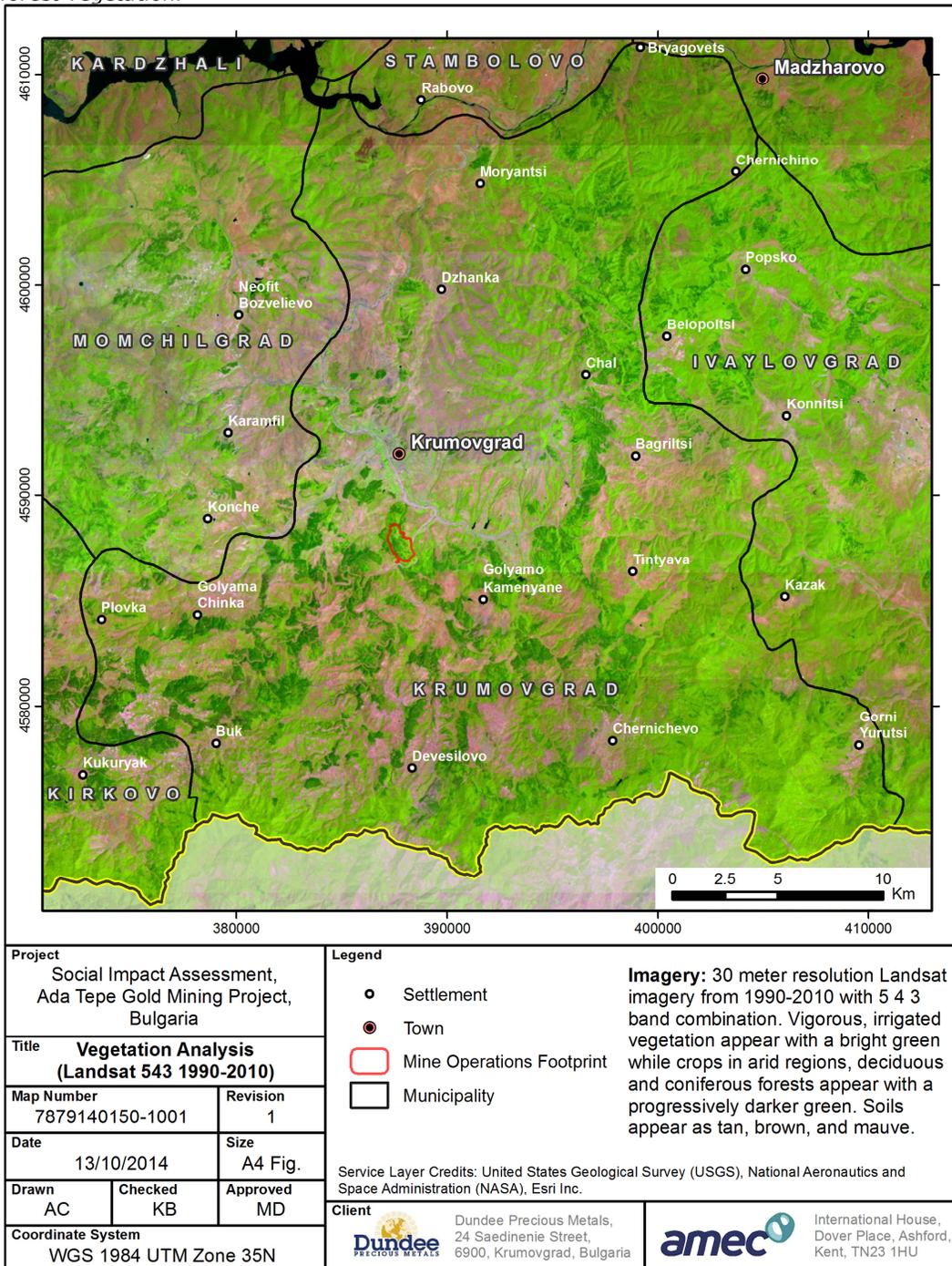
Table 7-2: Types and usages of wild herbs and mushrooms in the Aoi as disclosed during the baseline consultations.

Plant Name	Usage
Greek Oregano	Cooking
Savory	Cooking
Melissa Officinalis	'Spice'
Tilia (Tieia)	Tea (medicinal)
Common balm (Salvia Officinalis)	Tea (medicinal)
Dog Rose	Tea
Thyme	Tea and cooking
Juniper (a protected species)	Cooking
Crab apple	Pectin

Mushroom	Usage
Chanterelle	cooking
Boletus	cooking
Red pine mushroom/saffron milk cap	cooking



Figure 7-3: Potential mushroom growing areas in the municipality of Krumovgrad, identified by dark green coloured regions of Landsat 543 imagery which highlights the presence of forest vegetation.





Hunting

There are two game breeding reserves (MDP, 2014), one of which “Studen Kladenetz” is of national and international importance. It is situated south of Studen Kladenetz dam, straddling Momchilgrad and Krumovgrad municipalities, with a total area of 5577 ha. The reserve offers hunting of big game (fallow deer, roe, wild boar, wolf, fox), small game (hare, quail) and permitted species of wild ducks. In addition to hundreds of local hunter, visiting hunters from all over Bulgaria congregate in the Studen Kladenetz breeding area, with widespread poaching also reported (Krumovgrad.bg, 2013).

In Krumovgrad Municipality there are 13 active hunting fields as set by the Forestry Department (refer to Figure 7-4). As such there are 13 established hunting groups who are assigned to each hunting territory. Baseline consultations were told that hunting groups within the Municipality maintain good relations with their neighbouring hunting groups and there existed no conflict or rivalry. The hunting areas across the Municipality offer hunting of wild boar, hare, wolves, foxes, marten as well as quail, partridge, wood pigeon, woodcock and waterfowl. According to baseline consultations with a hunting group deer are usually also hunted (presently forbidden), however Muslims do not shoot them as it is a sacred animal to them. Hunting traps are deemed illegal. Baseline consultations found that hunters walk approximately 5 to 10 km during the day. The hunting season lasts between 15th August and 15th January for birds and between 1st October and 31st December for mammals, although it can be extended to the end of January by exception. The annual fee for hunting is 150 BGN and the daily permit is 62 BGN (hunting and fishing) which is purchased from the local Forestry Department.

In addition to recreational hunting activities, the hunting groups may also be requested by the Forestry Department to organise controlled culls for which they are compensated by the Hunting Association as follows:

- Wolves – BGN 100 per kill;
- Jackals - BGN 25 per kill;
- Foxes – BGN 10 per kill.

This is tightly controlled and depends on the size of the population of animals

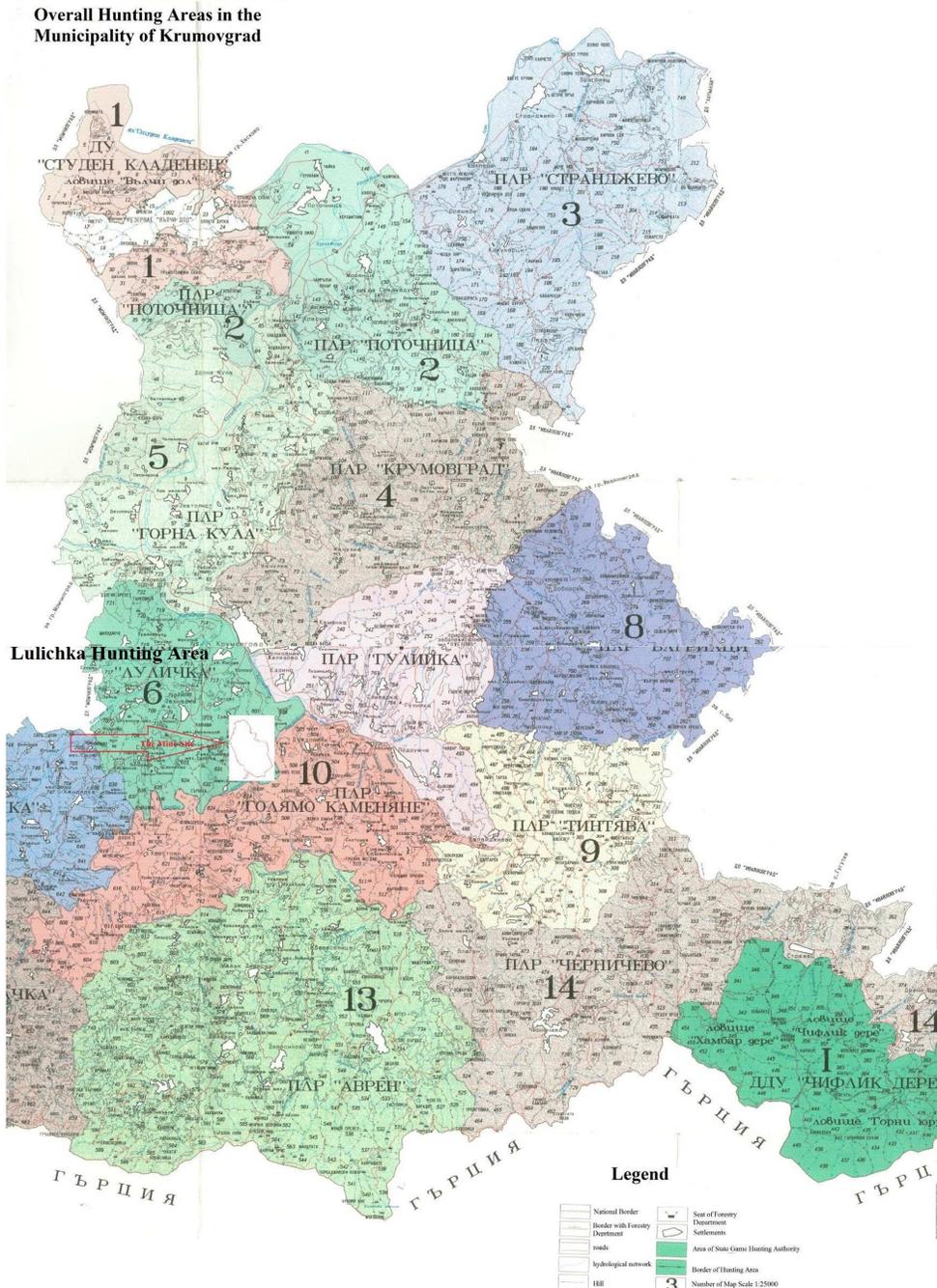
Lulichka hunting group is one of the thirteen hunting groups within the Municipality, refer Figure 7-4, territory 6 highlighted in pink. The 35 hectare territory incorporates the proposed project area footprint, no other hunting group has their hunting territories within the project foot print. There are 50 members, whom are all male. Baseline consultations found that animals such as wolves, jackals, foxes, wild boar and fowl, are all hunted in this territory. However the only part of the Lulichka hunting territory, which is maintained to have wild boar, despite there being no fences in the areas to restrict movement, is in the Ada Tepe area. It was purported that there is presence of wild boar in forest areas of other hunting territories in the Municipality. Boundaries of hunting territories cannot be moved, according



to baseline consultations with the Forestry Department as they are permanently agreed and set.

Hunting in the Municipality remains relatively exclusive, perhaps due to the costs associated as discussed above, and the HHS results indicate that hunting is practiced by only 5% of the surveyed households. Meat is consumed for personal consumption and is a recreational activity. However 3 out of 396 respondees in the HHS whom hunt stated that hunting is one of the sources of income for the household.

Figure 7-4: Map of hunting fields (Source:DPM October 2014)

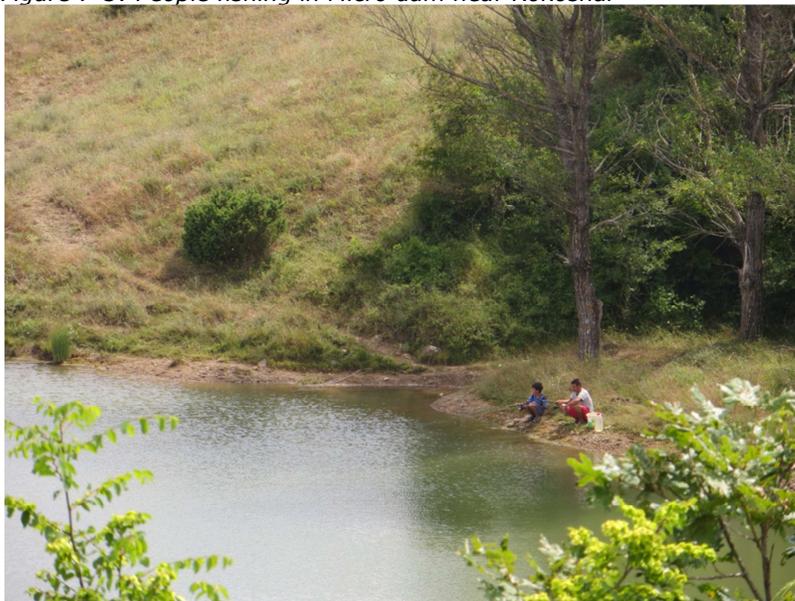




Fishing

The rivers Arda and Krumovitsa offer opportunities for fishing. People fish mainly for recreation and not for commercial purpose and it is predominantly carried out by men. They often fish in the river below Ada Tepe and in 'micro dams'⁸ and fish Mountain Barbel, Perch, Carp, Trout, Mullet, Tilapia, Pike, Sheat fish and Rudd. 15% of the surveyed households carryout fishing as a recreational activity (DPM HHS, 2014).

Figure 7-5: People fishing in Micro dam near Kokoshar



Beekeeping

Beekeeping is a traditional agricultural practice in Krumovgrad and predominantly carried out by men. Although not as popular as tobacco growing, this sector tends to grow, due to the fact that the EU provides funds to support bee keeping. Funding is provided only to registered bee keepers. According to the Krumovgrad State Veterinary Service, the number of registered colonies (hives) has increased from 2,600 in 2010 to 2,654 in 2013. (DPM SEIDP, 2014). Results from the HHS, however, reveal on average only 4% of the households keep bees. The HHS results indicate that most beehives are kept by Kuklitsa residents - 35%. This percentage is smaller (11% - 18%) for residents of Malko Kamenyane, Skalak and Rogach village, while in Guliya only 4% of the people are occupied with beekeeping. Baseline consultations also found bee keeping practices in Ovchari (AMEC, 2014). Baseline interviewees report the honey produced is primarily for household usage and only if there is

⁸ Micro-dams are formed by diversion of natural stream waters (gorges, small rivers and streams) and their waters are primarily used for irrigation and water supply.



surplus, then it is sold. Interviewees familiar with local beekeeping also believe that the area is unpolluted and very suitable for bee keeping (AMEC, 2014).

Figure 7-6: Bee keeping in Varhushka (Ovchari) [Left]. Bee keeping in Shtarbina (Kuklitsa)[Right].



Recreation and Land use

The land is used to a lesser degree for recreational and leisure usage (not tourism). Within the AoI there is an abandoned tourist lodge and 4 tourist bungalows (owned by the Municipality), which are purported to be used by a Krumovgrad school despite their dilapidated state (EIA 2010) refer Figure 7-7 below. According to baseline consultations people also use the forest areas throughout the Municipality for walking and hiking but not to a great extent.

Fishing as a recreational activity takes place in the river Krumovitza, which flanks the southern side of Ada Tepe area and flows only during the winter months but it is also carried out in micro dams, and the Rivers Arda and Kesebir. The HHS, indicate that of the sample few people undertake fishing. Of the villages nearby the proposed development the most people citing that they fished were in the Village of Kuklitsa (Shtarbina and Kremenik), which is up stream from the site. The banks of the river Krumovitza were also observed to be used as sites for picnicking and relaxing.

As discussed above hunting also takes place predominantly as a recreational activity.



Figure 7-7: Derelict Lodge on Ada Tepe N41 26' 36" E 25 39' 16"(Left). Derelict Student's leisure chalets N41 26' 31" E 25 39' 20" (Right).





8.0 Education

8.1 National Overview

8.1.1 National Education System

Bulgaria has adopted a system of compulsory primary and secondary education, which is secular in nature and is provided free of charge in a system of state and municipal schools. According to the state Public Education Act the state guaranteed right of free and mandatory education applies to all children from 7 to 16 years old, presided over by a Ministry of Education. The Ministry enforces a strict system of educational requirements – curricula, licensed textbooks and a teacher accreditation system, which applies to all levels of schooling. Private schools are also admissible following the state sanctioned educational requirements, although state funding for private schooling is limited.

All education in kindergartens, schools and their affiliates is conducted in the Bulgarian language. Schooling in mother tongues (such as Turkish) is permitted for children whose mother tongue is not Bulgarian in municipal schools, under the control of the state.

Article 12 of the Public Education Act states that “Bulgarian kindergartens and schools with foreign participation shall be opened or transformed at the request of associations, or corporations, or companies of Bulgarian and foreign natural and/or legal entities. There are some foreign schools in Bulgaria, as well as foreign-operated educational programs such as a local branch of the Teach for All network, and until 2013 teachers sent by the US Peace Corps. Large companies, particularly in the mining and IT sectors, frequently partner and fund schools, typically technical profile high schools, associated with a particular industry.

Higher education is concentrated in the big cities, where a network of more than 50 accredited institutions of higher education (universities and colleges) exists, most of which are universal or profiled with large regional universities. The nearest universities to Krumovgrad Municipality is a regional branch of Plovdiv University, located in the city of Kardzhali, specializing in philology, business and tourism, and the the Free University of Burgas, specializing in economic, legal and humanitarian studies and information sciences.

Various formal and informal opportunities for lifelong learning and career training and retraining exist, some of which are sanctioned by the state, and some partner the academic institutions. There is a certified training system for some professional skills (such as language proficiency and computer literacy), which has been set up with the support of the European Structural Funds in the period 2007-2013, under Operational “Programme Human Resources Development” (MLSP, 2007). A still frequently utilized form of informal education services are private tutors in languages, high school subjects, and various skills.



8.1.2 National Educational Attainment

According to NSI Census data, approximately 93% of the national population have graduated at least at primary school level, of which 43% also achieved a high school diploma and 19.6% have a university degree. A relatively small number of people – mostly older persons – have never attended high school, and this number has dropped significantly between 2001 and 2011, as the newer generations increasingly have at least a high-school qualification (NSI Census, 2011). The expansion of university graduates during that period – See Table 8-1, is in part owed to the liberalization of the nation tertiary education system and lowering of the barriers to enrollment in many new state and private universities.

Table 8-1: Educational attainment of the population – 2001-2011 trends (NSI Census, 2011)

Highest educational level Attained	Persons (2011)	% of Total (2011)	Persons (2001)	% of Total (2001)
Graduated university	1 348 650	19.6	1 050 534	14.1
Graduated high school	2 990 424	43.4	2 826 821	37.9
Graduated middle school	1 591 348	23.1	2 049 443	27.4
Graduated primary school	536 686	7.8	933 329	12.5
Unfinished primary school	328 803	4.8	433 049	5.8
Never attended school*	80 963	1.2	132 888	1.8
Children under school age	14 303	0.2	20 153	0.3
Total	6 891 177	100	7 467 839	100

**during the 2001 census the category "never attended school" was reported as "illiterate"

A comparison between residents of cities and villages shows that rural inhabitants have been lagging significantly in educational attainment, especially for higher degrees. The gender gaps in attainment are also more prominent in villages – see Table 8-2 (NSI Census, 2011).



Table 8-2: Educational Attainment of the Population – comparison across gender and place of residence (NSI Census, 2011)

Highest educational level Attained	% Men in cities	% Women in cities	% Men in villages	% Women in villages
Graduated university	21.3	28.1	4.8	6.8
Graduated high school	50.1	43.7	38.8	30.2
Graduated middle school	18.1	16.9	38.0	37.7
Graduated primary school	5.2	6.0	11.0	16.0
Unfinished primary school	4.5	4.2	5.6	6.2
Never attended school	0.6	0.9	1.6	2.9
Children under school age	0.2	0.2	0.2	0.2
Total	100	100	100	100

In addition to interpreting official indicators of scholastic attainment, it is important to have a picture of the functional knowledge of the population. An independent metric for this are the international PISA tests, conducted in 2012 (OECD, 2012). PISA tests functional knowledge under 3 categories: Mathematics, Natural sciences and Reading. Student performance is measured by standardized achievement levels – 1st being the lowest level of achievement and 6th – the highest.

The results (See Figure 8-1 and Figure 8-2 below) of the Bulgarian students' mathematical knowledge, natural science knowledge and reading literacy skills are below the average of OECD. For mathematical skills, the results of Bulgarians in the higher levels are 2-3 times lower than the average OECD countries. Especially alarming are the results for reading literacy – on average for OECD countries 1,3% of the students have shown performance below the first achievement level, while in Bulgaria the share of those students is 8% (OECD, 2012). Insufficient reading skills dramatically reduce chances of employment and career development, as well as other vital contributions to community social life.

Figure 8-1: Mathematics skills comparison between Bulgaria and OECD (OECD, 2012)

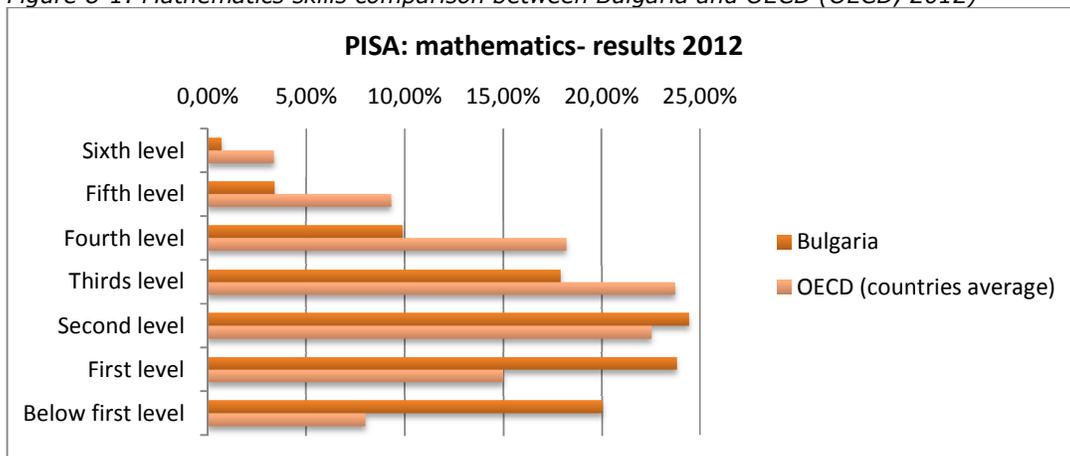
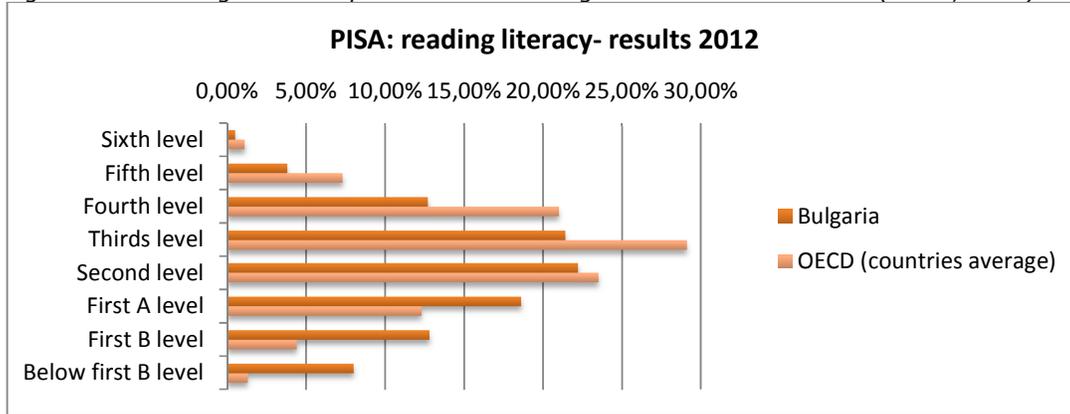




Figure 8-2: Reading skills comparison between Bulgaria and OECD countries (OECD, 2012)



8.2 Municipality and local level educational infrastructure

8.2.1 Formal Education

According to MDP in the academic year 2013/2014 Krumovgrad municipality had 10 public schools, which educate students, divided into classes from I-XII; 8 kindergartens, a kindergarten with two infant and toddler groups, working with children aged 3 years and children aged 3 to 6 years including six half-day kindergartens attended by children aged 3 to 6 years (See Table 8-3 below). Children attending high schools, primary schools and kindergartens are transported to schools from their homes by school buses, funded by the Ministry of Education. Schoolchildren in the AoI villages are primarily transported to the Zvanarka primary school (AMEC, 2014).

Table 8-3: Educational Institutions in Krumovgrad Municipality (Krumovgrad MDP, 2014)

Types of institutions	For the year 2013
Kindergartens	7
Schools	11
Professional high schools	1
Total	19

The MDP concludes that Krumovgrad has a school system that is optimal for the needs of the population of the municipality (Krumovgrad MDP, 2014). Baseline consultations found that households preferred to send their children to schools in Krumovgrad because they were deemed better than the more rural schools, such as Zvanarka (AMEC 2014). Baseline consultation interviewees reported that the school bus system in the municipality is regular and reliable. They also mention a problem of Roma community families withholding their children from schooling (AMEC, 2014).

The one professional state technical school "Hristo Smirnenski" has a transportation profile, although IT and computer training has recently also been developed with financial and technical aid from DPM Krumovgrad. A baseline consultation meeting with school representatives with the director of the Transport high school reveals that while there are



currently 180 students enrolled in the school in 8 classes (2 for each year group), it has capacity to take on more students. While the school is co-educational, there are currently many more enrolled boys than the girls. Children enrol for four years and on successful completion receive a nationally recognized certificate, after which students can opt to continue their education in university out of the municipality. It was revealed that about 30% of the students from this school go on to study at university. Only 20% go on to become mechanics or find employment abroad.

8.2.2 Skills Training

In addition to formal educational institutions, in the town of Krumovgrad there is also a Centre for Professional training and re-training for adults (accepting persons of working age – above 16 years old, which offers vocational training for the following ten professions:

- Profession "Office secretary" - specialty "Administrative service";
- Profession "Computer operator" - specialty "Word processing";
- Profession "Transportation technology technician" - specialties "Auto transportation technology" and "Road construction technology";
- Profession „Mechanic of material - handling equipment " - specialty "Material-handling equipment mounted on road vehicles" and "Material-handling equipment with electric drive";
- Profession "Transportation technology worker" - specialties "Auto painter";
- Profession "Tailor" – specialty "Tailoring";
- Profession "Landscaping" - specialty "Park construction and landscaping";
- Profession "Chef" - specialty "Production of culinary and beverage products";
- Profession „Waiter - bartender" - specialty „Servicing catering establishments";
- Profession „Hairdresser" - specialty „Hairdressing"

8.3 Local Educational Attainment

8.3.1 Formal Educational Attainment

As one of the crucial factors for the education of the population it is important to have a picture of the educational attainment of the citizens of the Municipality of Krumovgrad. Table 8-4 below illustrates the official statistics for Krumovgrad municipality and Kardzhali district based on the 2011 Census – also see national figures in Section 8.1.



Table 8-4: Educational attainment of the population at district and municipal level (NSI Census, 2011)

Highest educational level Attained	Krumovgrad municipality		Kardzhali district	
	Persons (2011)	% of Total (2011)	Persons (2011)	% of Total (2011)
Graduated university	1 113	6.7	14 719	10.3
Graduated high school	4 503	27.2	4 6357	32.5
Graduated middle school	6 531	39.4	50 849	35.7
Graduated primary school	2 597	15.6	16 288	11.4
Unfinished primary school	1 156	6.7	8 941	6.3
Never attended school	616	3.7	5 069	3.5
Children under school age	41	0.2	311	0.2
Total	16 557	100	142 534	100

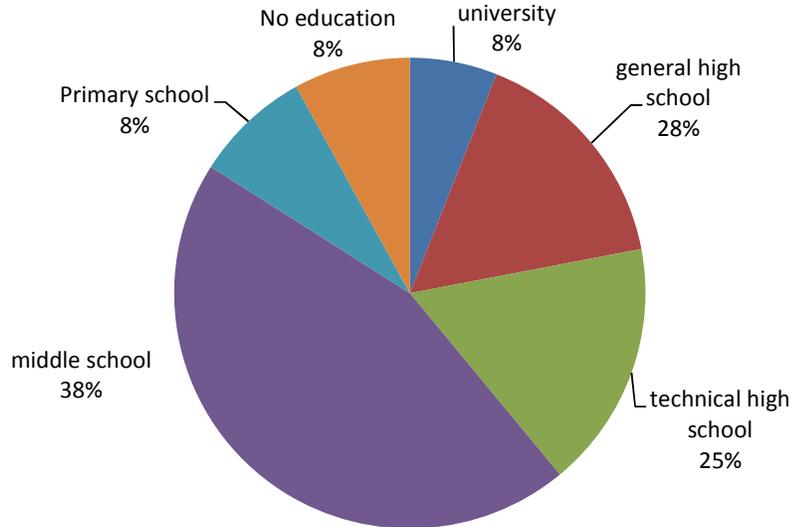
The attainment distribution shown above is fairly close to the district statistics but much more modest than the national picture. This indicates low levels of educational attainment in the whole district, not only in the AoI, and presents a strong probability of lower levels of qualification of the human resources in the district compared to the national levels.

As can also be seen in Table 8-4 above, 6.7% of the Municipality population has a university education, which is less than the district figure by around 3,5% and as much as three times lower than the national figure. The proportion of people with a high-school degree is also smaller than the national one, but close to the district one. The highest proportion of population has a middle school qualification at 39.4% of the inhabitants (NSI Census, 2011). There is a relatively high percentage of dropouts from primary schooling, and the proportion of people who have never attended school in Krumovgrad Municipality and Kardzhali district exceed the national figure.

For the AoI target group the HHS results indicate a large share of people with lower educational attainment (39%) - 3 times larger than national averages (DPM HHS, 2014).



Figure 8-3: Educational attainment for inhabitants in the AoI settlements (DPM HHS, 2014)



A clearer picture emerges when educational levels are disaggregated by gender and age groups. If one compares the oldest age group in the working age segment – those aged 50 to 59 – to the youngest working age group – the people aged 18-29, there is a clear difference – See Table 8-5 below. Almost 3 times more persons from the older group have graduated at only middle school level, while the majority of the younger group have graduated from a general or technical high school. The difference between men and women is more nuanced with a clear separation of men and women choosing technical and general high school, but proportionately more women having a university degree than men (DPM HHS, 2014).

Table 8-5: Education levels comparison in AoI by gender and age groups (DPM HHS, 2014)

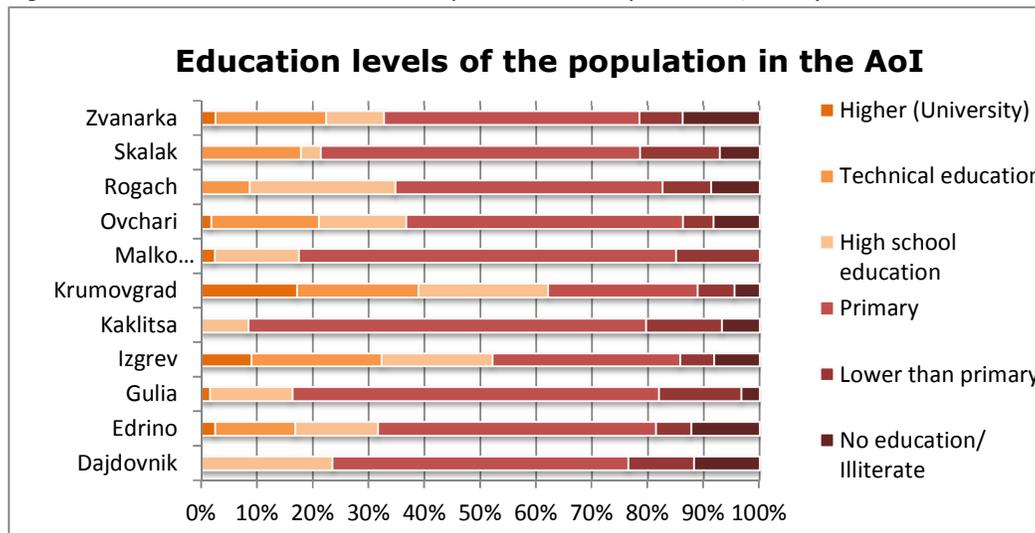
Education Degree Attained	% Men in AoI	% Women in AoI	% 18-29 Age Group	% 50-59 Age Group
University	4	8	13	3
Technical High School	25	6	19	21
General High School	15	19	46	15
Middle School	42	48	21	60
Primary School	8	8	1	0
No education	6	11	0	2
Total	100	100	100	100

The HHS has insufficient data on the educational levels of Roma community due to a low number of respondents from that community. From the available data it appears that the majority of the Roma inhabitants have primary education. There are slight differences between Bulgarian and Turkish communities, as proportionately more self-identified Bulgarians in the sample group have graduated high school and university (DPM HHS, 2012).



Regarding education levels in individual settlements, Krumovgrad and Izgrev neighbourhood people can be identified as the best educated in the area, having the largest proportion of inhabitants with university, high-school and secondary school qualifications. Following on from these are the people from the villages of Ovchari, Zvanarka, Edrino and Rogach (DPM HHS, 2014). The village of Kuklitsa is reported to have the largest proportion of residents with only primary or no education – see Figure 8-4 below.

Figure 8-4: Education levels in the AoI per settlement (DPM HHS, 2014)



8.3.2 Qualification and Skills

Additionally to the educational levels of the population of the AoI, there is some official information about the qualifications and skills of the employed and unemployed population in the municipality of Krumovgrad (Bulgarian employment Agency, cited in the DPM Skills Survey, 2014). According to data from the Employment Agency as of December 2013 in the Municipality of Krumovgrad there were 1 405 registered unemployed residents. Out of these, 60% have secondary education and 11% have graduated with university degree. The table below presents a detailed picture of the skills and qualifications of the registered unemployed in two major fields of relevance to the project, as follows:

- 1) Engineering and technology;
- 2) Finance, economics and administration.



Table 8-6: Fields and skills specialties of the registered unemployed residents in the municipality of Krumovgrad (Bulgarian employment Agency, cited in the DPM Skills Survey, 2014)

	High-school education		University		Qualification	
	Field	Number	Field	Number	Field	Number
Engineering and technology	car driver	119	Chemistry	1	1st PQD	
	Operator of metal-cutting	6	Plumbing networks	1	Motor vehicles	3
	Turner (lathe operator)	20	Computer networks and technology	1	Road construction worker	24
	Metallurgy and non-ferrous metals	5	Engineer	6	2nd PQD	7
	Construction	4	Construction of buildings	3	Stoker	1
	Technology of non-organic mater	1			3rd PQD	
	Operator of electricity networks	4			Construction worker	1
	Laboratory technician	1			Road construction worker	13
	Air conditioning and ventilation equipment	1			Motor vehicles technician	5
	Plumbing network	2			4th PQD	
				Mechanic	3	
Finance, economics and administration	Economics	6	Finance	4	1st PQD	
			English language	1	Administrator specialist	2
			Economics	11	Word processing	1
			Bulgarian and English languages	1	3rd PQD	
			Marketing	1	Word processing	1
			Public administration	1		
			Public relations	1		
			Industrial management	1		
		Budgeting and planning	1			

The most common technical qualification among unemployed job seekers with high school education appears to be “car driver”, followed by “road construction worker” and “turner” (lathe operator). Out of the economic qualifications the most common is “economics” at university level, followed by high-school level “economics” and “finance” at university level.

For comparison, Table 8-7 below presents a distribution of the currently employed residents in the same two fields. The most common occupation in the technical field appears to be construction followed by the processing industry (DPM Skills Survey, 2014). On the other hand, most of the employed with an economics background occupy governmental jobs, most probably meaning positions in the municipal structures.



Table 8-7: Number of currently employed residents in the municipality of Krumovgrad in 2 fields (Bulgarian employment Agency, cited in the DPM Skills Survey, 2014)

	Groups of economic activities	Total	In the town of Krumovgrad	In the villages
Engineering and technology	Mining and quarrying	65	26	39
	Processing industry	680	418	262
	Production and distribution of electrical and thermal energy and gaseous fuels	46	26	20
	Water supply; piping services, waste management and re-cultivation	55	21	34
	Construction	382	120	256
Finance, economics and administration	Financial and insurance services	23	21	..
	Administrative and supporting activities	71	53	18
	Government jobs	519	287	232

In addition to the data obtained by the DPM Skills Survey, the DPM HHS survey asked inhabitants of the AoI settlements to list their occupational and functional skills. From the collected responses (See Table 8-8) below it seems that agricultural (farming) skills are the most common amongst men and women in any age group. This is an expected result considering that agriculture is main occupation for the majority of the population in the AoI (see Section 9. Economic context and livelihoods). About 20% of the surveyed residents have also evaluated themselves as having “no specific skills”. The third most popular group of skills for men is related to driving, while for women it is sewing. When distributing the same skill set amongst age groups, the results for the age group 50-59 follow the general trend – with the most popular skills being agriculture, sewing and driving. For the generation entering the work force (age group 18-29), the skill set is much more diversified and although the most popular skills are again agriculture and driving they are followed by Crafts and IT. About 10% of the population aged 18-29 have evaluated themselves as having “no specific skills”, which is concerning, but to some extent reflects the more informed and realistic self-evaluation of younger people regarding the skills demanded on the current labour market (DPM HHS, 2014).



Table 8-8: Self-identified skill categories of the residents of AoI settlements by gender and age groups (DPM HHS, 2014)

Skill Category	% Men in in AoI	% Women in AoI	% 18-29 Age Group	% 50-59 Age Group
No specific skills	20%	22%	10%	4%
Crafts	10%	4%	10%	8%
Electrotechnical	3%	-	1%	2%
Sewing	2%	13%	5%	12%
Agricultural	29%	43%	28%	46%
IT	1%	3%	10%	-
Driving	17%	1%	14%	11%
Teaching	2%	4%	5%	1%
Medical	1%	3%	4%	2%
Economic	2%	6%	5%	4%
Construction	8%	-	2%	5%
Cooking	1%	1%	1%	2%
Stonework	1%	-	-	-
Plumbing	-	-	-	1%
Military	1%	-	-	1%
Mining	2%	-	2%	-
Metal processing	-	-	-	-
Public and governmental sector	-	-	-	1%
Administrative	-	-	-	-
Trade	-	-	1%	-
Others	1%	2%	-	2%

It must be noted that the above findings allow only limited interpretation of the objective mismatch between the demanded and supplied qualifications and skills in the local market. For example, it is clear that at present financial services have insufficient scope for local development, despite the number of persons with economic background and qualification being apparently available. Processing jobs – which are assumed to span both agricultural produce and food processing and other light industry, predominate, but it is not clear if enough workers have the specific skills required by the predominant types of local employers, some of which are identified in Section 9.2. Also the problem with functional skills and low literacy described in Section 8.1 above, may prevent young people fresh out of school or even university education from entering the labour market and performing effectively on the job. This, in result could have a rebound effect as young people who are laid off or just unable to find work join the ranks of the vulnerable group of young unemployed people, identified in Section 5.2.9.



9.0 Economic Context & Livelihoods

9.1 National Economy Overview

The following national review has been constructed based on current information provided by the Socio-Economic Analysis of the National Development Programme “Bulgaria 2020” (NDP, 2012) and current data from the NSI.

Overall, the Bulgarian economy has been recovering from the impacts of the global financial and economic crisis, which followed a national economic boom period characterized by a strong annualized growth rate of 5.8% for the period 2000-2008, and reaching 6.2% in 2008 just before the onset of the crisis (NDP, 2012). This was followed by a sharp recession amounting to a drop of -5.5% of annual GDP for 2009 and sluggish recovery staying slightly below or above 1% GDP growth since, with 0.9% growth in 2013 (NSI GDP, 2014). In nominal terms the Bulgarian annual GDP totalled approximately BGN 67 billion (EUR 34 billion) in 2013 (NSI GDP, 2014). In the pre-crisis period GDP growth was based mostly on investment, and particularly foreign investment in the real estate sector, which was badly hit during the crisis. Since then growth has been driven by exports, which have recovered relatively steadily, while domestic consumption has been stagnant or lagging, mostly due to depressed income and unemployment resulting from the crisis (NDP, 2012).

The employment situation in the country also took a sharp turn at the time of the crisis. Around 2008 employment was growing by 3% annually (despite negative demographic growth) and unemployment reached historically low levels of 5%. Following the slump of the construction and export-oriented industrial sectors in 2009-2010, drops in employment followed, with industrial production employing 16.5% and construction companies employing 31.8% less workers in 2011 compared to 2008 (NDP, 2012). In the post-crisis period some export-oriented industries, such as the manufacture of machinery and equipment, electrical equipment, and transport vehicles showed a marked increased labour demand, but that has not compensated the losses from the slumps in construction and domestic services (NDP, 2012). Some government administration workers were also laid off because of cost-saving reforms. As a result unemployment also rose, reaching 11.2% in 2011 (NDP, 2012) and most recently 11.4% for the second quarter of 2014 (NSI Employment, 2014).

The current breakdown of the total national GDP of BGN 67 billion according to different sectors (see Figure 9-1 below) indicates that industry – among which extractive minerals industry, machine building and energy, dominates in terms of value creation, followed by retail and public services, with a much more modest role for agriculture (NSI GDP 2014), underscoring the difference in wealth creation potential between primarily industry and service-oriented urban population centres and agriculture-dominated rural regions. A comparison of GDP value added to sector employment shares (see Figure 9-2 below) further underscores the relatively lower wealth and income creation potential of employment in labour-intensive sectors such as agriculture, basic services and local administration, available to the inhabitants of less industrialized rural areas (NSI Employment 2014).



Figure 9-1: Relative Value Added Share for economic sectors for 2013 (NSI GDP, 2014)

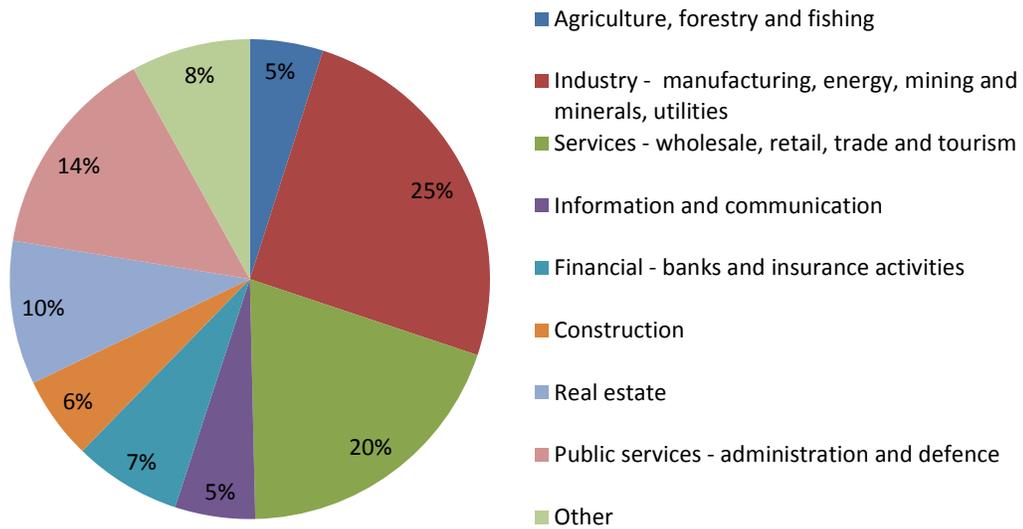
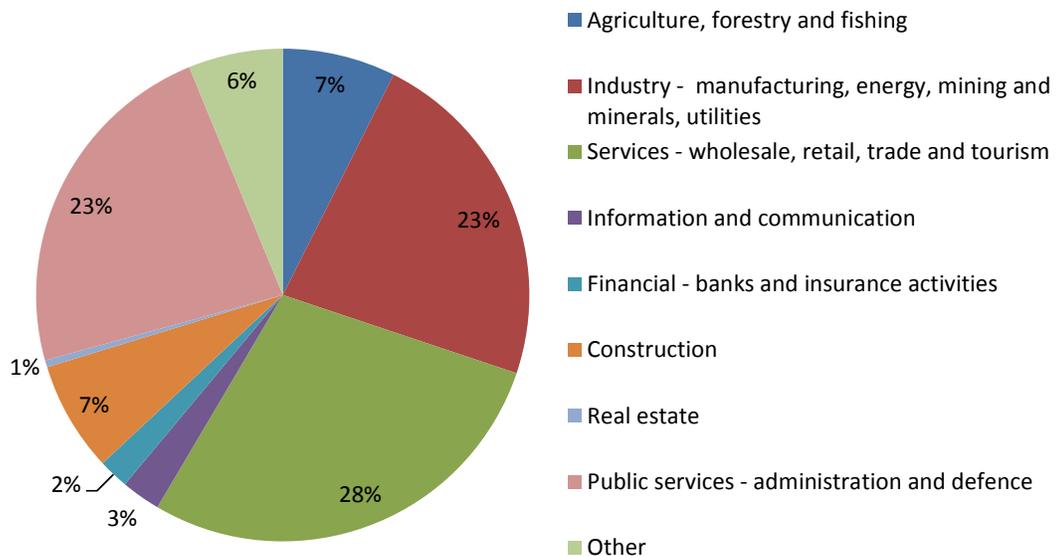


Figure 9-2: Share of Employment for Q2 2014 for economic sectors (NSI Employment, 2014)



9.2 Local Economy Overview

As established in the limitations of this report, NSI data does not exist to illustrate the district of Kardzhali’s economic profile, however a review of the average annual salary broken down by economic sector/employer provides a general proxy to the types of business as illustrated in Table 9-1 below indicates that the energy sector is the highest paying



economic sector, followed by financial services, and thirdly by the sector public administration of which is a civil service/Government sector. It is understood that the disproportionately high salary of electricity and gas, which distort the annual salary profile in the district considerably is due to the specialist requirements of the jobs.

Table 9-1: Average Annual Salary for Economic Sectors in Kardzhali District in 2012 (NSI, Regions 2014)

Economic Sector	Annual Salary – BGN
All sectors	6 266
Agriculture, Forestry and Fishing	6 278
Mining and Quarrying	No data*
Manufacturing	5 784
Electricity, gas, steam and air conditioning supply	15 685
Water supply, sewerage, waste management and remediation services	7 398
Construction	5 525
Wholesale retail trade, repair of motor vehicles and motorcycles	4 801
Transportation and Storage	6 649
Accommodation and food service activities	1 097
Information and communication	6 159
Financial and insurance services	9 857
Real Estate Activities	7 329
Professional, Scientific and Technical Activities	6 930
Administrative and Support Service Activities	4 640
Public Administration and defence; compulsory social security	8 218
Education	7 378
Human health and social activities	7 689
Arts, entertainment and recreation	5 181
Other service activities	4 561

A further review of fixed asset investments of the economic sectors in Kardzhali district to ascertain the economic profile of the district is indicated in Table 9-2 below. The table shows that the manufacturing, mining and quarrying type industries; water supply, sewerage, waste management and remediation have the highest investment in their fixed assets. Followed by Public Administration and defence; compulsory social security; education, human health and social activities, which is a civil service/Government sector and thirdly wholesale and retail trade, transportation and storage, accommodation and food service activities. From these two proxy indicators of the economic profile of Kardzhali district it can be deduced that there is little industry and economic investment in the region and as evidenced at local level in Krumovgrad Municipality the government remains a largest employer across its sectors (health, education, administration, public services etc). Light industry, small businesses and construction sectors also have a presence. Of relevance to the proposed project, there is an active mining and quarrying sector within the district, whilst



data is scarce, research reveals that there is a Gold processing plant 'Gorubso Kardzhali' located in Kardzhali which employs 600 workers (Gorubso Kardzhali, 2014). It is understood that Gorubso has been planning to expand its operations in Kardzhali District, including in Momchilgrad Municipality. In January 2014 an investment proposal notification was entered for the "Momchil" area, envisioning a 10-year gold-silver ore mining operation at 80 000 tonnes per year, which will be processed in the existing Kardzhali facilities (Krumovgrad Municipality, 2014). The results of such remain pending. Additionally Gorubso has been developing a separate site "Sedefche" in Momchilovgrad Municipality, which has already undergone an EIA process for a 100 000 tons per year of poly-metal ore that will employ 50 persons (Momchilgrad Municipality, 2014). In addition to metal ore mining there are several smaller quarry operations for inert materials and industrial minerals – the National Concessions Registry lists a total of 10 construction and andesite materials quarry concessions in active stages of exploitation (National Concessions Registry - NCR, 2014). Baseline consultations found that many stakeholders were aware of the implications of mining due to the fact that they had been former employees of mines and quarrying operations during the Communist Government when a considerable number of mining operations were running in the district but have now closed down.

Table 9-2: Fixed Asset Investments for Economic Sectors in Kardzhali District in 2012 (NSI, Regions 2014)

Economic Sector	Fixed Assets- Thousand BGN
All sectors	111 975
Agriculture, Forestry and Fishing	2 756
Manufacturing, mining and quarrying and other industry; water supply, sewerage, waste management and remediation	72 036
Construction	5 026
Wholesale and retail trade, transportation and storage, accommodation and food service activities	12 910
Information and communication	260
Financial and insurance services	No data*
Real Estate Activities	1 044
Professional, Scientific, Technical Activities, administrative and support service activities	2 615
Public Administration and defence; compulsory social security; education, human health and social activities.	13 592
Other service activities	No data*

*data are confidential, because only 1 or 2 companies in this sector have submitted salary data

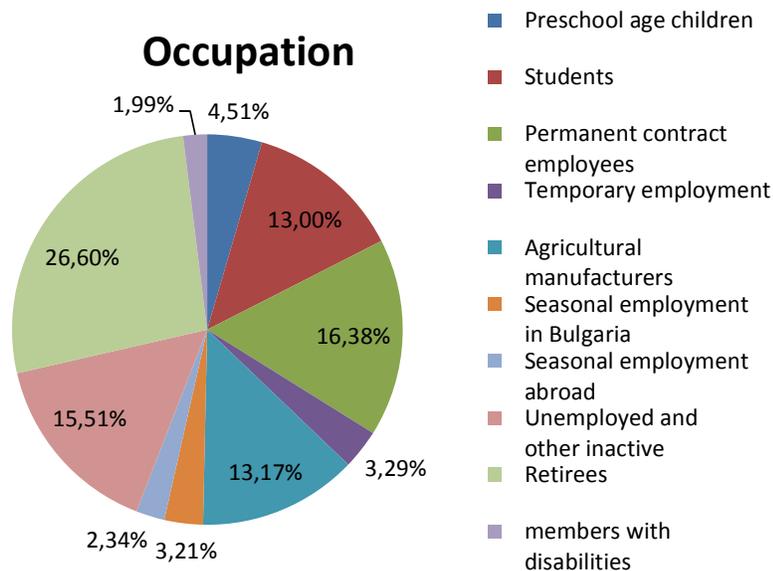
As is typical for a non-industrial rural municipality, the basis of local business in Krumovgrad municipality is centered around agriculture, food processing, construction and light manufacturing micro and small enterprises. According to the draft Municipal Development, 94% of enterprises are micro (up to 9 employees) and are concentrated in the municipal center Krumovgrad (MDP, 2014). The plan identifies small industrial enterprises, which are described in Section 9.2.1. Agriculture is centred around several main livelihoods for



smallholder farmers such as tobacco growing and livestock raising. Tourism is not significantly developed, although limited accommodation in the form of hotels and guest houses is available – see Section 9.2.3 below. There is insufficient information at the local level about the size and trends in the service sectors, other than regional registers of small food stores, barbers, restaurants and cafes – See section 9.2.4, but it is assumed these make up a significant share of the local economy in the municipal capital Krumovgrad, as is generally the case in Bulgarian rural regions.

The occupations of local people, already discussed above in the context of qualification and skills mismatch (see Section 8.3.2), are centered around established sources of employment opportunity, including agricultural with a smaller share of seasonal employment and a large share of unemployed people and retirees – See Figure 9-3 below. Of the employment based on a permanent work contract, the HHS results indicate that almost all seems to be associated with local or national administration positions, while craftsmen such as plumbers work on temporary contracts (DPM HHS, 2014). A lot of the respondents avoid answering questions about the nature of their current occupation, so a local picture of employment by sector cannot be constructed.

Figure 9-3: Occupation of the population of the AoI (Source: HHS, 2014)



More information about the development of the main local economic sectors, based on the draft Municipal Development Plan and other secondary information sources is given below.

9.2.1 Industry

The main industrial enterprises in Krumovgrad area are tailoring and the shoe industry. Other than this there are few other industrial employment opportunities in the area, mainly in the construction and food processing sector. According to the Municipal Development Plan of Krumovgrad (MDP, 2014) the following enterprises are active in the area:



- **Clothing and Textiles** - Enterprises related to the footwear industry are "Krumitsa" JSC (150 employees) and "Dickie shoes" Ltd. Knitwear is produced by "Hasteks" Ltd (86 employees) and "Suteks Krumovgrad" Ltd (156 employees). All work on commission for foreign companies;
- **Food Processing** - The production is sold mainly in the municipality - small producers of bread and meat products;
- **Construction & Materials** - "Bulslate" Ltd. is extracts and processes natural stone materials. „Niki 03" Ltd produces gneiss slabs, flooring, cladding, skirting. Part of the construction activity in the municipality is carried out by "BKS" LTD. The company owns facilities (equipment, transport, storage facilities). Over 80 people are employed. Other private companies involved in the construction industry include ET "Fevzi & Son - Engineering - Stanimir Semov" ET "Caution - Mehmet Hussein", "Dural" Ltd., ET "Sovastroy", "Soft S" Ltd. and "Naafi" Ltd.

In 2009 the company Vets Chal EOOD had an investment project in Krumovgrad area for developing a wind park with 15 wind turbines planned (Dnevnik, 2012). The project appears to not have been implemented, probably because in 2012 all planned renewable energy projects in Bulgaria were severely restricted by the energy regulator (SCEWR, 2014).

9.2.2 Agriculture

The following list of local agricultural livelihoods is compiled based on data from the MPD, baseline study consultations and the household survey. This list of livelihoods is not necessarily ordered by importance, although tobacco growing and subsistence farming (with some additional sources of income, see Section 9.3 for the most significant livelihoods in the area. Where actual data on number of employed persons for the stated activity exists, these have been reported. Unfortunately, as already stated, no comprehensive National Statistics Data on persons employed in economic sub-sectors and agricultural livelihoods may be obtained for the municipality.

Tobacco Growing

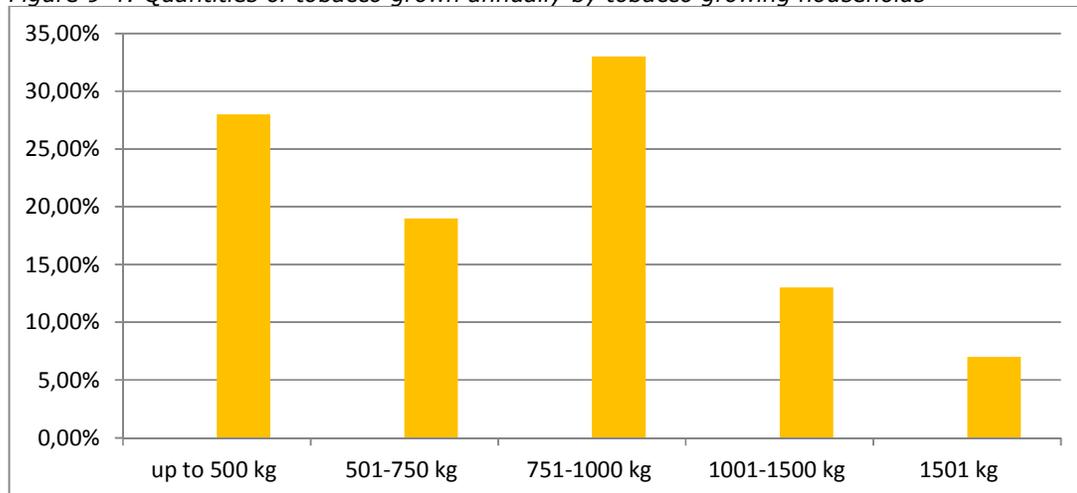
Tobacco growing provides livelihood to more than 5,000 local people and hence dominates the economy of the Municipality. Currently tobacco plantations cover about 26,583 acres. Based on Municipality data, a trend is observed for decrease of the tobacco growers with 3,370 people in 2009 and 2320 in 2011. This trend is associated with a decrease in tobacco production in the last few years. Nevertheless, since tobacco is deeply associated with the traditional way of life and livelihood of the local population, it will likely continue to be a major activity for the residents in the area. Households sell their tobacco production to buyers such as Phillip Morris with whom they have a contract and incomes are taxed (AMEC, 2014). In Krumovgrad Municipality, a high-quality oriental tobacco "Bashi-bales" type is produced. The production is well placed on the local and international market. Interviewed stakeholders report that local inhabitants generally prefer to grow tobacco than to have paid



employment because they receive a better income, which is formalised by contracts with buyers at the beginning of the season and earnings are taxed at source (AMEC, 2014).

The HHS further established tobacco growing as the only significant commercial crop, with all other crop types adapted mainly for subsistence farming. According to the survey results, 30% of the surveyed households are involved in tobacco growing, with most tobacco growers producing less than 1000 kg of tobacco annually (see Figure 9-4 below). Survey data further show that tobacco is the most commonly cultivated crop by the people of Kuklitsa village - 74%, while for the other settlements (excluding Krumovgrad with 4%) this percentage is on average 30%. The higher percentage in Kuklitsa may be due to the fact that this village has the biggest share of working age population (between 18 and 60) and tobacco growing is perceived as quite a hard occupation.

Figure 9-4: Quantities of tobacco grown annually by tobacco growing households



In this part of Bulgaria it is a common practice that all family members, including young children, are engaged in tobacco growing. Although between 2004 and 2009 under the supervision of the International Labour Organisation and with cooperation of numerous NGOs a lot of effort has been put into preventing child labour, this practice continues (Le Monde, 2013; The Guardian 2013).

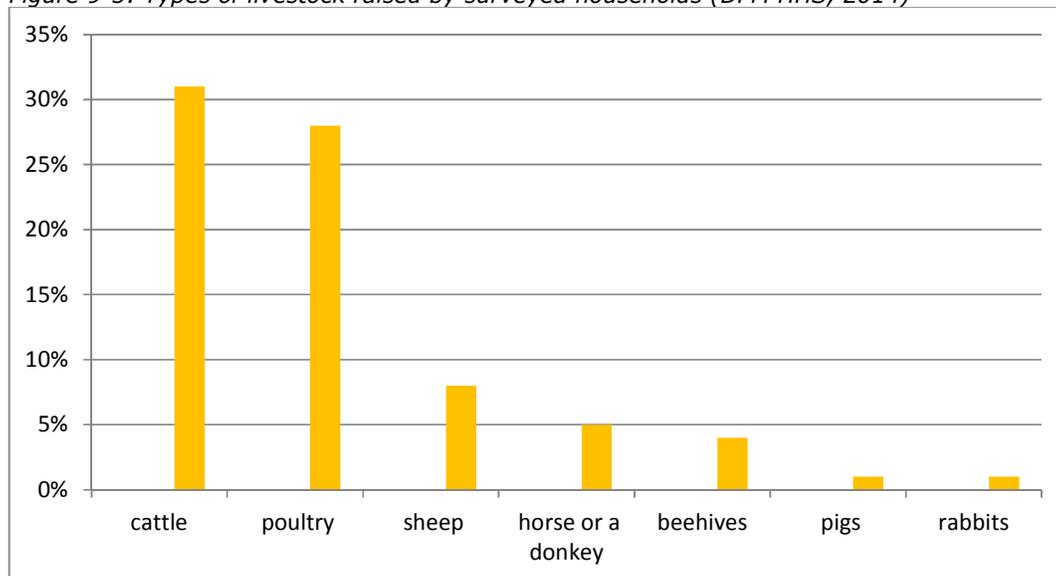
Livestock Raising

In the territory of Krumovgrad Municipality, people breed cattle, sheep and goats, mainly for milk and meat. Despite this, there are no commercial live-stock farms in the Municipality and virtually all cattle are raised in small private farms and produce is mainly for personal, non-commercial use. Baseline consultations found that it was common for every household to have at least two cows, however households with larger herds tended to be located to the west of Ada Tepe, where livestock rearing is predominant rather than tobacco growing, as discussed earlier. Cattle and sheep roam freely, sometimes accompanied by a shepherd or cattle herder, however baseline consultations found that this was rare. The grazing lands are



privately owned or municipality owned. Results from the survey show that it was accepted practice for livestock to move freely across grazing areas without permits or permission from land owners. Production in this sector is low due to lack of milk processing equipment and quality control assurance that deprives producers of the realization of their production and of obtaining subsidies. Furthermore baseline consultations found that households were unable to get buyers to buy their livestock and milk because road conditions and access to households was poor. This was cited by many stakeholders, predominantly in the mine site hamlets to the west of Ada Tepe. Nevertheless, 39% of the surveyed households try to sell some of their production (milk products, honey, meat) or livestock. According to Municipality data, the number of livestock steadily decreased between 2005 and 2011. The household survey (2014) has established that 48% of the surveyed households raise livestock with 31% owning cattle, 28% poultry and 8% sheep (See Figure 9-5 below).

Figure 9-5: Types of livestock raised by surveyed households (DPM HHS, 2014)



Other Marketable Crops

Based on statistical data from Krumovgrad's municipality, about 865 acres support herb plantations: white marjoram, lemon balm and rose hips. Orchards/apples, pears and cherries/cover 562 acres and vineyards - 270 acres. 823 acres of land were indicated as areas planted with other perennials in the development plan of Krumovgrad. Vegetable growing is poorly represented with only 44 people registered as vegetable producers. The main crop is tomatoes (83% of the surveyed households) followed by potatoes and peppers with 71 % and 69 %, respectively (see Figure 9-6 and Figure 9-7 below) and least crop growing – alfalfa (1%), nuts (2%), and carrots (4%). The same practices in crop growing with some small variations are observed for all villages (DPM HHS, 2014).



Figure 9-6: Types of vegetable crops grown by surveyed households (DPM HHS, 2014)

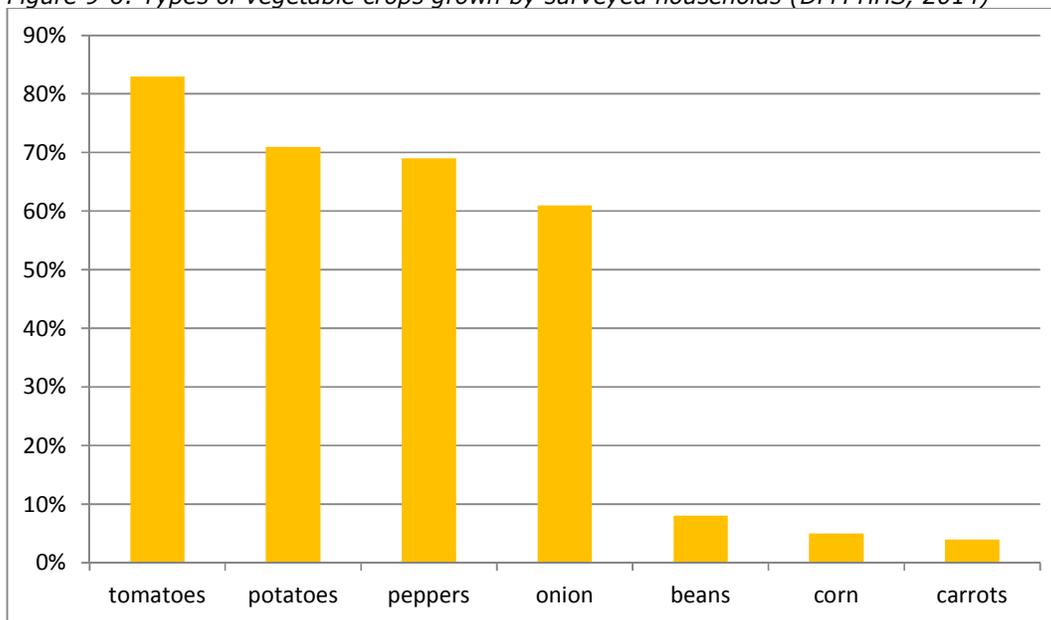
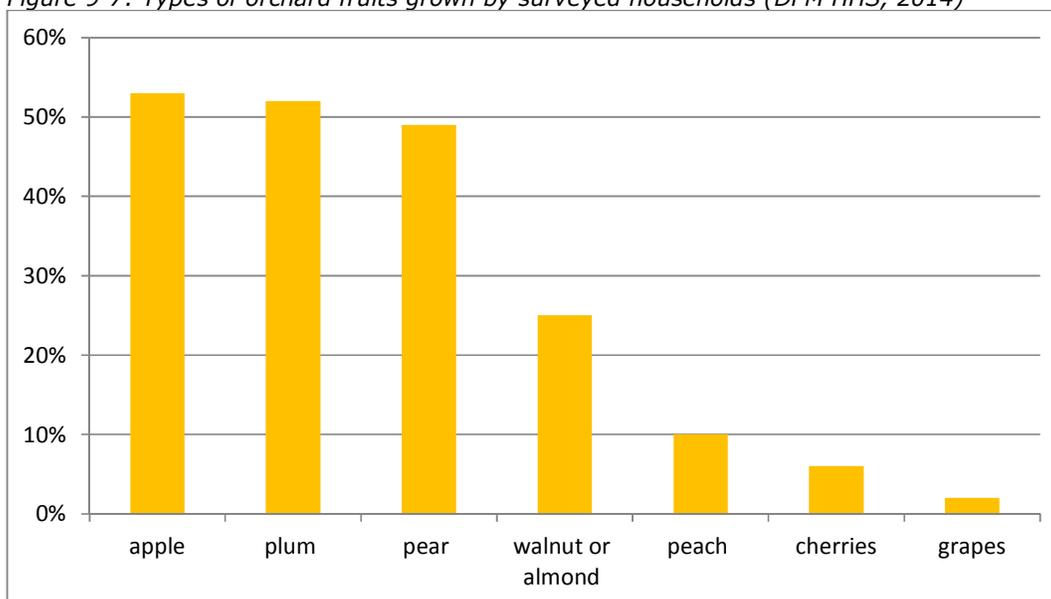


Figure 9-7: Types of orchard fruits grown by surveyed households (DPM HHS, 2014)



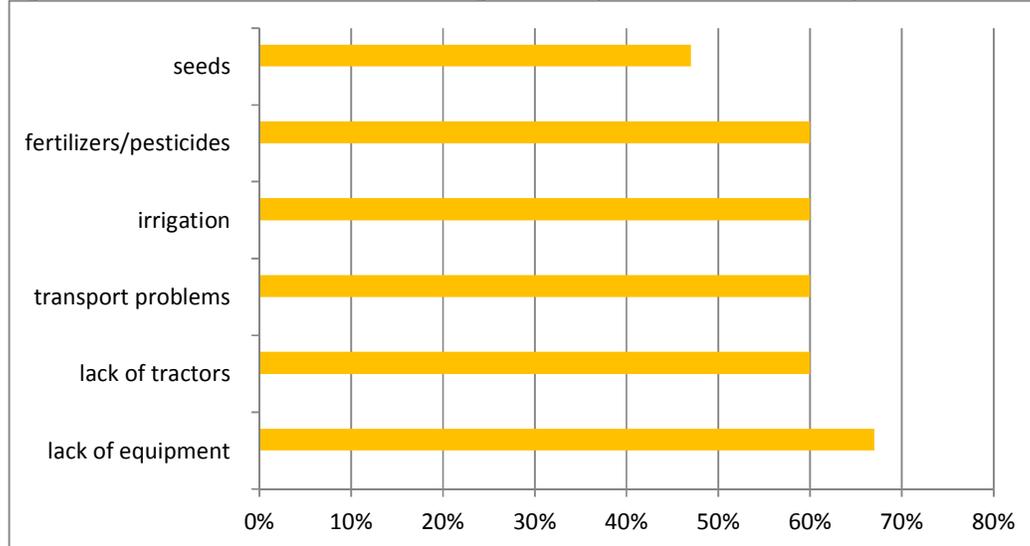
Subsistence Farming

Practically all crops grown, excluding tobacco (described in the previous section), are for household consumption and do not reach the market, thus, constituting a form of subsistence agriculture. Why this may be so is illustrated by the household survey responses related to the main barriers to marketing produce – including lack of equipment, irrigation



and seeds/pesticides (See Figure 9-8 below). This reflects an underlying cause – lack of business planning skills and access to finance for starting a profitable smallholder business.

Figure 9-8: Barriers to market-oriented agricultural production identified by the households



9.2.3 Tourism

The MDP observes that tourism in the municipality is not significantly practiced and forms a minor part of the municipality revenue. According to data from the National Statistical Institute in 2012, the municipality provided two accommodation establishments with a capacity of 52 beds. Overnight stays for 2012 numbered 19 032, which is 60% less compared to 2011 (MDP, 2014).

As stated in Section 7, the natural surroundings of Krumovgrad remain unique and offer potential for tourism development. This is coupled with the attractions offered by historic and especially archaeological sites in the area. Nevertheless, as stated by some interviewed stakeholder respondents “tourists are rare” (AMEC, 2014) and does not represent a significant livelihood source – the MDP lists only 5 guest houses on the territory of the municipality, which are maintained by local households as family businesses. This situation is logical as the municipality is not well established among regional and international tour destinations and routes. The MDP states several important barriers to successful tourism development, including lack of investment interest and lack of sufficiently developed infrastructure and adequate promotional activities. The plan also outlines measures to support tourism as a potentially significant driver of economic development in the 2014-2020 period, with a leading role for rural and ecological tourism – which also has the greatest potential to be developed by local family-owned businesses and provide livelihoods in the smaller settlements of the municipality (MDP, 2014).



Table 9-3: Tourism accommodation capacity, based on accommodation facility owner statements (DPM Accommodation Survey, 2014)

Accommodation	Number
Beds	233
Rooms	98
Apartments	16
Hotels and guest houses	6

According to the accommodation survey (DPM Accommodation survey, 2014), there is a capacity 233 beds, understanding that the survey did not comprehensively engage with all accommodation owners, only those who showed interest. There are 3 hotels in Krumovgrad – hotel “Divna” (38 persons), hotel “ViA” (52 persons) and hotel “Arhida” (110 persons). The hotels provide cable TV, electric heating (air conditioning) and wireless Internet access. Additionally there are several guest houses and apartments for rent that are furnished, equipped and ready to use, with total accommodation capacity of 33 persons. The guest house “Enigma” offers a swimming pool.

In addition to this accommodation, Krumovgrad also offers other family/single occupancy options in the form of rental apartments. Residential buildings owned by natural or legal persons can accommodate another 141 people. However, these additional accommodation options are currently non-furnished and not ready-to-use, although the owners express readiness to furnish and equip them (DPM Accommodation survey, 2014).

Ecotourism

As already stated in Section 7.6, the hunting reserve “Studen Kladenec” is partially located in Krumovgrad municipality, offering two hunting lodges, with 8 beds each and serving traditional local dishes made from organic products produced in the area. The reserve organizes fishing parties for carp, white fish, perch, bleak, etc (see also 8.5 Natural Resource-Based Livelihoods – Hunting). Within the hunting reserve the Nature reserve “Valchi Dol” (774.7 ha) is located. It has an international reputation for mammals (wolf, fallow deer, etc), eagles and the griffon vulture. In the village close to the nature reserve a Nature protection centre is situated that offers to the visitors two eco trails for observation of vultures and accessing the natural sites “Shaitan” gorge and “Abrazievi kladentsi”.

The so called “green center” in Avren village is located in the center of the village and is suitable for access for people with disabilities. It provides educational programs in the field of environmental protection, training camps in nature for children and young people and can accommodate visitors for recreation and tourism (MDP, 2014).



9.2.4 Service Sector

As is typical for rural regions of Bulgaria, agriculture, food processing industry and tourism are supplemented by various local services, provided by family-owned or micro/small enterprises such as car repair shops, barbershops, convenience stores, restaurants and pubs.

In Bulgaria there is no centralized register or statistics about such service-oriented small businesses, and corporate registers only cover certain traders and companies, who may be registered at a different location. Nevertheless, incomplete information exists for small businesses in Krumovgrad Municipality, which are related to food preparation, distribution and sale. The Bulgarian Agency for Food Safety (BAFS) via its district Food Safety Agency (DFSA) of Kardzhali, maintains a registry of such business enterprises. As the agency was founded in 2011 the available data provide information about the businesses established since that time. The data are also limited as the registry consists of information about established businesses, but does not clarify which of them currently operate (BAFS, 2014).

According to the BAFS there are 35 fast food restaurants opened in the AoI settlements, 33 of which are registered in Krumovgrad, 1 in Izgrev and 1 in the village of Rogach. There are two categories for retail shops: one of them is shops selling packaged food, 45 of which were established in the AoI settlements, and retail shops selling packaged and fresh food (including meat), 4 of which were established in Krumovgrad. In the period 2011-2014 5 restaurants were established in Krumovgrad and 26 pubs and cafés in the whole AoI (24 in Krumovgrad, 1 in Zvanarka and 1 in Rogach). For the same period In Krumovgrad 14 confectionery and pastry shops were also established in the town of Krumovgrad for the same period. A total of 7 movable food stands have been registered in the AoI settlements in the 2011-2014 period, 6 of which are in Krumovgrad and 1 in Edrino village (BAFS, 2014).

9.3 Income & Expenditure

Income

Annual income for an average Bulgarian household from all sources has been estimated at BGN 12 086 for 2013, and as BGN 5 094 on a per capita basis, which constitutes an almost twofold increase in nominal terms for the 10-year period since 2004 (NSI Income and Expenses, 2014). Of this aggregate household income about 53% comes from salaries and wages and about 25.5% from retirees pensions with other sources of income such as rent and interest earnings constituting much smaller fractions – see Table 9-4 below.



Table 9-4: Annual household income on national level per household and per capita level, per income source for 2013 (NSI Income and Expenses, 2014)

Type of income source	Annual Household Income BGN	Annual Per Income Per Capita BGN	Proportion of Total Income %
Salaries and wages	6 067	2 557	53.1
Pensions	2 915	1 229	25.5
Other earnings	438	185	3.8
Entrepreneurship	650	274	5.7
Property income	124	52	1.1
Unemployment benefits	76	32	0.7
Family allowances	85	36	0.7
Other social benefits	180	76	1.6
Household plot	183	77	1.6
Property sale	76	32	0.7
Miscellaneous	628	265	5.5
Interest income	365	154	NA*
Loans and credits	292	123	NA*
Loans repaid	8	3	NA*

*Note: Last rows left empty due to NSI methodology of allotting loan income.

The last available NSI data indicates that the average salary in the district of Kardzhali was 522 BGN in 2010 (NSI Income and Expenses, 2014). According to the 2011 KC2 socio-economic study salaries for people working in the private sector in Krumovgrad are about 15-25% lower than salaries for comparable jobs in the district center Kardzhali, at levels below 300 BGN during 2010. Also, unemployment is lower reaching 35% while the levels are about 10% in the district centre for the same period.

The 2014 data from the AoI settlements in the HHS indicate a mean income of 4 602 BGN per household annually or 384 BGN per household per month (143 BGN income per capita). The median household monthly income is BGN 417 indicating a relatively uniform income distribution (DPM HHS, 2014). Overall, these are very low levels, even for Bulgarian national standards (see above), underscoring the poverty of the region. Such low incomes also explain the predisposition of many of the households with subsistence farming's non-cash contributions (meat, milk, eggs, fruit and vegetables).

Disaggregated data set out below in Table 9-5 below indicate that pensions form the main income source for both men and women, in the HHS sample which, corroborates earlier findings that the Municipality has a predominantly ageing population. This figure is proportionately higher than the second highest source of income for the sample which is reliance on a wage derived from formal employment. Understanding that the sample size has more men than women and therefore the gender disaggregation cannot be considered reliably representative, in the survey marginally more men (13%) rely on a wage as an income compared to women. The third highest source of income across the sample indicate



that state subsidies are a main source of income for both men and women. Again understanding the high unemployment rates and the lack of formal employment opportunities within the study area this is not unexpected. The results indicate that few people rely on hunting and fishing as a source of income and the survey reveals that these activities are only carried out by men. Baseline consultations found that mushroom picking and wild herb picking was carried out by both men and women and to a large extent for household consumption, however Table 9-5 indicate that a small proportion of men and women rely on these activities as a source of income and from this data it indicates that the activity is principally carried out by men. Remittances sent from household members working abroad and elsewhere in the country also form a main source of income, and of interest more for women than men. The sample results illustrate that people in the study area do not rely on savings as a source of income, with only 1 respondee stating they relied on savings as a source of income, which would indicate households within the study area's financial vulnerability.

Table 9-5: Main income sources- gender disaggregated data, HH survey, 2014

Main income source	Total	Gender	
		Men	Women
Respondents	396	248	148
Salaries/ Wages	159	85	74
	40%	34%	50%
Livestock breeding	99	77	22
	25%	31%	15%
Growing tobacco	121	86	35
	31%	35%	24%
Growing vegetables (for commercial purposes)	7	2	5
	2%	1%	3%
Honey production	15	14	1
	4%	6%	1%
Mushroom picking	11	10	1
	3%	4%	1%
Herb picking	26	19	7
	7%	8%	5%
Hunting	3	3	-
	1%	1%	-
Fishing	9	9	-
	2%	4%	-
Remittances*	43	20	23
	11%	8%	16%
Pensions	231	138	93
	58%	56%	63%
State support/ subsidies	123	82	41
	31%	33%	28%
Entrepreneurship	4	2	2



	1%	1%	1%
Fruit tree growing (for commercial purposes)	1	1	-
	*	*	-
Savings	1	1	-
	*	*	-
No answer	1	1	-
	*	*	-

*In accordance with the HHS questionnaire methodology this category includes both local family assistance and remittances from abroad

A disaggregation of income per settlement (see Table 9-6 below) is also revealing, as it shows that some of the AoI villages (namely Skalak, Guliya, Kuklitsa and Malko Kamenyane) receive very little wage income, compared to residents of the town of Krumovgrad, while tobacco growing and other agricultural livelihood income, together with social support and family remittances is a much more important income source in the smaller settlements.

To gain more in depth understanding of each settlement in the Aoi the data in Table 9-6 below has been used to create a profile of each village and where appropriate refers to data presented earlier in the document.

Krumovgrad, in comparison with the villages in the AoI has the second highest number of people receiving a formal salary as well the second highest number of people receiving pensions. This is in line with other characteristics presented in the baseline. Krumovgrad has the highest concentration of population, with the majority of the economic activities taking place, apart from agricultural activities. The age distribution of Krumovgrad as discussed earlier indicates that there is an almost parity in age distribution of people of working age 18-59 and people of retirement age 60 – 70 +. The gender balance of Krumovgrad indicates that there are slightly more women to men and of interest baseline consultations found that some stakeholder's views were that the job opportunities available in the Municipality were more geared towards women. Krumovgrad has the fewest number of people receiving social support, which is possibly due to the availability of employment opportunities.

With regards to Izgrev, a suburb of Krumovgrad and the location of the Municipal hospital, the town has the highest number of respondees receiving a wage in comparison with other settlements in the AoI. With regards to the population there are slightly more people of working age 18-59 than there are people of pensionable age. Despite this the number of people receiving a pension is comparatively high in Izgrev, but lower than other AoI settlements as set out in the table below. Of interest Izgrev holds the highest number of residents with disabilities in the sample, however the number of people receiving social support as indicated in Table 9-6 is comparatively low. The number of people receiving a wage from agricultural activities such as tobacco growing and animal husbandry are low. The former is surprising considering its proximity to the river Krumovitza and the irrigation potential. However the number of people receiving an income from the production of



vegetables is the highest in the sample and this is possibly why there is less tobacco production, with farmers preferring to grow vegetables, possibly due to better financial gains. However stakeholder consultations found that there was concern amongst agricultural producers that their ability to market goods was poor due to infrastructure and transportation means. Izgrev, like other villages in the Aoi have a number of residents who receive remittances from family members.

With regards to Ovchari Village and its cluster of hamlets is not densely populated with the majority of its inhabitants living in Varhushka, Table 9-6 illustrates that of the sample most of the residents remain dependent on a pension for an income. Of the population only 30% are over the age of 60 - 70+, therefore it would indicate that the people of working age are engaging in agricultural activities to derive an income, as the table shows such activities are tobacco production, animal husbandry and vegetable production. Of interest, 4 people derive an income from fishing and hunting, which is a small amount however in most of the other villages across the sample people do not perform this activity at all as a source of income.

Dazhdovnik, of which 40% of the population are of pensionable age, like the other villages in the Aoi, most of the inhabitants income source is derived from a pension. However this is followed by a relatively high number of people who receive a formal salary, which is surprising considering its rural location. The data in Table 9-6 indicates that residents prefer to perform animal husbandry over tobacco production, as a means of an income. The village has the second highest number of residents comparatively across the villages in the Aoi, receiving remittances. This was corroborated during the baseline consultations with stakeholders saying that a large number of family members worked overseas or in other places in the country. There is a high number of people receiving social support, which may indicate high unemployment levels especially as 40 % of the population is of working age.

Edrino is a village near to Krumovgrad, and similar to the other villages, the majority of the sample receive a pension, however closely followed by people receiving a salaried income source, possibly due to the town's proximity to Krumovgrad. Approximately 28% of the population of Edrino are of pensionable age, leaving the majority of the population of working age. Baseline consultations found that a substantial number of residents of Edrino were engaged in tobacco production, this is evidenced in Table 9-6 below as well. The number of residents who receive an income from tobacco in Edrino is the second highest across the villages in the sample. The fifth highest means of income in Edrino is receipt of social support, with approximately 35% of the population of working age this could be related to those registered unemployed. The number of people receiving remittances is the lowest of all the villages, which is contrary to findings from the baseline consultations, which found that a high number of household members in Edrino worked overseas.

Malko Kamenyane is a rural village, of substantial distance from Krumovgrad and only accessible along a poorly maintained dirt road. The main source of income in this village is from animal husbandry and although the village is in close proximity to a tributary of the Krumovitza, those deriving an income from tobacco growing amongst the sample appears



relatively low as shown in the table below. This is possibly due to the rough terrain and soil characteristics which have a heavy presence of stones as observed during the baseline consultations. Over 40 % of the population is of pensionable wage, as such the number of people in the village sample receiving a pension as an income source is the third highest across the surveyed villages. Honey production as an income source is relatively high and comparatively across the other villages in the survey it is the fourth highest.

Kuklista Village, like Malko Kamenyane is a rural cluster of hamlets, to access them the road follows the proposed haul road. The age profile of the village has only 20% of the population of pensionable age, and this is reflected in the numbers of people in the sample receiving a pension, which is low. Indeed, It is the lowest of all the communities in the survey. 50% of the population are of working age, however due to the rural location, there are few employment opportunities thus the village has the highest number of people comparatively across all the villages who receive social support. Nevertheless, the village is highly dependent on agricultural production as a source of income, mainly tobacco production and animal husbandry. In fact compared with the other villages in the survey, Kuklista is the village which appears to depend most on agricultural production. Furthermore there is the highest number of people across all the villages who depend on honey production as a source of income as well as the highest number of people gathering herbs and mushrooms amongst the surveyed villages.

Skalak consists of a cluster of hamlets, which are the closest to the proposed development. The age profile of the village shows that over 50% of the population are of pensionable age, as such this is illustrated in the table below with pensions being the highest source of income for the majority of the village inhabitants. People also have a heavy reliance on agricultural production as a source of income, the main being animal husbandry, followed by tobacco and honey production. Of all the villages in the survey Skalak has the second highest number of people generating an income from gathering mushrooms and herbs. Of interest Skalak has the highest number of respondees who depend on remittances sent from family members across all the villages surveyed.

Guliya's age profile indicates that over 30% of the population are of pensionable age and this is evidenced in the table below which shows that pensions are the second highest source of income amongst the sample respondents. However animal husbandary is the highest source of income, with a smaller proportion of people performing tobacco growing. This is possibly due to the rough terrain and the distance from a source of irrigation. Guliya has a high number of people receiving social support, again this may be attributable to the rural location and the absence of formal employment opportunities, indeed only 12 people in the sample had a wage based income.

The main source of income for most in Zvanarka is from pensions, with over 45% of the population of pensionable age. Compared to the other villages it has the highest number of people who rely on a pension as a source of income across all the villages. The table below indicates that animal husbandry is the second highest source of income and a comparatively



small number of the sample carryout tobacco production. As Zvanarka is relatively easily accessible, a number of people (20) have formal employment and receive a salary, in fact a proportion more than those who carryout tobacco production (16).

Rogach village, is located to the East of the proposed project. Of all the villages in the survey it has the third highest amount of people who depend on pensions as a source of income and within the village it is the main source of income for most of the respondees. This is followed by animal husbandry, and thirdly by a considerably less amount of people depending on tobacco production as a source of income. However a sizeable number of people rely on honey production and fishing as a source of income. In fact the number of people who fish for a source of income is the highest across all the villages in the sample. This may be due to the fact that Rogach is relatively close to a tributary, which feeds in to the River Krumovitza down stream.

Table 9-6: Stated Main sources of income per households per settlement (DPM HHS, 2014)

Stated Proportion of households receiving significant income from this source %	Krumovgrad	Izgreva quarter	Ovchari village	Dazhdovnik village	Edrino village	Malko Kamenyane village	Kuklitsa village	Skalak village	Guliya village	Zvanarka village	Rogach village
Salaries and Wages	52	69	41	41	45	16	13	9	12	20	25
Pensions	76	54	49	71	46	47	30	73	56	77	75
Tobacco production	3	32	30	12	50	37	74	36	28	16	38
Social support	9	25	24	41	39	58	83	27	52	16	13
Animal husbandry	1	8	22	41	16	63	70	45	60	27	63
Remittances*	10	14	14	18	6	0	13	27	12	9	13
Honey production	0	0	0	0	0	11	39	18	4	0	13
Vegetables production	0	6	3	0	1	0	0	0	0	2	0
Gathering mushrooms and herbs	0	0	0	0	0	0	39	9	4	0	0
Hunting	0	0	1	0	0	0	1	0	0	0	1
Fishing	0	0	3	0	0	0	4	0	0	0	13

*In accordance with the HHS questionnaire methodology this category includes both local family assistance and remittances from abroad

The observed temporal trends in cash income by the HHS indicate a stagnant or even deteriorating situation, 27% of the survey participants indicate a decrease in their cash income during the previous year, while another 57% state no change of household cash income (DPM HHS, 2014). This is a telling sign of the financial difficulties felt by households at local and national level, due to the slow recovery from the economic crisis, described in Section 9.1.

The stakeholder consultation interviewees also voiced the conclusions of the survey - that a large share of the population in the municipality depends on the pensions, which vary



between 120 and 250 BGN. As there is high unemployment and low levels of education there are few opportunities to increase the household incomes of the municipality or the district households. This is one of the primary reasons for the migration of the population, especially of that part of the population working abroad (AMEC, 2014). Furthermore it illustrates people's dependence on agricultural activities as a source of income which renders them vulnerable to any natural or induced changes in the environmental conditions of the area.

Expenditures

The HHS results provide a breakdown of expenditures for the AoI target group of households. The proportion of household expenditures, compared to national level statistics (NSI Household Budgets, 2014) is illustrated in Table 9-7 below. It must be noted that the HHS expenditure categories do not overlap completely with NSI expenditure categories, and where possible NSI data have been disaggregated or the discrepancy has been explained.

Table 9-7: Breakdown of household expenditure for AoI households compared to average national household expenditures (NSI Household Budgets, 2014 and DPM HHS, 2014)

Category of expenditure	Share in a small consumer basket for average AoI household %	Share in a small consumer basket for average national household %
Food	53.5%	31.4%*
Electricity	8.3%	4.7%
Transport	6.5%	6.6%
Health care and medication	5.7%	5.6%
Telephone, Internet, paid TV	5.4%	4.6%
Water	4.7%	NA**
Education	4.2%	3.5%
Clothing	3.9%	2.8%
Agricultural supplies	3.7%	NA
Loan costs	1.6%	NA
Leisure and recreation	1.5%	4.5%
Rent	0.4%	NA**
Wood, coal, gas	0.4%	NA**

*National food figure excludes alcohol and soft beverages, which amount to 4% of total expenses.

**National level data have one figure for rent, fuels, electricity and water, amounting to 14.2% of total household expenses. With the exception of electricity, the other expenses cannot be disaggregated.

As indicated by their modest income level, the biggest AoI household expenditures cover the main living necessities – food (53.5%), electricity (8.3%) and health care expenses (5.7%). Leisure and recreation activities amount to only 1.5% of cash expenditures, and rent constitutes just 0.4% - illustrating the trend that a high number of households within the sample are privately owned.. Whilst the highest expenditure for households is on food, each household in the Municipality invariably has a plot next to the house in which they grow fruit and vegetables, nevertheless this does not seem to detract from the amount spent on food



products. Expenditure on goods such as education-related expenses⁹ and medications, as well as services with fixed national charges such as telephone, Internet and TV appears to be similar, across each category with proportion differences resulting from the differences in income levels outlined previously.

The differences in median expenditures level regarding several types of consumer basket expenses, such as electricity, telephone, Internet and paid TV, and clothing (no median data available for recreation), tell of the slight economic divide between the urban population of Krumovgrad and Izgrev on one hand and the inhabitants of the smaller AoI villages on the other – See Table 9-8 below. The difference is not more pronounced because the HHS respondents supplied expenditure feedback in pre-determined bins limiting data resolution.

There were no such demonstrated differences in other expense items which may be expected to differ between urban and rural settings, such as rent or water (due to irrigating crops). Also median expenditures for education in some villages were higher than for the town of Krumovgrad, which may signify either higher attention to education or a higher level of associated expenses, such as board and supplies.

Table 9-8: Breakdown of household expenditure per AoI settlements (DPM HHS, 2014)

Median monthly expense for AoI household BGN / Category of expenditure (monthly)	Krumovgrad	Izgrev quarter	Ovchari village	Dazhdovnik village	Edrino village	Maliko Kamenyane village	Kuklitsa village	Skalak village	Guliya village	Zvanarka village	Rogach village
Electricity	50	50	30	20	30	30	30	30	30	30	30
Telephone, Internet, paid TV	30	40	25	15	30	25	22	20	20	22	20
Clothing	30	50	30	20	20	40	30	15	30	15	10

With regard to “strategically important” expenses such as education and mortgage/loans, it is important to note also that households in different income brackets are allowed to allocate a different proportion of their expenditures - See Table 9-9 . This difference does not seem significant for the lower surveyed income brackets but appears to become significant for both items above BGN 12000, taking into consideration that only a couple of the surveyed households fall within this high bracket. It is probably the case that if households had incomes approaching those of the major cities in Bulgaria – up to several times higher than the surveyed brackets – much more money would be allocated to such expenditures.

⁹ While tuition in the state school system in Bulgaria is free, there are various school-related expenses such as textbooks, supplies and school lunches, which in most cases are not fully covered. The households may also list other expenses such as private lessons for schoolchildren in this category.



Table 9-9: Breakdown of AoI household expenditure per income bracket (DPM HHS, 2014)

Annual household income bracket \ Category of expenditure (annual)	Below BGN 3600	BGN 3601-4801	BGN 4801-7200	BGN 7201-12000	Above BGN 12000
Education	600	500	660	1000	1900
Mortgage/Loans	2400	NA*	2700	1700	6000

*no interviewed households responded to the question

Poverty

As evident from the income and expenditures trends shown above, poverty in the area is widespread, and this is confirmed by a comparison with national poverty indicators. Based on the median national incomes (NSI Income and Expenses, 2014), the official poverty line in Bulgaria for 2014 constitutes a monthly income below BGN 251 per person, which has increased by BGN 10 since 2013 when it had been BGN 241 BGN. It is therefore evident that a large proportion of households surveyed, in particular the households within the more rural villages such as Kuklista, Malko Kamenyane, Skalak, Guliya and Rogach, could be considered as vulnerable due to their lack of formal income sources and their dependence on agricultural derived income sources.

Savings & Credit

Only approximately 12% of the target group AoI households declare they have savings. This is not surprising within the context of low incomes and a subsistence existence of many households. These savings are generally held in bank deposits (80%), while 15% are invested in real estate and only 2% are invested in business (DPM HHS, 2014). The fact that more of the saved income is not reinvested reflects an unwillingness of the local population to take risks with regard to their small savings – a contributing factor to stagnant entrepreneurship and SME development.

A very clear, almost linear, trend is seen with regard to the availability of savings for households of different income brackets – see Table 9-10. Despite small sample sizes, it also appears that income levels may affect where savings are invested – households in the relatively higher income brackets make more risky decisions, such as investing their savings in property or business.



Table 9-10: Breakdown of AoI household expenditure per income bracket (DPM HHS, 2014)

Annual household income bracket	Below BGN 3600	BGN 3601-4801	BGN 4801-7200	BGN 7201-12000	Above BGN 12000
% of households with savings	1%	5%	11%	25%	40%
% of households who keep savings in bank	100%	100%	80%	75%	83%
% of households who invest savings in property	0%	0%	20%	25%	0%
% of households who invest savings in business	0%	0%	0%	0%	17%

A more encouraging finding from the household survey is the low level of indebtedness – just 5% of the households currently have loans. As shown above loan servicing costs amount to only 1.6% of household expenditures. This trend also has a downside, however, as it indicates low use of credit by households, who could otherwise be able to borrow funds for productive use – e.g. for obtaining education, making housing energy efficiency improvements or to buy a car to improve access and be able to transport produce to market or to buy agricultural implements and increase productivity. Three of the four main purposes of loans identified by the households are namely for education, housing improvements and vehicle purchase, while credit is also used to cover health care costs (DPM HHS, 2014).



10.0 Health

10.1 National Overview

The Bulgarian health system is dominated by the state, as it is regulated by the Ministry of Health and the National Health Insurance Fund (NHIF) – the sole guarantor and provider of free health care services, including state paid medications and hospital interventions. The state health care depends on patients following clinical pathways of diagnosis and treatment starting with general practitioners (GP), specialist doctors, prescriptions, operations and other interventions. The NHIF finances hospitals, clinics and other health care providers, based on mandatory health insurance coverage meaning individuals make a monthly contribution directly from their salaries and a system of clinical pathways. The primary care medications sold in the Bulgarian pharmacy chains have regulated prices with the NHIF financing the least costly or standard medications for a list of serious conditions. Health care providers and medication providers, thus, have to sign contracts with the NHIF for the provision of services and treatments under the clinical pathways. Licensed physicians can also sign contracts to work with the NHIF (most private practitioners do) or work through the health care institutions in which they are employed. Many doctors work both in a state or municipal health care institutions and also in a separate personal practice, as the pay for state and municipal doctors is quite low.

The hospital system itself is divided into state hospitals, municipal hospitals (such as the Krumovgrad municipal hospital), polyclinics and dispensary care centres. Municipal hospitals often serve as regional hospitals and there are conflicts between municipal authorities regarding their financing and upkeep. In rural regions municipal hospitals are insufficient and there is a big problem with staffing as there are few qualified medical personnel – doctors and nurses. Diagnostics and treatment facilities and equipment are also generally outdated.

There is a parallel system of private health institutions – hospitals and clinics, which is gaining popularity. It is also permitted to work under state fund compensation for most of the clinical pathways, but generally charges are higher, which are paid in part or in full by the patients. Private hospitals and cities mostly cover the big cities of Bulgaria as there is no market for them in rural regions. Rural inhabitants travel to big cities to receive better care.

There is a separate network of centres for emergency medical care – ambulance services, coordinating with the 112 emergency number and dispatching qualified emergency care teams. 28 such centres exist in the 28 district centres, including Kardzhali district. In theory they should be covering all settlements but they mostly cover the district and municipal centres, but here are problems with personnel and equipment shortages and controversy due to ambulance service delays and patient conflicts. There is practically no medical airlifting service. In 2014, the first medical ambulance helicopter in Bulgaria was leased by the government hospital in Sofia as a demonstration project. Some private ambulance services also exist, but these are focused in Sofia and in the major sea and ski resort areas.



10.2 Local Health Infrastructure

The MDP states that the main hospital for active treatment is "Zhivot" hospital in Krumovgrad with capacity of 60 beds. Operating divisions are internal medicine, paediatrics, obstetrics and gynecology however there is no surgery department. In 2010, the Hospital "Zhivot" surgical ward was closed due to not covering the requirements set by the Ministry of Health of normative 1 000 surgeries per year. The MDP also notes there is no mental health care centre in the municipality, which is typical of rural regions where this type of care is lacking (MDP, 2014).

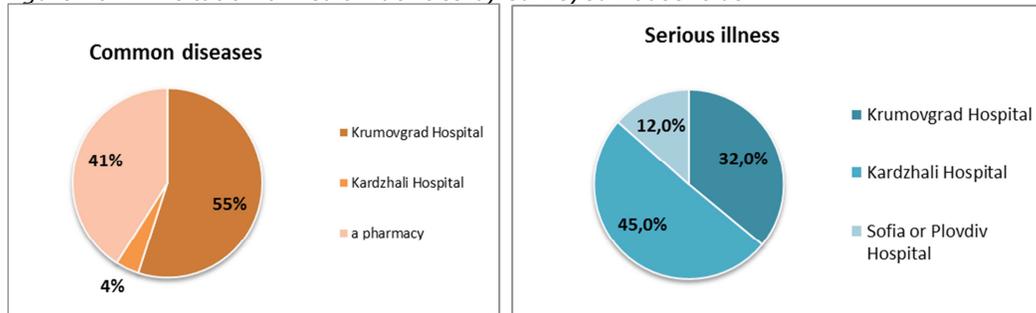
In addition to the hospital in Krumovgrad municipality there are 23 medical practitioners, including 6 general practitioner practices, 9 dentist practices and 7 medical specialists. There are 3 vacant positions for general practitioners in the town of Krumovgrad and 10 vacant positions in the villages in the municipality (MDP, 2014)

The district centre in Kardzhali has two general hospitals – "Atanas Davovski" and "Kardzhali", which together have a capacity of 400 beds, expandable to 600 beds in cases of epidemics. The "Atanas Davovski" hospital accepts about 1400 patients monthly, providing about 34 000 medical examinations annually. Approximately 15% of these patients have no health coverage (Kardzhali Municipality, 2014). In addition to the general hospital, the city of Kardzhali also has a state psychiatric hospital, which has established a leading position for psychiatric screening and treatment for Southern Bulgaria. The psychiatric hospital has a capacity of 320 beds (Kardzhali Municipality, 2014). Also, in the city of Kardzhali there are two hospice centers and a care and rehabilitation center for children with chronic illnesses (Kardzhali Municipality, 2014).

Interview respondents from baseline consultations indicated that the Krumovgrad hospital is in poor condition, there is a lack of specialists and equipment – which is a nationwide problem in the health care system. Respondents say that the Kardzhali Regional Hospital offers better facilities (AMEC, 2014). Yet, more than half of the HHS respondents indicate that they would generally use the Krumovgrad hospital for common conditions, while for more serious conditions the Kardzhali hospital is visited more frequently – See below in Figure 10-1. It appears that the general satisfaction with the medical care in the hospital of Krumovgrad is good, falling not too far behind with the respondents' evaluation of the services in Kardzhali hospital. As is typical in Bulgaria, many people state that they obtain medications from the pharmacies directly without consulting doctors to save visitation costs and time (DPM HHS, 2014),



Figure 10-1: Visitation of health facilities by surveyed households



Krumovgrad municipality estimates that approximately 45% of the total population of the municipality don't have health insurance (MDP, 2014). According to the HHS, approximately 72% of the HHS respondents claim they have a valid health insurance – which is deducted monthly for salaries or paid in person by self-employed persons (pensioners don't pay). Approximately 12% admit to not having valid health insurance and 8% are not sure.

The difference between municipal estimates and HHS self-reported figures may reveal unwillingness of respondents to admit don't have health insurance or unawareness about this fact. The fact confirms a national trend for uninsured people to be mostly located in the villages among - mostly working age Turkish and Roma people (DPM HHS, 2012). The higher concentration of uninsured people in rural regions affects hospitals financially, as they have to shoulder some of the costs for providing care for them.

10.3 Health profile of the population

As already stated in the demographics chapter Krumovgrad Municipality has a negative population growth (- 3.1‰ for 2012). While the main factor for that is the migration of the population the municipality has one of the lowest mortality rates in Bulgaria (13.9‰ for 2012). The child mortality rate is steadily decreasing – it was 7.7‰ for the Kardzhali District in 2012. The majority of child deaths are in the perinatal period and with a smaller number in the neonatal period. According to the MDP there are no deaths in the post-neonatal period in the district (MDP 2014)¹⁰.

Krumovgrad municipality notes that the health status of the municipal population in villages is worse than the health status of Krumovgrad town residents due to socio-economic factors, such as living conditions and social status. The lack of general practitioners in villages already stated in Section 10.2, as well as difficult access to ambulance services are also contributing factors. Some of the especially vulnerable rural residents who do not receive adequate medical care include elderly people living alone, large families, families without income and people with disabilities (MDP, 2014).

¹⁰ Baseline consultations interviewees report that health statistics are regularly collected (AMEC, 2014)

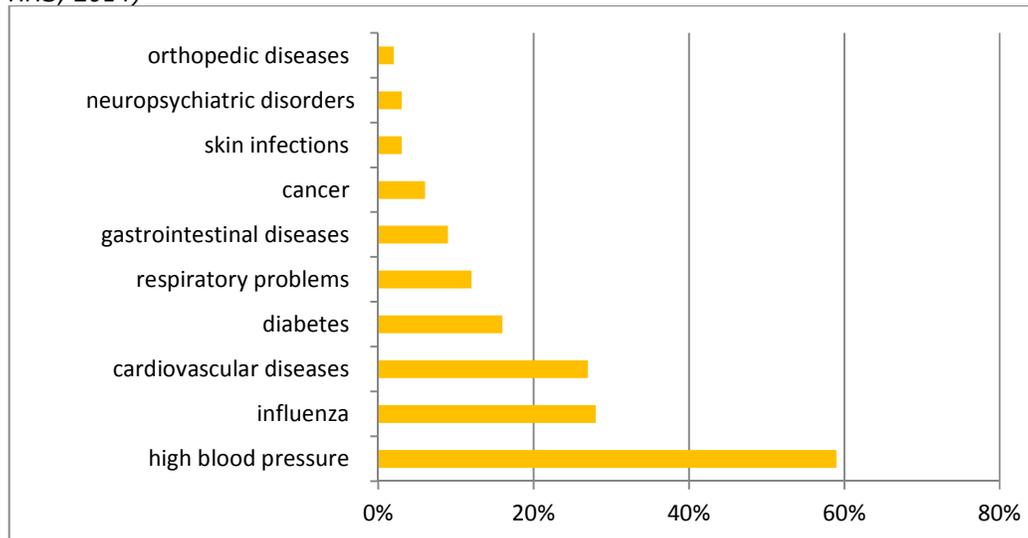


Despite difficulties in accessing healthcare services, according to the health survey reviewed by the EIA assessment in the 2008-2010, Kardzhali district is characterized by better health statistics than the national average, in particular regarding oncological, respiratory and cardiovascular diseases, and the mortality associated with them. Mortality from oncological and cardiovascular diseases for Kardzhali district is reportedly significantly lower than the national average (Dango, 2010). For Krumovgrad municipality, the EIA report notes that the disease morbidity is similar to the Kardzhali district, with the exception of respiratory diseases where Krumovgrad municipality performs better (Dango, 2010).

The EIA report also states that the district has lower than national rates of mortality due to oncological and cardio-vascular diseases. The majority of oncological diseases are related to female breast diseases and diseases of the digestive and respiratory systems. The EIA report also includes data from 2004-2008 health screenings about the types of disease found during monitoring among school children that show complete absence or very low levels of virtually all types of chronic diseases in Krumovgrad Municipality, with the exception of child obesity (Dango, 2010).

The household survey somewhat corroborate this trend – according to the respondents during the last 2 years only 16% of the households have experienced a serious illness. The biggest problems include hypertension, serious flu, heart disease, diabetes and respiratory problems with a relatively low incidence of cancers and psychological conditions – see Figure 10-2 below (DPM SSH, 2014).

Figure 10-2: Health issues and illnesses during the last 2 years reported by households (DPM HHS, 2014)



During stakeholder consultations, local residents reported no serious health issues, apart from such resulting from the hard work (problems with bones) and kidney problems allegedly related to the lime in the water. Some of them report that they use home remedies for prevention and curing simple illnesses – i.e. using herbs, tea, honey, etc. Interviewees



familiar with the issue stated that there are almost no STDs and HIV testing is non-existent. There is occasional testing for syphilis, especially for patients who travel abroad, but there are problems with funding such tests (AMEC, 2014).

No public information about contagious diseases or STDs is available for Krumovgrad Municipality. In general Bulgaria's HIV infection rate is among the lowest in the world, with only 113 new HIV cases having been discovered in 2013 from 115 000 tested persons - the total monitored HIV-positive population in Bulgaria as of June 30, 2014 is 922 persons. Most of the new infections are concentrated in Sofia and no new infections discovered in Kardzhali district during 2013 (MH, 2014). With regard to other STD's, the NSI statistics for Kardzhali district note 10 syphilis cases registered in 2013 (NSI Health, 2014).

With regard to other significant contagious diseases, NSI data for 2012 indicate that in Kardzhali district there were 119 cases of viral hepatitis, 74 cases of chickenpox, 24 cases of scarlet fever, 8 cases of viral meningitis and 1 case of dysentery (NSI Health, 2014). STDs and contagious diseases with the exception of flu were not included in the HHS responses (DPM SSH, 2014).

There may be hidden public health risks in local people lifestyles - according to a survey conducted by the National Center of Public Health and Analyses (NCPHA, 2014) 46.7% of the children in Kardzhali District are passive smokers.

11.0 Cultural Heritage

11.1 National Overview

In terms of archaeological heritage, Bulgaria is considered to be one of the richest countries in Europe, frequently compared to Italy and Greece. The favourable climatic and geographical conditions have facilitated the development of ancient civilizations in Bulgarian lands, including Thracian, Ancient Greeks, Romans, Slavs, Bulgars, Varangians and Ostrogoths.

Thracian artefacts¹¹ of tombs, golden treasures and ritual vessels have survived to the present days. The ancient Bulgars left traces of their heritage in music and early architecture. More significant treasures dating from ancient times are: Rogozene silver treasure (108 phials, 54 pitchers, 3 cups and 165 silver items); Panagyurishte treasure (9 vessels with gold decorations); Vulchitrun treasure (13 items for ritual purposes); Lukovit treasure; Letniskoto treasure; Mezzek; Sveshtari; Kazanlak.

Bulgarian Middle Ages saw the arrival of Barbarian peoples from East. During the Middle Ages, Bulgaria was the centre of Slavic Europe with considerable cultural influence over the

¹¹ Detailed information for the sites of national importance mentioned in this section can be obtained from the registers of the National Institute of Immovable Cultural Heritage (NIICH, 2014).



Eastern Orthodox Slavic world. In the late 14th century, the Bulgarian state was in revival and the culture flourished. The capitals Pliska, Preslav and Tarnovo are hubs for monumental sculpture and architecture. Cultural heritage from that period includes the following: Boyana Church; Assen's Fortress; Madara Horseman.

In the Late Middle Ages there was a significant development of church painting influenced by Italian Renaissance art. However, at this period also a great amount of cultural heritage were destroyed, among which the major artistic center of Tarnovgrad. The Late middle ages left monuments, such as Boboshevo Monastery; Church St. Peter and Paul (Tarnovo); Rozhen Monastery and Church St. St. Tiron and Theodore Stratilat.

The Bulgarian Revival during the 18th-19th century is known for the flourishing of residential architecture/carvers, painters, stonecutters, leaving cultural heritage as: Rila Monastery; House Argyros Kuyumdjioglu (now Ethnographic Museum in Plovdiv); the inn of Hadji Nikoli (Turnovo); Kableskova house (Koprivshtitza); the Bridge of Yantra River (near Byala).

Bulgaria has nine UNESCO World Heritage Sites and fourteen additional properties are on the tentative List (UNESCO, 2014).

- the early medieval large rock relief carved on the Madara Plateau - Madara Rider;
- two Thracian tombs (one in Sveshtari, dating back to 3rd century BC and one in Kazanlak, part of a large Thracian necropolis);
- three monuments of medieval Bulgarian culture (Rila monastery, one of the most significant cultural, historical and architectural monuments, the Boyana church and the Rock-hewn Churches of Ivanovo);
- the ancient city of Nessebur- one of the most important centres of seaborne trade in the Black Sea, situated on a peninsula;
- two natural sites: Sreburna nature reserve and Pirin National park.

Intangible cultural heritage

In addition to the material historic and cultural heritage, Bulgaria also boasts a significant intangible cultural heritage. The First Bulgarian Empire adopted and developed the Cyrillic script, which originated from the Preslav and Ohrid Literary Schools. Cyrillic script contributed to a flourishing literary and art tradition, based on Bulgarian and Slavic cultures and orthodox Christianity. The Bulgarian National Revival under Ottoman Rule of the 18th and 19th centuries, followed by the consolidation of the cultural influences of the Bulgarian nation state century in the 20th century, significantly enriched Bulgarian literature, art and music, giving rise to world renowned authors such as Ivan Vazov and composers such as Pancho Vladigerov.

The strongest influences in theirs and other works come from the national folklore – songs and dances unique in each Bulgarian region (typically based on asymmetrical rhythms), fine woodworking, metalworking and textile crafts, cuisine and rich oral tradition. Thracian rituals



such as “Zarezan”, “Kukeri” and “Martenitza” are kept alive in modern Bulgarian culture. The folklore and traditions mostly survive today, and are especially well preserved and valued in rural and mountainous areas. The diverse ethnic mix of Bulgaria additionally enriches local traditions by adding significant and valuable contributions from the Turkish, Roma, Bulgarian-Muslim, Armenian, Jewish, Sarakatsani and other locally established ethnic and/or religious communities.

11.2 Local Tangible Cultural Heritage

Cultural and historical heritage

Remains of Thracian sanctuaries, temples and medieval fortresses, cemeteries and tombstones have been discovered in the Krumovgrad region. Furthermore, the region abounds in impressive natural sights. Krumovgrad Municipality has 28 archaeological monuments of local importance and 3 archaeological monuments of national importance: 1) necropolis of dolmens in Chernichevo village, in Hambar dere area - 7 dolmens dated to end of II – beginning of I millennium BC. Four of the dolmens are well preserved; 2) medieval rock monastery "Dupka na pop Martin" in Oreshari village. The tomb was carved in hard rocks above the right bank of Arda river and 3) rock tomb in the village of Rogach, dated to I mill. BC. Twelve architectural sights and building monuments of local importance are listed.

The medieval temples in Krumovgrad were built of stone cemented with plaster. In churches in Chernichevo and Egrek villages, traces of wall paintings were found.

Remains of medieval fortresses found in the region date to the Second Bulgarian Kingdom. A hoard of 40 silver coins of Bulgarian Tsar Ivan Alexander and his son Michael, were discovered in the "Gradishteto" near the village of Chernichevo. Other remains of medieval fortresses can be found in the villages of Surnak, Zlatolist and Kran.

Other architectural sights are the Thracian rock niches carved into the cliffs along the Arda river and Krumovitsa river. Thracian rock niches are located near the Thracian fortresses or towns. Probably small pottery urns or burial goods were placed into the rock niches. Based on the found fragments, the pottery can be dated from 9-5 BCE. Rock niches can be seen near villages of Vransko, Potochnitsa and Strandjevo, at the left slope of the "Top dere" and at the high rock called "Ak Kaya".

Several Thracian sanctuaries associated with cults worshiped by the Thracians were discovered near the villages of Dzhanka, Ovchari, Kovil, Perunika, Pelin, Sbor, Limets and Maluk Devisil. The Sanctuary “Sabazius” - the sun god, is located in the "Tsarkvishteto" area above the village of Limets. The Thracian sanctuary at “Ada Tepe” is considered the most important of any of the known sites in the Eastern Rhodopes providing information on Thracian religious practices, customs, economic activities and relations.

A bronze statue of Apollo and a Thracian horseman as well as antique coins have been discovered during excavations in the past. In the area surrounding the present-day town of



Krumovgrad, archeologists have found remains of a fortress and a church, dating to the Middle Ages, while in the surroundings of the village of Plevun were found remains of Thracian settlements and a Thracian sanctuary. The sanctuary is situated close to the peak of St. Iliya and held a ritual plate with a Thracian horseman depicted on it. In Ada Tepe area near Krumovgrad, reportedly the most ancient gold mine in Europe has been found, which functioned during XV-VIII century BC.

Rock tombs were discovered in the villages Dzhanka, Rogatch, Strandjevo and Potochnitsa. Rock tombs are unique Thracian monuments that were cut in the lower part of a large rock.

In Kovil village a necropolis with 9 rock tombs with altars were found. Medieval cemeteries were discovered in Krumovgrad, Zvanarka, Ovchari, Gorna Kula, Strandjevo, Studen Kladenetz, Stari Chal, Potochnitsa, Ribino, Golyama chinka, Avren, Egrek, Ruchey, Limets, Devisilovo, Chernichevo, Gorni Yurutsi Strazhets.

In the villages of Zvanarka, Ovchari, Avren and Lulichka Thracian burial mounds were found.

Over 2000 exhibits, arranged in a museum collection at the Regional Historical Museum has in different sections - archaeology, new history and ethnography, testify of the rich cultural heritage of Krumovgrad region. The museum has been open since 1965, and is housed in a building itself declared for a cultural monument. The Museum works in accordance with Article 26 of the Bulgarian Cultural Protection Act, as a state owned regional museum. The Museum is housed in a former Muslim religious school, which was constructed around the turn of the 20th century with voluntary donations from the local Turkish population (Pressa Daily, 2013).

In Table 11-1 below a summary list of cultural heritage sites in Krumovgrad area is provided.



Table 11-1: Cultural heritage sites in Krumovgrad municipality (NTG project, 2009-2014; Feasibility study of the Iron Curtain Trail on the Balkans, 2011)

Archaeological sites and objects
<ul style="list-style-type: none"> • Ruins of ancient Thracian sanctuaries and necropolis • Ruins of castles and Roman bridge (near village of Egrek) • rock tomb and medieval fortress near the village of Rogach • Thracian tomb mound in the area Yurtata and Staroto turbe near the village of Avren • The medieval necropolis also near the village of Avren • Necropolis of dolmens, medieval fortress in the areas Asara and Gradishteto near by the village of Chernichevo in Hambar dere area • Thracian rock niches near the villages of Vransko and Dzhanka near by the Oreshari protected site • Prehistoric Thracian antique village at Asar area near the village of Kovil • Thracian necropolis near the village of Kovil
Architecture monuments (bridges, monuments, buildings)
<ul style="list-style-type: none"> • Museum of archaeology, contemporary history and ethnography • 2 tobacco storehouses in the city of Krumovgrad • 5 watermills in the village of Egrek – operating between November and March • Roman bridge and mill in the village of Egrek • 15 monuments of solders, cultural and political activists
Spiritual places (rituals and customs)
<ul style="list-style-type: none"> • The church of “St. Iliya (Elijah) the prophet” near the village of Avren • The church St. Atanasyi and the medieval church in the village of Chernichevo • Mosque in the village of Chal - the oldest mosque in Eastern Rhodopes • Cult place in Ak kaya area near the village of Kovil

In addition to these listed sites, it must be noted that stakeholder interview respondents (AMEC, 2014) were particularly protective of the following local sites: public water taps, Islamic graveyards and the Said Baba Tomb - see Map of specific sites in Annex 3. The cultural significance and the embodiment of public water taps as sensitive locations have been described earlier in the report. In addition, graveyards are universally important sensitive locations. Turkish Muslim cemeteries are especially respected due to the culturally ingrained reverence of the Turkish community to familial and community ancestors. Traditionally Muslims (both men and women) visit graveyards once or twice a year but particularly during the Festival of sacrifice also known as Bayram. Women and men are prohibited from visiting a graveyard together during funeral ceremonies. Baseline consultations found that the two Islamic graveyards in close proximity to the proposed haul road indicate that one of the graveyards is still in use. Figure 11-1 below. The graveyard is considered sacred and has a fence around it. to illustrate it’s presence. The second grave yard next to the proposed haul road is not in usage any more and consists of several head stones strewn randomly by the side of the existing road. Consultations with the Mufti of Krumovgrad revealed that Islamic graveyards could not be moved on any account. Furthermore, there have been several recent high profile acts of vandalism to Turkish cemeteries in Bulgaria during recent years, so it is understandable that the Turkish inhabitants are protective of these sites. The Said baba tomb consists of a mausoleum and a



fenced sacrifice area adjoining the tomb. The Mufti of Krumovgrad revealed that yearly there was a celebration to commemorate Said Baba, an ancient influential Islamic figure.

Figure 11-1: Abandoned Islamic graveyard near to Pobeda (Left). Pobeda Islamic graveyard which remains in use (Right).



11.3 Summary of Ada Tepe Excavations

During 2011 and 2012 there was an extensive archaeological research and excavation of the ancient gold mine site at Ada Tepe, involving leading archaeological experts from Bulgaria and Germany and in coordination with the national institute of Archaeology and the Ministry of Culture. The archaeological research implemented interdisciplinary scientific methods applied for the first time in Bulgaria, which gives the project unique scientific value. Furthermore the principle objective was to enable a comprehensive archaeological study of the ancient gold mine in full compliance with the regulations of Bulgaria's cultural heritage (Popov, 2012).

The archaeological research provides evidence for shallow underground gold mining at the south-western and eastern slopes of Ada Tepe. The team established that the ancient miners used stone and wooden tools and fire to gradually cut the rock and take out the gold bearing quartz veins (Popov, 2012). On the top of the hill the researchers found traces of mining settlement – ancient houses and supporting facilities. The high gold grades found indicate that ancient miners could have used smelting to produce gold as an end product. The archaeological remains on the western and the northern slopes of Ada Tepe gave information of the methods and technology of the ore extraction. Small dumps of finely crushed rock were found by researchers, evidencing the process of sorting and grinding of the mined ore. Gold mining at Ada Tepe started in the late Bronze Age (15th c. BC). Currently, the Ada Tepe mining site is considered the earliest known gold mine in Europe.

The archaeological researchers at Ada Tepe found several ceramic pottery vessels from the late Bronze Age (15th-11th c. BC) and the early Iron Age (10th-8th c. BC). Clay stamps for pottery decoration dated from the early Iron Age.



11.4 Local Intangible Cultural Heritage

The cultural heritage to local people is estimated to be with a of high importance (AMEC Ecosystem Services Baseline and Impact Assessment Report, 2014). Traditions are kept alive through local music and dance festivals. These are practiced at and coordinated by local cultural institutions such as the "Hristo Botev" Community Hall. Other community halls in the Krumovgrad municipality also account for the various cultural activities throughout the year.

Annually in May in the city of Krumovgrad a folk festival is held where local Rhodopes, Thracian and Turkish songs and dances are performed. Each year in early October the traditional local fair "Seit baba" is organized. The other most significant cultural event is the traditional cultural festival "Krumovgrad lights" which is held annually and has been running for the past 25 years. The festival lasts for three days and gathers artists from different artistic fields (Krumovgrad Municipality Events, 2014).

Some cultural events and activities are restricted to particular ethnic and religious communities. Such are the rites and customs, associated with religious holidays - for example the "Kurban Bairam" (Greater Eid), practiced by Muslim Turks and Muslim Roma. It is common practice for major religious holidays of different faiths, such as Easter, Saint George's Day and Ramadan, to be celebrated together by the entire community, as a way to strengthen bonds and exchange goodwill.



12.0 Conclusions

The following general conclusions can be made in accordance with the findings regarding the individual baseline aspects studied and described in the previous sections of the report:

- **Demography** – the AoI has an unfavourable demographic structure, with ageing and declining population, although these processes are not as extreme as in other regions in Bulgaria. The population is ethnically and culturally diverse and social cohesion is good. Full social integration of some vulnerable groups, such as the Roma minority and underemployed youth remains a problem;
- **Infrastructure** – engineering infrastructure is relatively well developed but as a general rule needs maintenance and rehabilitation – especially with regard to the road network and water and sanitation. The municipality can attract significant financial assistance from the EU operational programmes in the 2014-2020 period;
- **Natural resources and land use** – land use in the AoI has a formal nature with good management over forestry and cropland resources with possible exceptions of poaching and illegal logging. More than half of the local households regularly utilize the resources provided by the local ecosystems such as wild fruit gathering, firewood collection, hunting, fishing, beekeeping, etc. People use the local natural resources mostly for their own needs and do not consider them as an important income source;
- **Education** – the educational opportunities offered within the AoI settlements are mostly limited to the national school system, with prospective students needing to pursue higher education in major Bulgarian cities. There is sufficient access to schools in the area and an adequate and improving level of formal educational attainment. However, nationwide problems with acquiring functional skills persist. Adult retraining and qualification is assisted by a local training centre in Krumovgrad;
- **Economic Context & Livelihoods** – The local economic context is not dominated by any single business sector or activity, with light industry, agriculture, tourism and services generating local income and employment. Of these tourism probably has the biggest development potential. Tobacco growing and livestock raising are the leading agricultural livelihoods. Local incomes are modest, with low levels of savings and spending. Households supplement their financial incomes with subsistence farming;
- **Health** – There are no recurrent or socially significant health problems affecting the local population. The biggest local health issue is the lack of medical practitioners;
- **Cultural heritage** – The AoI and Krumovgrad municipality in general share a rich cultural heritage, living traditions and impressive archaeological and natural sites;

In conclusion, the conducted socio-economic household survey reveals that approximately 68% of the surveyed residents state that Krumovgrad municipality is “a good place to live”, with only 9% disagreeing, and a total of 63% would not consider relocation to another place.

Such results betray an underlying optimism and endurance of the local population, which can be tapped and relied on to spur local economic growth, attract new business and employment opportunities, and ultimately improve livelihoods. There is no evident single



measure or path that could bring about such a change – but a significant and strategic investment in new employment, education and skills training for growth sectors, coupled with providing quality public services, can support local aspirations for future development.



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Annex 1: Socio economic survey package



**Krumovgrad Gold Project
Socio Economic Household Survey
July 2014**

**(The raw data from survey is available on DPM Krumovgrad
office. To obtain a copy of the information please contact
with Lubomir Marchev on e-mail:**

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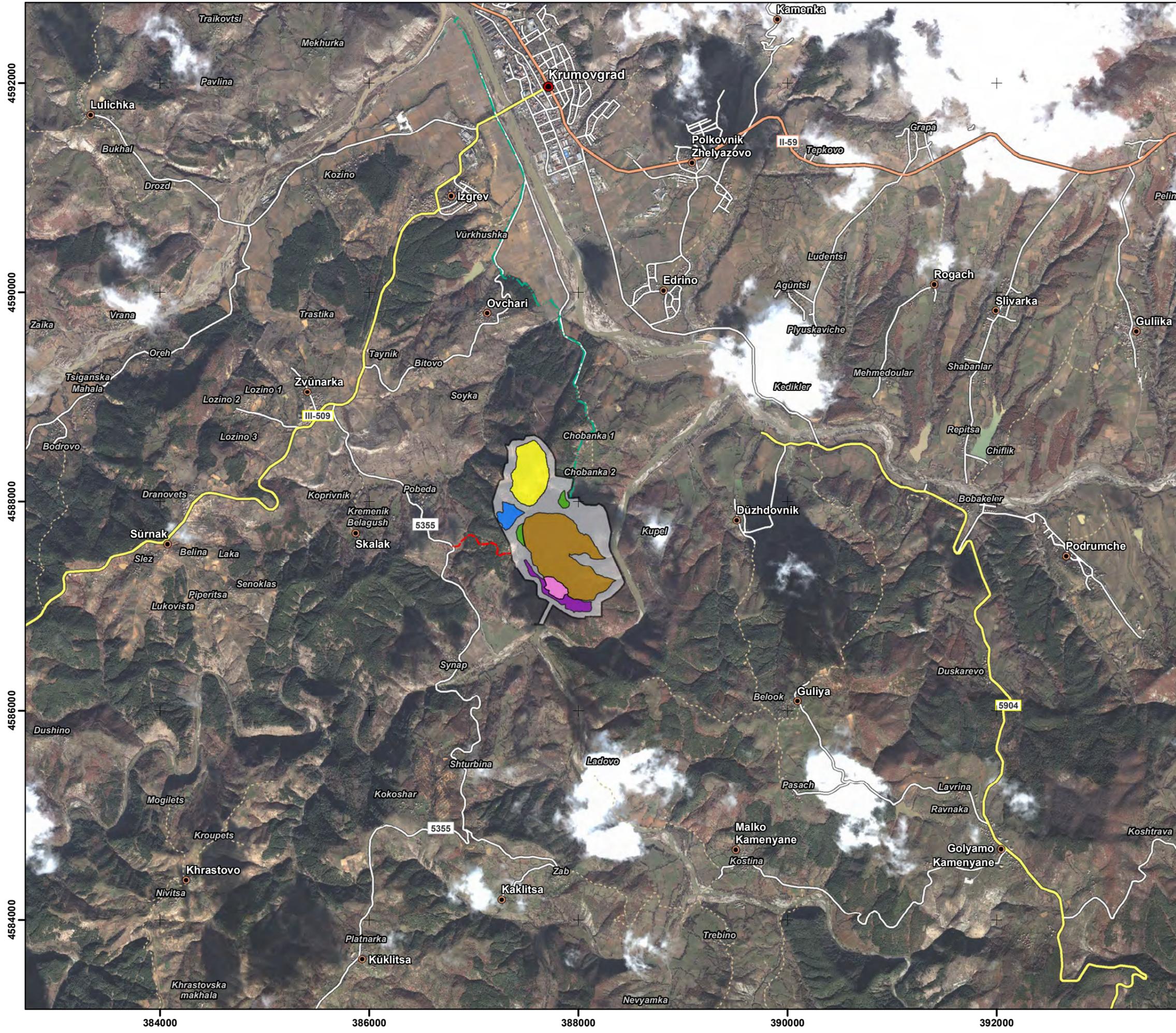
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Section 4.....Data

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Section 1

Map of villages and hamlets



Legend

- Town
- Village (Mahala system Administrative 'lead' village)
- Hamlet
- Mine Operations Footprint
- Ada Tepe Mine Open Pit
- Reservoir
- Stockpile
- ROM Ore Pad
- Integrated Mine Waste Facility
- Process plant
- Discharge Pipeline
- New Access Road
- Primary Road
- Secondary Road
- Tertiary Road
- Track



Orientation

Coordinate System: WGS 1984 UTM Zone 35N
Projection: Transverse Mercator
Datum: WGS 1984

Client

Dundee Precious Metals
24 Saedinenie Street,
6900, Krumovgrad, Bulgaria

amec
International House, Dover Place,
Ashford, Kent TN23 1HU, UK

Project Social Impact Assessment,
Ada Tepe Gold Mining Project, Bulgaria

Title Project Area of Influence

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Section 5

Main Findings

**Socio-economic research in the region of
Krumovgrad**

July 2014

Analysis of the main results

Prepared for:

DPM Krumovgrad

Prepared by:

Prof. Zhivko Georgiev

Methodology

➤ Quantitative survey

- ❑ **Scope**
 - ⇒ The survey covers part of the settlements in the Municipality of Krumovgrad, and in particular the town of Krumovgrad (including Izgrev Quarter) and the villages Edrino, Dazhdovnik, Ovchari, Zvanarka, Malko Kamenyane, Kaklitsa, Skalak, Guliya
- ❑ **Sample**
 - ⇒ The effective sample includes 396 households with 1154 members at the time of the survey
- ❑ **Method of registration**
 - ⇒ Direct (face-to-face) semi-standardized interview according to residence with the household head or another member of the household aged 18+ years
- ❑ **Period of implementation**
 - ⇒ 17-21 July 2014

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I. Socio-demographic profile of the target group

* The sociological survey on the territory of the Municipality of Krumovgrad covers the following settlements: the town of Krumovgrad, Izgrev Quarter and the villages Ovchari, Dazhdovnik, Edrino, Malko Kamenyane, Kaklitsa, Skalak, Guliya, Zvanarka, Rogach.

Effective interviews were made in 396 households, which consisted at the time of the survey of 1154 persons distributed in

- 14% single-person households
- 34% two-person households
- 19% three-person households
- 19% four-person households
- 14% five- or more person households.

The average household size is 2.9 persons.

* The gender structure of the target group is

I. Socio-demographic profile of the target group

- male - 51%
- female - 49%

The age distribution is as follows

- people under working age (17 years) - 14%
- people of working age (18-59 years) - 53%
- people over working age - 33%

Of the people aged over 18 years (979 people)

- 3% are students
- 19% work on a permanent labour contract
- 4% work on temporary labour contract
- 16% are farmers
- 4% are seasonally employed in Bulgaria

I. Socio-demographic profile of the target group

- 3% are seasonally employed abroad
- 18% are unemployed or housewives
- 33% are retired (including 2% persons with disabilities).

The aggregate of people aged 18+ has the following educational structure

- tertiary - 7%
- secondary general - 19.4%
- secondary technical - 18.5%
- lower secondary - 48.7%
- primary - 2.8%
- no education - 3.6%

The educational structure of the population in working age, which forms the labour supply on the local labour market (a total of 599 people), is:

I. Socio-demographic profile of the target group

- tertiary education - 8.3%
- secondary general - 27.4%
- secondary technical - 25.2%
- lower secondary - 37.9%
- primary or no education - 1.2%.

The attention is drawn by the large share of people with lower education ($\approx 39\%$) - a value, which is 3 higher than the average for the country for this target group.

Of the people aged 18-59 unemployed at the time of the study are 26.4%, and among young people (aged 18-29) - 32%, i.e. every third person.

On the other hand, 42% of the people over the age of 60 are employed, either on some kind of labour contract, or as farmers.

* Of the population aged 18-59, only 5% declare that they have no skills useful on the labour market. The rest of the people have.

I. Socio-demographic profile of the target group

The skills that are most frequently indicated by men are

- agricultural
- driving
- crafting
- mining
- electro-technical

Most frequently indicated by women are

- agricultural
- sewing
- economical
- pedagogical
- crafting
- computer.

I. Socio-demographic profile of the target group

The level of Bulgarian language proficiency (important for the full social integration) among the active population (aged 18-59) is good.

If there is a problem among the aggregate population (5% do not speak Bulgarian at all, and 6% have poor knowledge of the language), it is concentrated among small children who have not attended school yet (aged 4-5 years) and among the older members of the Turkish ethnic community.

* The ethnic structure of the target group (by self-determination) is

- Turkish - 63%
- Bulgarian - 23%
- Roma - 1%.

and 12% are registered as '*other*', but they can be identified as Bulgarian Muslims (or Muslims as they most frequently describe themselves).

I. Socio-demographic profile of the target group

- * The ethnic structure to a great extent determines also the structure of religious identity.

The majority of people in the target group are

- Muslims - 81%

Followed by

- Eastern Orthodox - 13%
- unbelievers - 6%

II. Income, savings, financial assistance

The essential items that for the income of the surveyed households (according to their statements) are

- pensions stated by - 58% of the households
- salaries/wages - 40%
- social support - 31%
- tobacco growing as a commercial crop - 31%
- animal husbandry - 25%
- remittances from relatives working abroad - 11%
- gathering herbs - 7%
- honey production - 4%
- gathering wild mushrooms - 3%
- growing vegetables as a commercial crop - 2%

II. Income, savings, financial assistance

- fishing - 2%
- hunting - 1%

According to the collected information regarding the annual income for each item, if (1) we use the median estimate (the scales are interval) and (2) the assumption that non-respondents are a random subsample of those relying on the respective item, we can estimate the contribution of each item to the annual cash income of the average household in the surveyed target group, as follows

- salaries and wages - 29.7%
- pensions - 29.2%
- tobacco production - 19.3%
- social support - 8.4%
- animal husbandry - 5.7%
- remittances from abroad - 5.4%

II. Income, savings, financial assistance

- honey production - 0.4%
- vegetables production - 0.4%
- gathering of mushrooms and herbs - 0.4%
- hunting and fishing - 0.4%
- other - 1.0%

The aggregate income from agricultural production for commercial purposes is 25.8% of all income.

According to these estimates, the average net cash income per target group household is 4602 levs per year, and respectively 384 levs per month.

The declared annual net cash income of the average household in the surveyed target group (in the scale of *Me*-median) is about 5000 levs, i.e. about 417 levs.

The monthly income per capita for such household is 143 levs.

II. Income, savings, financial assistance

Certainly, due to the relatively developed agriculture in the region, it is obvious that the households rely also on significant **non-cash income**, made up of food for natural consumption (meat, milk, eggs, fruit and vegetables).

Nevertheless, only 12% of the surveyed households have savings.

Nearly 80% of the savings are not used for investment purposes, i.e. they are held on deposit in a bank. 15% are invested in real estate and only 2% are invested in business.

The surveyed households are conservative regarding the use of credits/loans. Only 5% of them have loans.

There are four main purposes for using credit/loan:

- for construction/repair of a house
- for covering education related costs
- for covering healthcare costs
- for purchase of a car.

II. Income, savings, financial assistance

The summarized assessment of the dynamics of household income as compared to the previous year is as follows:

- 57% stated 'no change'
- 27% - decreased
- 8% - increased
- 9% could not determine or did not respond

III. Household expenditure

The survey has made an attempt to study the main daily expense items of the household, which in aggregate account for about 90% of the expenditure of Bulgarian households (outside this group remain expenses for special occasions, purchase of household appliances and equipment, household chemicals, cosmetics).

If we have to describe the shares of the average expenditure of a typical household from the target group, the estimates show that **their shares in a small consumer basket of the household are**

- food - 53.5%
- electricity - 8.3%
- transport - 6.5%
- health care and medication - 5.7%
- telephone, Internet, paid TV - 5.4%

III. Household expenditure

▪ water	-	4.7%
▪ education	-	4.2%
▪ clothing	-	3.9%
▪ agricultural supplies	-	3.7%
▪ loan costs	-	1.6%
▪ leisure and recreation	-	1.5%
▪ rent	-	0.4%
▪ wood, coal, gas	-	0.4%

The high share of food expenditure (10% more than the average for the country regarding the studied segment of expenditure), **provided that a considerable part of the households produce themselves certain types of food for their own consumption, is an indirect indicator of the relatively low standard of living of the target group, even compared with its low level in Bulgaria as a whole.**

III. Household expenditure

Certainly, in the last year the households have also made other considerable expenditures (13% of the respondents indicate such).

The more significant of these include

- 4% for purchase of a vehicle
- 4% for health care
- 2% for purchase of immovable property
- 2% for renovation of a house
- 1% for celebration of a significant family event (wedding, prom, etc.).

In their summarized assessment

- 40% state that in comparison to the previous year the expenditures of the household have not changed.

III. Household expenditure

- 7% state that they have decreased
- 52% indicate an increase of their household expenditure.

IV. Land ownership, land use and agriculture

1. Land ownership

Landowners with official ownership deeds are 36.1% of the surveyed households.

1.1. Arable land

31.6% of households own such land.

The total area of the owned arable land is 55.3 ha, i.e. average area of **0.464 ha per household**.

There are no large landowners among the surveyed households. The maximum area of the properties is 3 ha.

All land lots, with single exceptions, are on the territory of the municipality.

It is noteworthy that the majority of respondents have not indicated their own yard in this section.

IV. Land ownership, land use and agriculture

* 79% of owned farmland is located at less than one kilometer from the home, the other part (14%) is located at between 1 and 5 km.

* **88% of the arable land is used and cultivated by the household.**

In another 7% of the cases the land is leased to another household, while in 3% of the cases it is shared with another household.

The respondents state that in 7% of the cases the arable land is not used.

1.2. Pastures

12.9% of households own pastures.

The total area of this type of land property of the target group is 43.4 ha. The average area of pastures per household possessing such is 0.886 ha.

* In 62% of cases the pastures are also located within 1 km, while 88% of the land lots are located within a distance of less than 5 km.

IV. Land ownership, land use and agriculture

In 76% of the cases the pastures are used by the households that own them.

1.3. Forests

Forests are owned, based on documents, by 2% of the surveyed households.

The total area of the forests owned by them is 4.5 ha.

90% of these forests are used by the households.

1.4. Uncultivated lands

Ownership of such land is reported by only 0.8% of the surveyed households.

The total area of these lands is 2.1 ha.

1.5. Summary

According to the survey, the 396 sample households have

IV. Land ownership, land use and agriculture

ownership documents for a total of 105.3 ha land, including

- arable - 52.5%
- pastures - 41.2%
- forests - 4.3%
- uncultivated - 2%.

2. Crop-growing

87% of all surveyed households cultivate some kind of crops or another.

The predominant ones are

- tomatoes - 83% of the households
- potatoes - 71%
- peppers - 69%
- onion - 61%

IV. Land ownership, land use and agriculture

- tobacco - 30%
- apples - 20%
- peaches - 15%
- beans - 8%
- raspberries/strawberries - 6%
- corn - 5%
- carrots - 4%
- nuts - 2%
- grapes - 2%

All other crops amount to 1% or less.

Virtually all food that the households produce is intended for their own consumption and does not reach the market.

Only the tobacco production is 100% market-oriented.

IV. Land ownership, land use and agriculture

The surveyed community of 396 households produces for consumption an average of

- 94 kg peppers
- 59.4 kg potatoes
- 55.6 kg tomatoes
- 30.3 kg apples
- 15.2 kg onion
- 1.7 kg peaches
- 1.3 kg beans

and less than 1 kg of other fruits and vegetables.

The majority of the households grow fruit trees in their yards, including

- 53% apple(s)
- 52% plum
- 49% pear(s)

IV. Land ownership, land use and agriculture

- 25% walnut or almond
- 10% peach
- 6% cherry/ies,

but in the large majority of cases these are 1-2 trees of each kind.

Only 4 households have larger gardens with over 20 trees of the species apple, pear and peach.

In this situation, it is obvious that fruit-growing in private farms remains natural and is off the market.

What are the problems that those 87% of households in the target group are facing, while being involved in one way or another in plant-growing?

15% of them indicated some kind problem and predominant are

- lack of equipment - 67%
- lack of tractors - 60%

IV. Land ownership, land use and agriculture

- transport problems - 60%
- irrigation - 60%
- fertilizers/pesticides - 60%
- seeds - 47%

These types of problems are mostly valid for producers, which are mainly market-oriented.

In the case of the only market-oriented crop, the tobacco, in the production of which are involved 30% of the surveyed households, the breakdown by quantities produced is as follows:

- up to 500 kg - 28% of tobacco producers
- 501-750 kg - 19%
- 751-1000 kg - 33%
- 1001-1500 kg - 13%
- 1501 kg - 7%

IV. Land ownership, land use and agriculture

The average quantity per household is 840.6 kg.

3. Animal husbandry

48% of all surveyed households breed livestock (in the villages this value is between 54% and 87%).

- 31% of households breed cattle
- 28% breed poultry
- 8% breed sheep
- 5% have a horse or a donkey
- 4% have beehives
- 1% breed pigs
- 1% breed rabbits.

In 66% of the cases cattle-breeders own 1-2 animals.

IV. Land ownership, land use and agriculture

About 20% keep more than 5 animals, and this renders them to a greater extent market-oriented. These are mainly from the villages of **Malko Kamenyane, Kaklitsa, Skalak** and **Guliya**.

70% of the sheep-owners keep more than 10 animals and this is a prerequisite for market orientation.

Poultry, pigs, rabbits are bred in quantities that cover the needs of the households.

40% of the bee-keepers have more than 10 beehives, which also indicates potential to leave the boundaries of the natural economy.

In 70% of cases the most common animals in the community - cattle and sheep - are left to graze free pasture beyond the confines of pens and farmyards.

The free grazing pastures are located at an average of 1.9 km. Only in 11% of the cases it is located at more than 4 km.

IV. Land ownership, land use and agriculture

Animal products are traded by 39% of the households.

The products are most frequently sold

- through a buyer in Krumovgrad - 59% of the sellers
- to a buyer who comes to the house to buy directly - 54%
- on the market in Krumovgrad - 18%
- traded on exchange basis between neighbors - 8%
- to a wholesale market - 3%

* In the cases where the buyer visits the houses the traded goods are mainly milk or livestock.

* The goods sold on the market in Krumovgrad are mainly milk, honey, livestock, dairy products made at the household (cheese, curd cheese, butter).

* A limited amount of animal products is sold through a buyer in Krumovgrad - meat, milk, honey. The same products are also typically traded on exchange basis between neighbors.

IV. Land ownership, land use and agriculture

4. Agricultural subsidies

32% of surveyed households declare that they receive some type of agricultural subsidies, including

- 28% subsidy from the Agricultural Fund
- 6% from the Ministry of Agriculture
- 2% from EU Funds
- 1% from other governmental and non-governmental organizations.

V. Infrastructure and Housing

1. Water supply

As a matter of fact, 100% of the households use water for drinking and domestic purposes and 91% use it also for agricultural purposes.

* The households are supplied with drinking water mainly (90%) from the water mains system. Another 10% use a well for this purpose, and 6% use a local water source.

Water supply in the villages **Kaklitsa** and **Skalak** is mostly dependent on wells and local sources.

- * In the general case, the domestic water is the same as the one used for drinking.
- * For irrigation and other agricultural purposes
 - 64% use water from the water mains
 - 28% rely on rainwater harvesting
 - 17% rely on a well

V. Infrastructure and Housing

- 9% rely on pumping from the river
- 4% use bored wells
- 6% use local springs and small dams.
- * According to 76% of the interviewed people, the quality of drinking and household water is 'good' and 24% of them state that to one extent or another the quality is 'poor/bad'.

Most dissatisfied with the quality of water are the people in **Izgreiv Quarter** (42%) and in the village of **Zvanarka** (37%).

* 8% of households experience difficulties with the water supply (the majority of them in **Zvanarka** - 36%).

The main problems (particularly with the drinking water) are that

- it is expensive
- there are water cuts
- the water is not pure

V. Infrastructure and Housing

2. Sewerage

* Most commonly used is the septic tank - 43% of the households.

Sewerage system is used by 36% of the households, direct discharge into river/land – by 19%, and septic tank regularly disposed of by the Municipality – by 1%.

The sewerage system is typical for **the town of Krumovgrad (including Izgrev Quarter)** and partially for the village of **Ovchari**. In the other villages predominantly used are the septic tanks, and at some villages (**Edrino - 39%**, **Zvanarka - 41%**, **Skalak - 55%**, **Gulia - 36%**) also the direct discharge into river/land.

3. Solid waste

80% of households state that the municipality regularly collects solid waste, but 17% burn them (regularly or occasionally), and the another 17% dispose them close to their home in designated areas.

The latter two practices are predominant in **Malko Kamenyane, Kaklitsa, Guliya**.

V. Infrastructure and Housing

4. Heating

The local households use mainly wood for heating (97%).

4% use electricity as a main or one of the main sources for heating.

97% buy firewood, but 27% collect the greater part of it in nearby forest areas.

This percentage is highest in the villages of **Kaklitsa** (83%), **Guliya** (64%), **Skalak** (64%) **Malko Kamenyane** (59%).

VI. Health care

In the last 2 years, only 16% of households had no serious illness.

The predominant health issues were

- | | | | | | |
|------|----------------------------|----|---|-----|-------------------|
| (1) | high blood pressure | in | - | 59% | of the households |
| (2) | influenza | | - | 28% | |
| (3) | cardiovascular diseases | | - | 27% | |
| (4) | diabetes | | - | 16% | |
| (5) | respiratory problems | | - | 12% | |
| (6) | gastrointestinal diseases | | - | 9% | |
| (7) | cancer | | - | 6% | |
| (8) | skin infections | | - | 3% | |
| (9) | neuropsychiatric disorders | | - | 3% | |
| (10) | orthopedic diseases | | - | 2% | |

VI. Health care

- * In the case of **common diseases** medical assistance is most often sought at
 - the Krumovgrad Hospital - 55%
 - a pharmacy - 41%
 - the Kardzhali Hospital - 4%

In case of serious illness

- 45% seek help at the Kardzhali Hospital
- 32% at the Krumovgrad Hospital
- 12% at a hospital in Sofia or Plovdiv.

When asked to assess the health care on the scale ranging between '(1) *dissatisfied*' and '(4) *completely satisfied*', the average ratings of the respondents are

- the Krumovgrad Hospital - 3.5
- the Kardzhali Hospital - 3.5
- hospitals visited in Sofia and Plovdiv - 3.9

VI. Health care

- the pharmacy that they usually use - 3.9
- * 72% of the respondents firmly declare that they have health insurance.
12% explicitly state that they do not have such. 8% are not sure.

* **The highest relative share of the people that do not have health insurance is in the villages, and these are mainly representatives of so-called active population of the Turkish and the Roma community.**

VII. Transport and communications

* For short distance travels respondents indicate as most widely used means of transport

- personal (owned by the household) car - 59%
- bus - 43%
- bicycle - 4%
- cart - 2%
- other - 3%

* Only 11% of the respondents assess the roads in the municipality as 'good'.

According to 41% they are 'very poor', and 47% assess them as 'poor in places'.

* The access of to telecommunication services is described by the surveyed households

as follows:

- 73% have a mobile phone
- 36% have landline phone
- 31% use Internet /Skype, etc./

VII. Transport and communications

Those who do not have access to any of these services are 12% and the vast majority of them are one- or two-person households with members aged over 60 years.

*** In general, 39% state that they have Internet access, 38% of them - at home (but 7% of them in another household, living in the same house), and 1% for each of the following: club, community center, school. Of all 396 respondents, however, only 1 (?) has a mobile Internet access.**

VIII. Cultural and historical heritage, natural landmarks

* The local people consider that the region in which they live cannot boast prominent cultural and historical heritage or exceptional natural landmarks.

For that reason, when asked to name such, 41% find it difficult to identify anything in particular, and another 29% give only general answers of the type '*Eastern Rhodopes*' or simply '*the Rhodope Mountains*'.

Nevertheless, the most significant number of answers were collected for

- *Ada Tepe Area* - 17%
- *Krumovitsa River* - 16%
- *Tyulbe Teke* (religious site) - 4%

The following sites are mentioned in single answers

- *The cave near the village of Ridino*

VIII. Cultural and historical heritage, natural landmarks

- *The evergreen oak near the village of Kandilka*
- *The White Eagle*
- *The rock formations near the village of Dolna Kula*
- *The Ethnographic Museum (village of Batkovtsi)*
- *The Mill (village of Egrek)*
- *Golata Chuka Peak*

and others.

IX. Utilization of natural resources

1. Practices for utilization of the local natural resources

* 54% of all 396 households practice more or less regularly activities for natural resources utilization provided by the local ecosystems

What is the prevalence of these practices?

- 27% of the surveyed households collect herb plants
- 27% breed grazing livestock
- 24% collect wild fruits and vegetables
- 18% collect firewood for heating and cooking
- 15% are fishing
- 15% collect medical plants
- 5% are hunting animals and birds
- 1% collect ingredients for traditional alcohol

IX. Utilization of natural resources

Rarely, other activities are practiced, however with a little importance for the household economy.

Practically all people practicing these activities are using the natural resources for the household needs. In fact, 70% are using the resources only for the household needs, while the other 30% are motivated to sell them as well.

The main mechanism for transforming the natural resource into income on the Krumovgrad's market is by breeding grazing livestock (cattle, sheep) – 14% of the households.

Second, although practiced only by 3% of the households, is the collection and sale of herbs and other medical plants.

IX. Utilization of natural resources

Only 1% have found a way to profit from the sale of wild fruits and vegetables (probably mushrooms are considered here as well).

2. Hunting and fishing

* 5% of the surveyed households are practicing hunting

In these occasions hunting is practiced mostly 2-3 times/month (during the hunting season).

Typically, people travel between 5 and 15 km from their homes for hunting.

There are no particularly preferred areas for the hunting.

Traditionally the preferred animals for hunt are:

- wild boar - 89%
- hare - 72%
- wolf - 61%

IX. Utilization of natural resources

- fox - 50%
- partridge - 17%.
- * 15% of the households are with at least one fisherman

Almost all of them fish in **Krumovitsa river** (12% at the dam), and only a few prefer **Arda river** and **Kesebira river**.

Fishing is practiced usually 1-2 times/month, and for 20% - more often.

3. Collecting wild fruits and other plants

This practice is traditional and regular for at least 24% of the households.

Most of them practice it at least 2 times/month during the spring-autumn period.

2/3 collect wild fruits near their homes, while 1/3 travel for not more than 5 km away.

What wild fruits are mostly collected:

IX. Utilization of natural resources

- (1) rose hip
- (2) cornels
- (3) blackberries
- (4) walnuts
- (5) mushrooms
- (6) pears
- (7) raspberries.

*** 29% of the households collect herbs and medical plants**

In a good season this practice is done 1-2 times/month. The preferred distance away from their homes is not more than 5 km.

What herbs and medicinal plants are mostly collected:

- thyme - 90%

IX. Utilization of natural resources

- wort - 64%
- oregano - 38%
- sumac - 28%
- chamomile - 14%
- yarrow - 12%
- hawthorn - 4%
- minta - 2%
- melissa - 2%.

X. Conclusion – local patriotism

68% of the surveyed think that Krumovgrad Municipality is a good place to live.

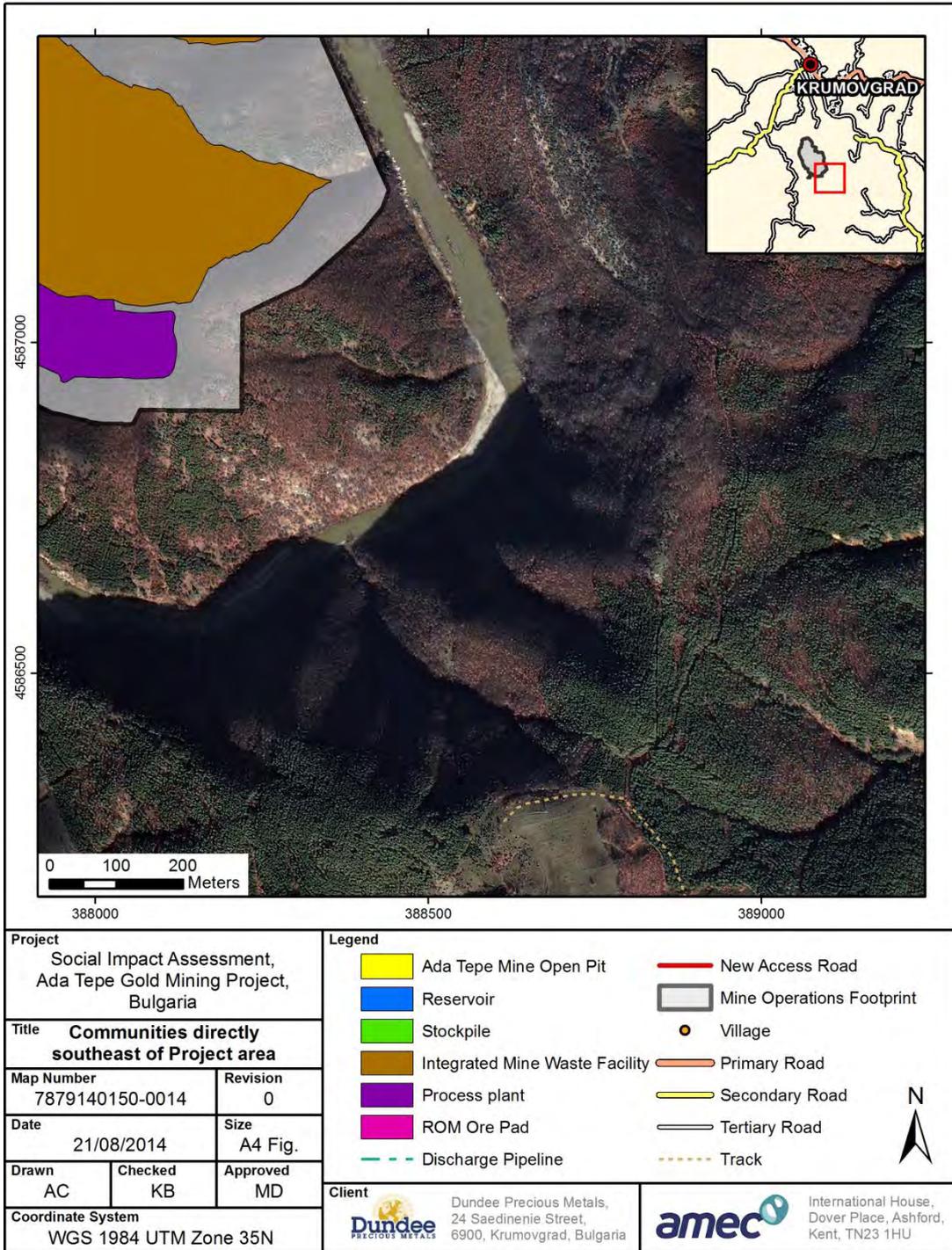
For 22% it is 'partially' good.

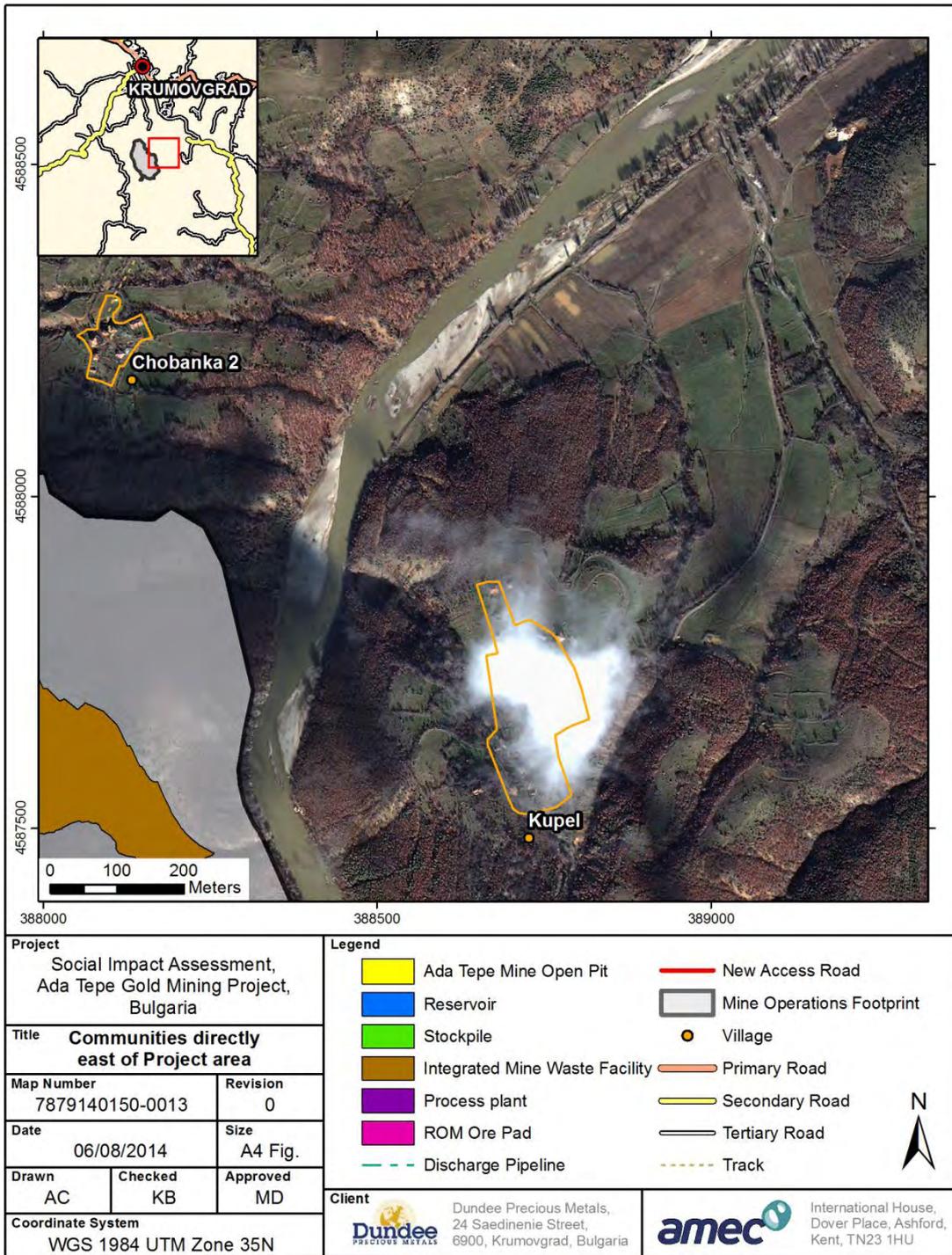
For 9% (mostly young people) it is not a good place to live.

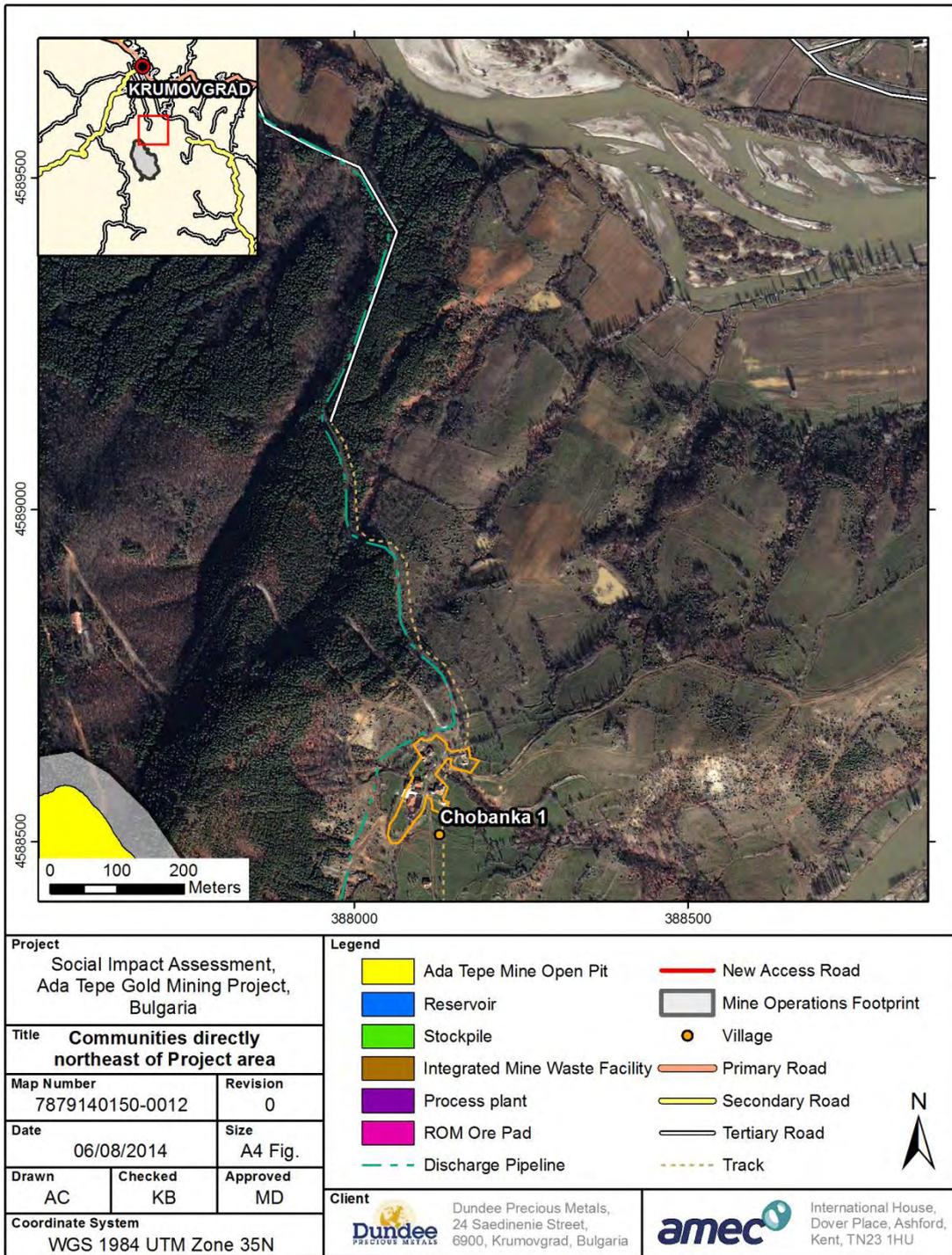
- * 63% of the surveyed would not consider relocating
- 15% would like to move to another place in Bulgaria
- 12% would like to move to another EU country
- 6% would like to move to a country outside EU (ethnic Turks, perhaps meaning the neighboring Turkey).

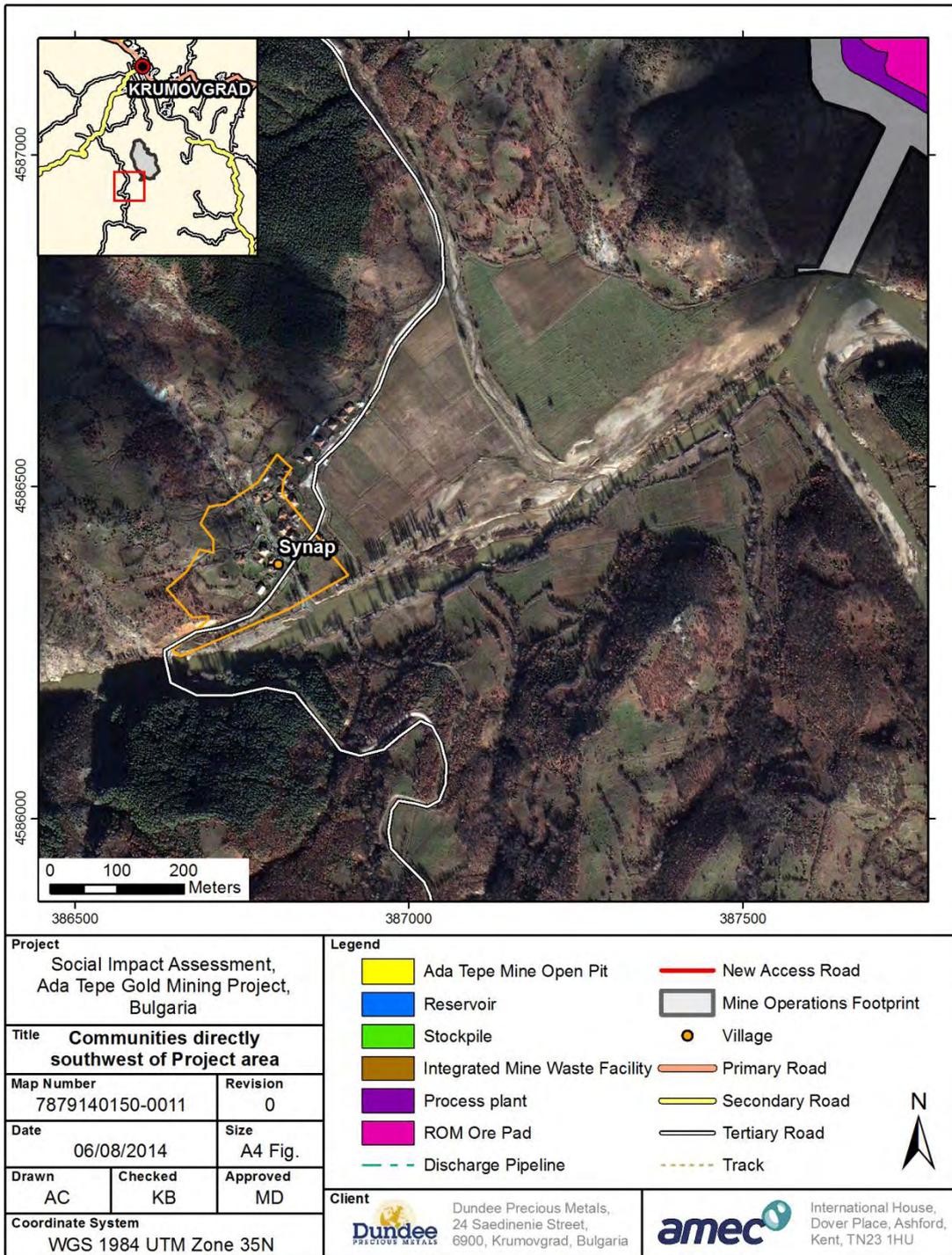


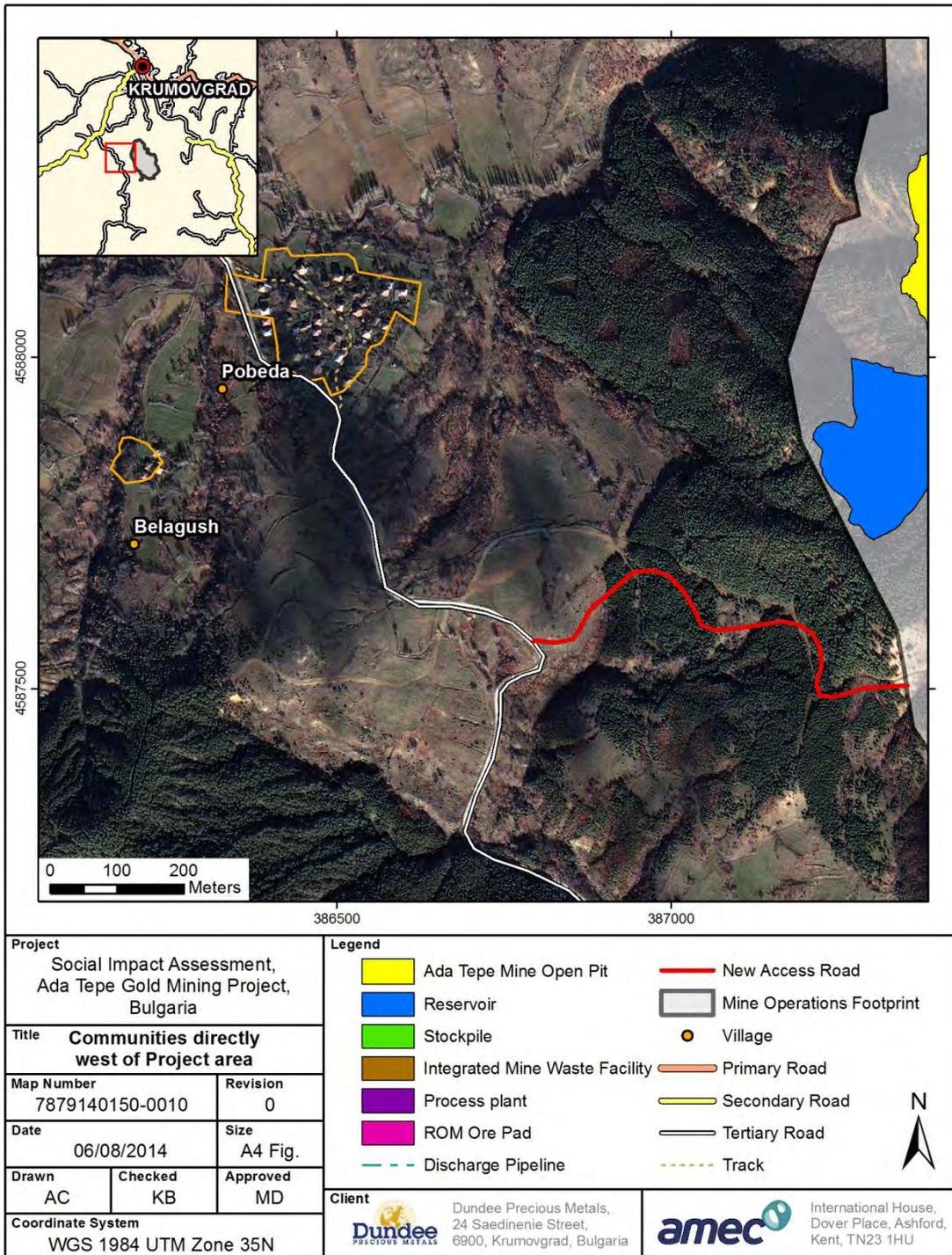
Annex 2: GIS Spatial Analysis

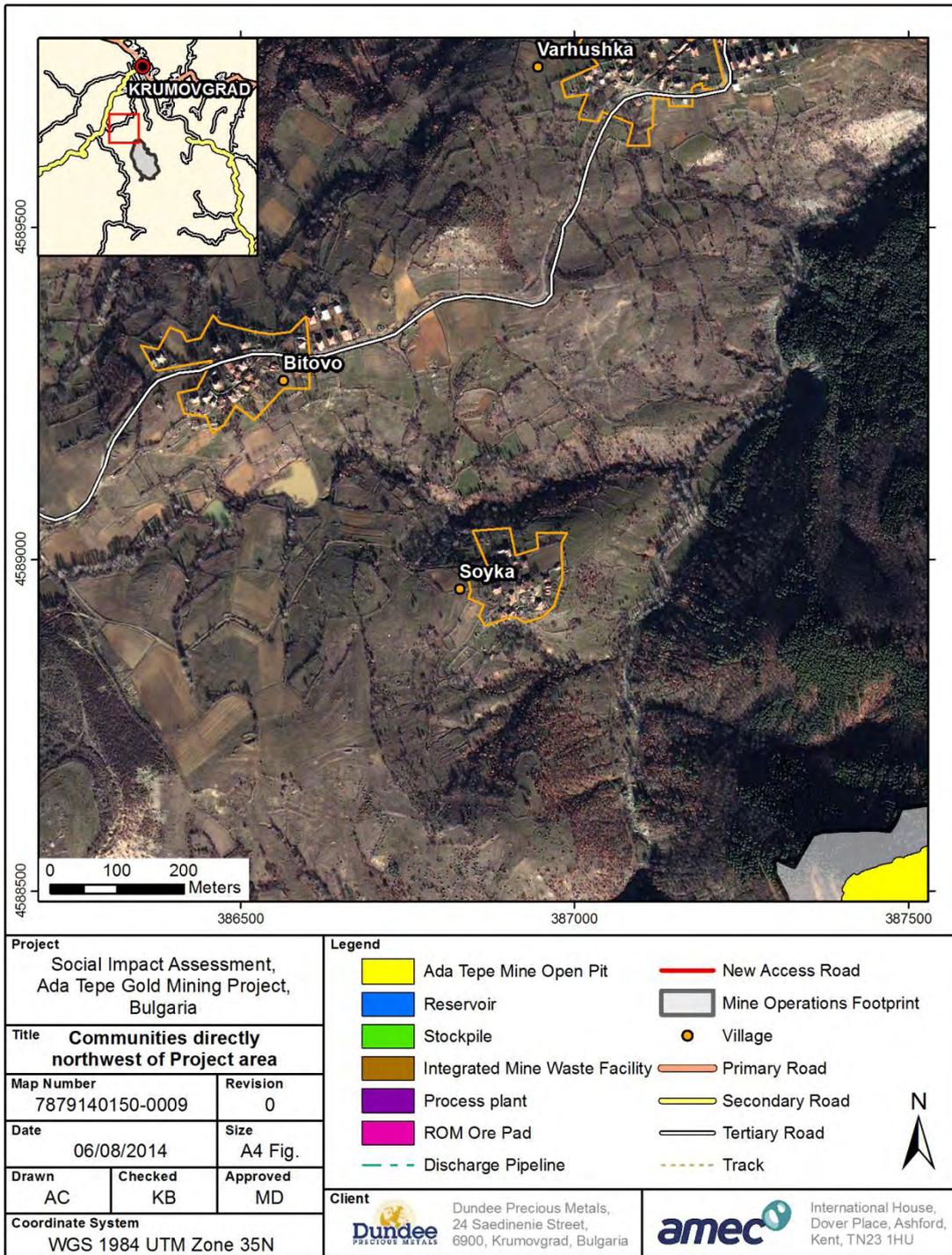


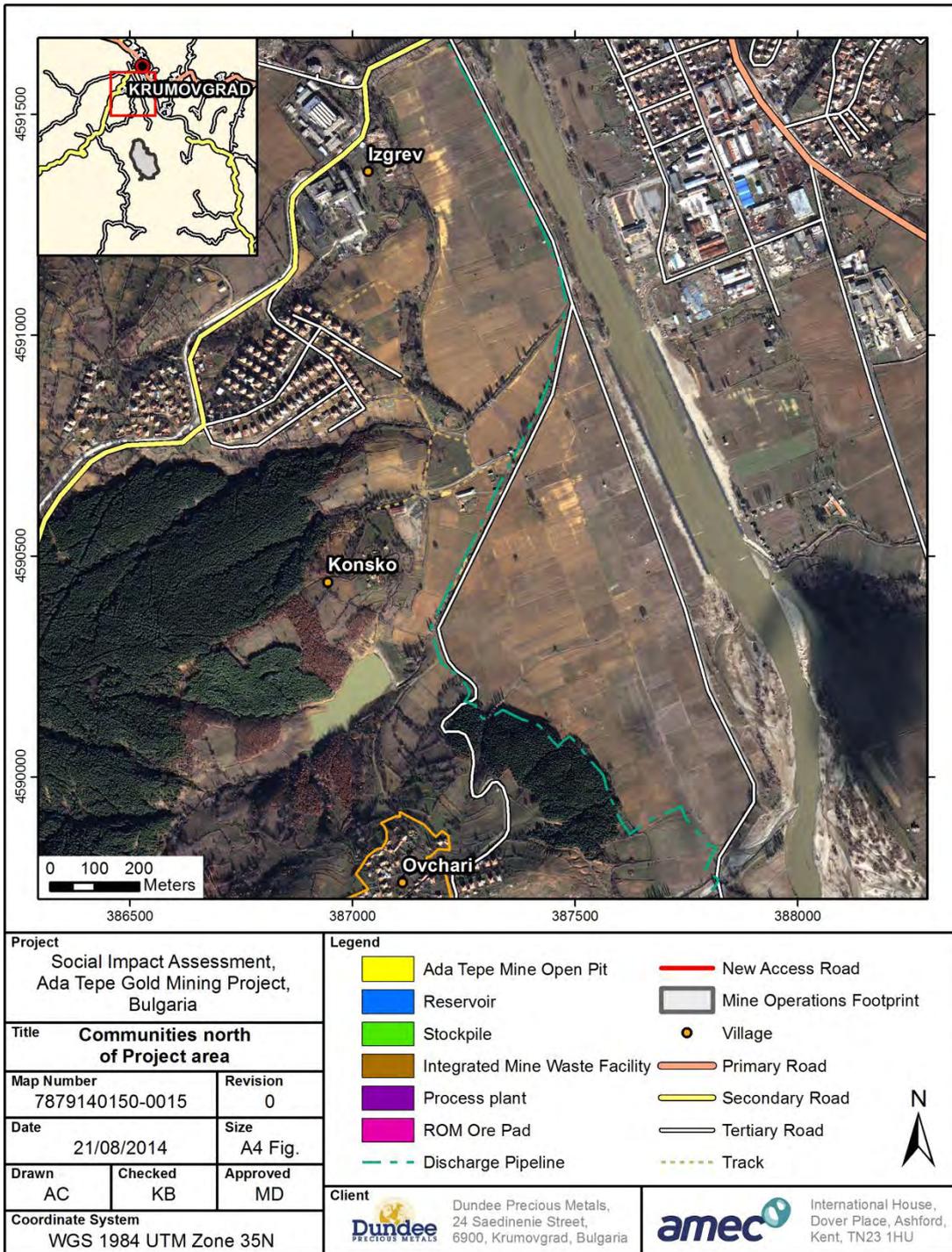


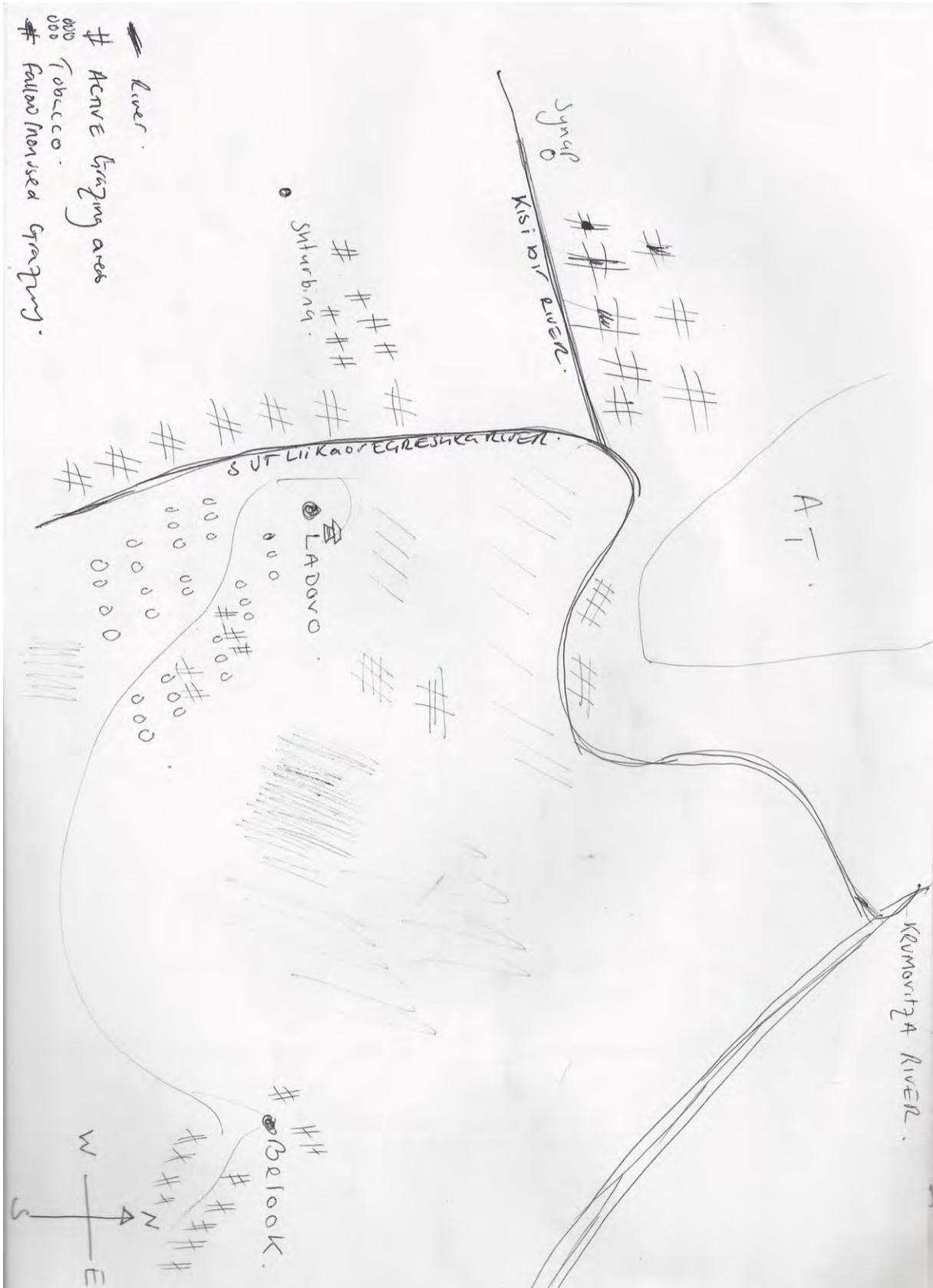












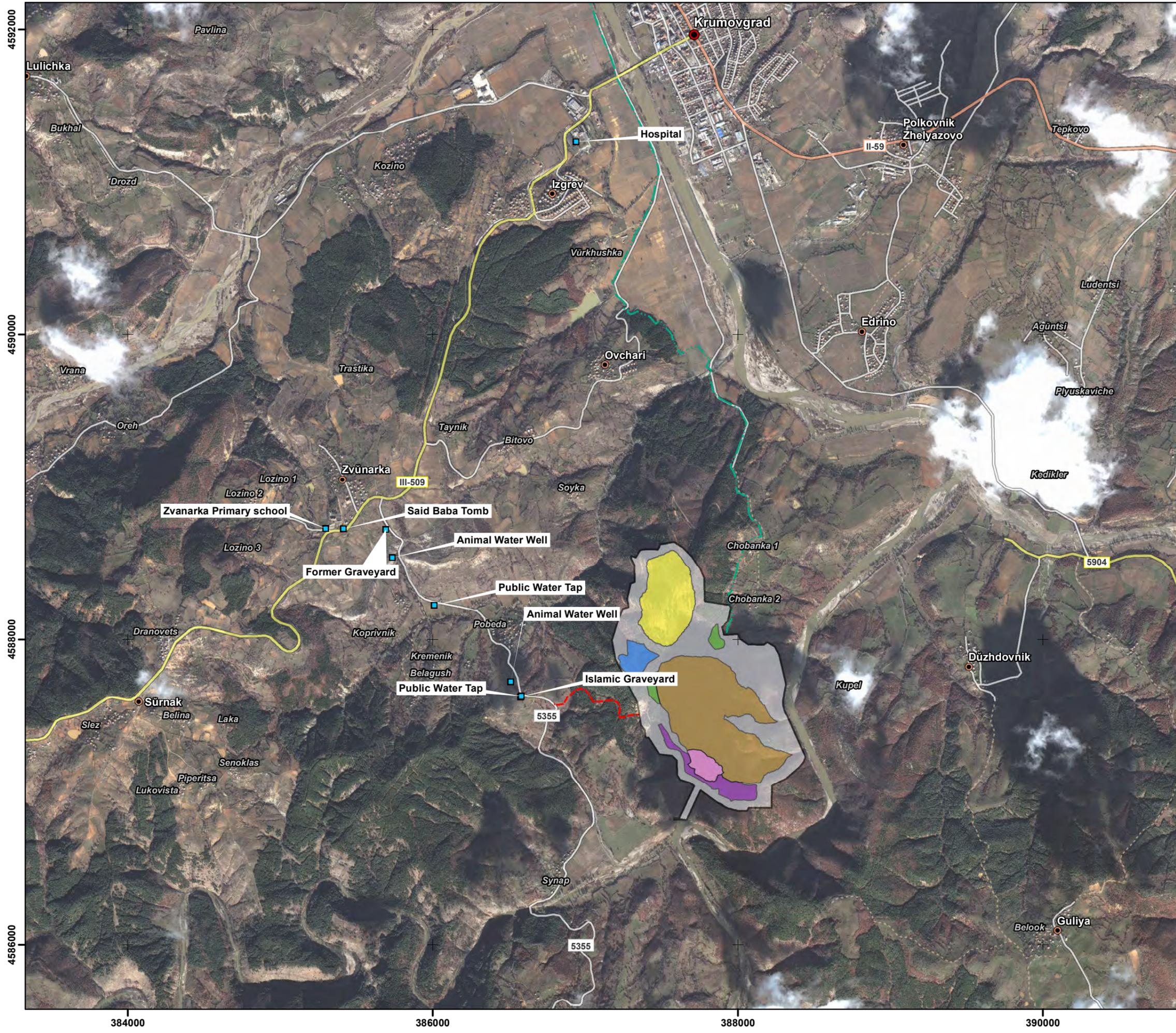




Annex 3: Sensitive Locations Identified during Baseline Consultations

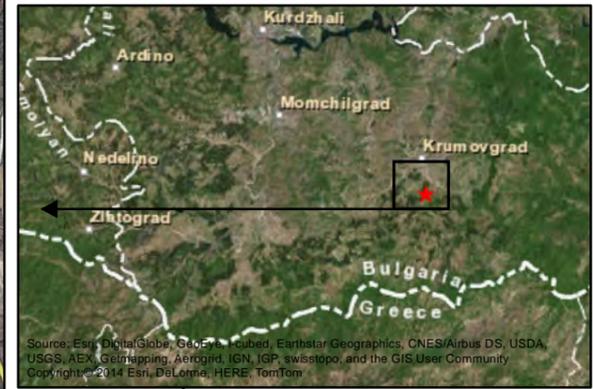
The following sensitive locations were identified during the field study and stakeholder interviews:

Location	Coordinates	
Islamic graveyard by the side of the road fenced off Pobeda	N 41 25'56"	E 25 38'33"
Public water tap directly opposite graveyard by the road	N 41 25'56"	E 25 38'33"
Public water tap by the side of the road	N 41 26'15"	E 25 38'08"
Water well for animals by the side of the road but at a lower level	N 41 26'25"	E 25 37'56"
Former graveyard by the side of the road (2 tomb stones)	N 41 22'31"	E 25 37'54"
Tomb of Said Baba & sacred place where animals slaughtered to celebrate his death approx. 5 000 years ago	N 41 26'31"	E 25 37'42"
Water well for animals by the side of road	N 41 25'59"	E 25 38'30"
Zvanarka Primary school	N 41 26'31"	E 25 37'37"



Legend

- Sensitive Location
- Town
- Village (Mahala system Administrative 'lead' village)
- Hamlet
- Mine Operations Footprint
- Ada Tepe Mine Open Pit
- Reservoir
- Stockpile
- ROM Ore Pad
- Process plant
- Discharge Pipeline
- New Access Road
- Primary Road
- Secondary Road
- Tertiary Road
- Track



Orientation

Coordinate System: WGS 1984 UTM Zone 35N
 Projection: Transverse Mercator
 Datum: WGS 1984

Client

Dundee Precious Metals, 24 Saedinenie Street, 6900, Krumovgrad, Bulgaria

amec International House, Dover Place, Ashford, Kent TN23 1HU, UK

Project Social Impact Assessment, Ada Tepe Gold Mining Project, Bulgaria

Title Sensitive Locations Along Haul Road

Map Number 7879140150-2000	Revision 2	Scale 1:24,000
Date 15/10/2014	Sheet Size A3	
Drawn AC	Checked KB	Approved MD

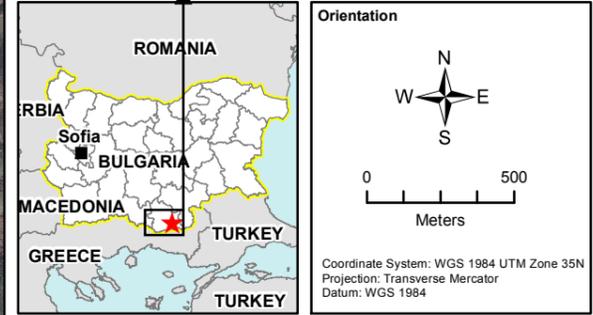
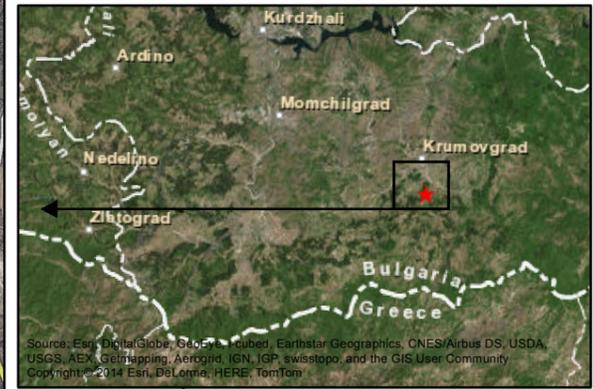
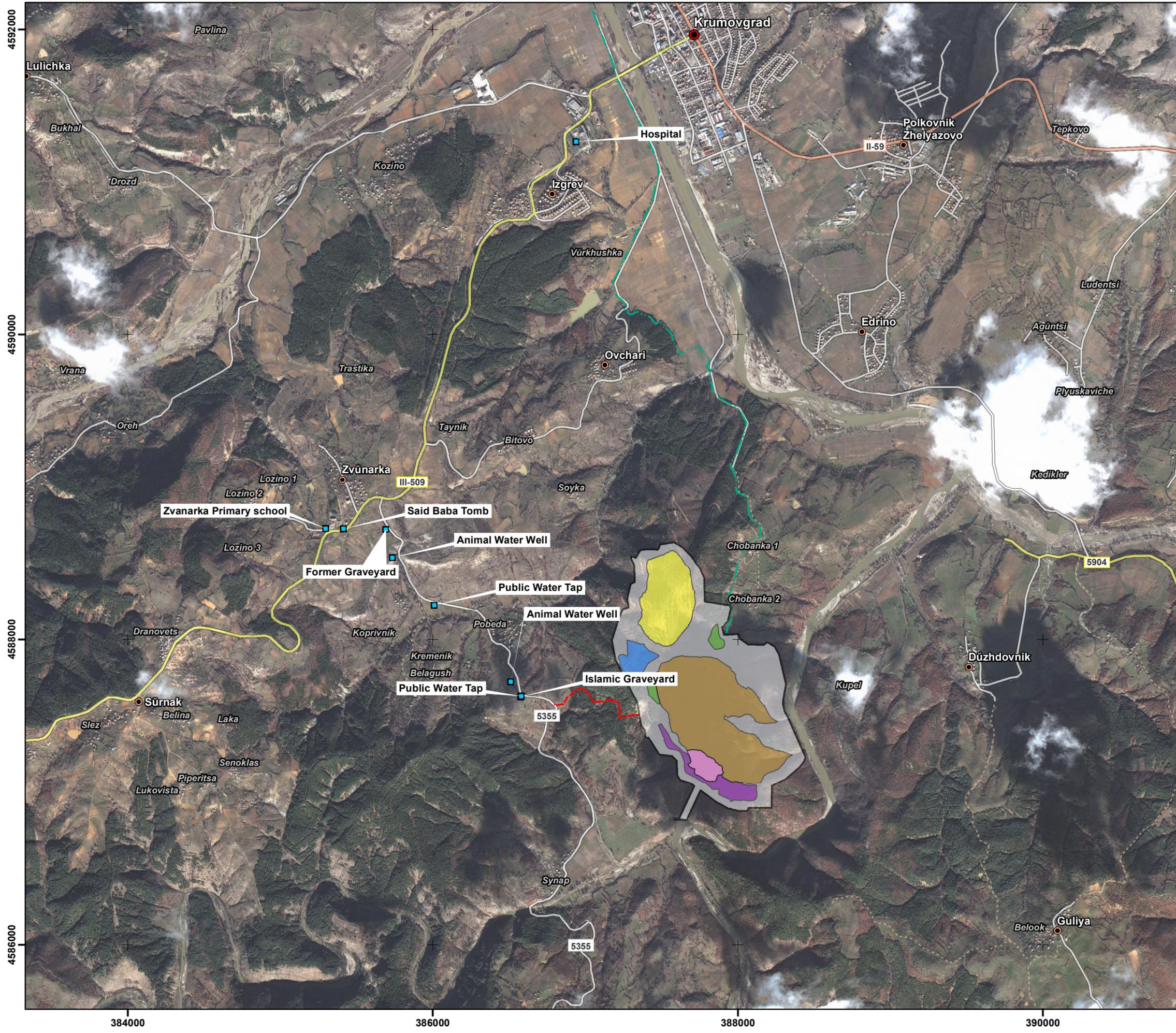


Annex 3: Sensitive Locations Identified during Baseline Consultations

The following sensitive locations were identified during the field study and stakeholder interviews:

Location	Coordinates	
Islamic graveyard by the side of the road fenced off Pobeda	N 41 25'56"	E 25 38'33"
Public water tap directly opposite graveyard by the road	N 41 25'56"	E 25 38'33"
Public water tap by the side of the road	N 41 26'15"	E 25 38'08"
Water well for animals by the side of the road but at a lower level	N 41 26'25"	E 25 37'56"
Former graveyard by the side of the road (2 tomb stones)	N 41 22'31"	E 25 37'54"
Tomb of Said Baba & sacred place where animals slaughtered to celebrate his death approx. 5 000 years ago	N 41 26'31"	E 25 37'42"
Water well for animals by the side of road	N 41 25'59"	E 25 38'30"
Zvanarka Primary school	N 41 26'31"	E 25 37'37"

Appendix B
Sensitive Locations



Client

Dundee PRECIOUS METALS
 Dundee Precious Metals,
 24 Saedinenie Street,
 6900, Krumovgrad, Bulgaria

amec
 International House, Dover Place,
 Ashford, Kent TN23 1HU, UK

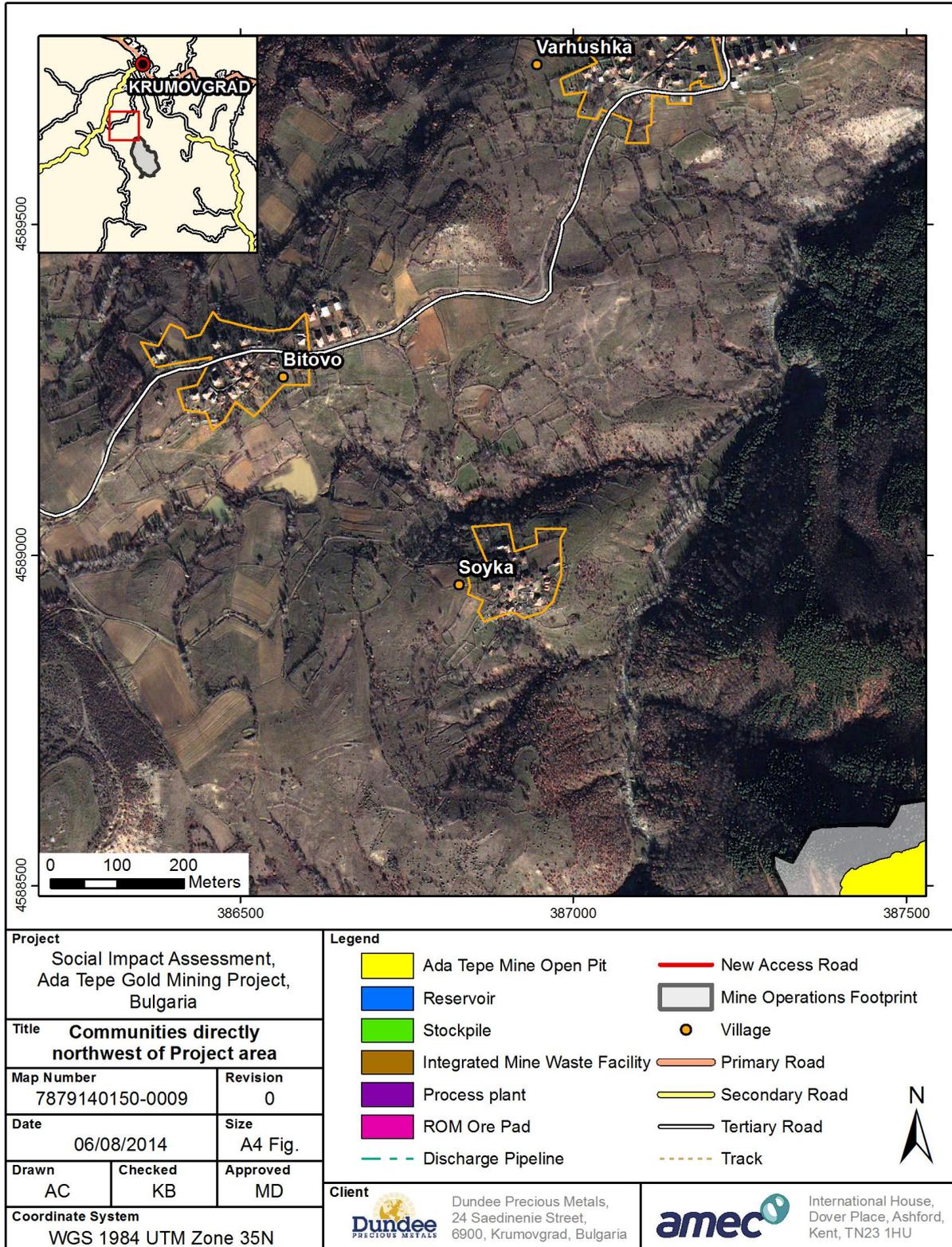
Project Social Impact Assessment,
 Ada Tepe Gold Mining Project, Bulgaria

Title Sensitive Locations Along Haul Road

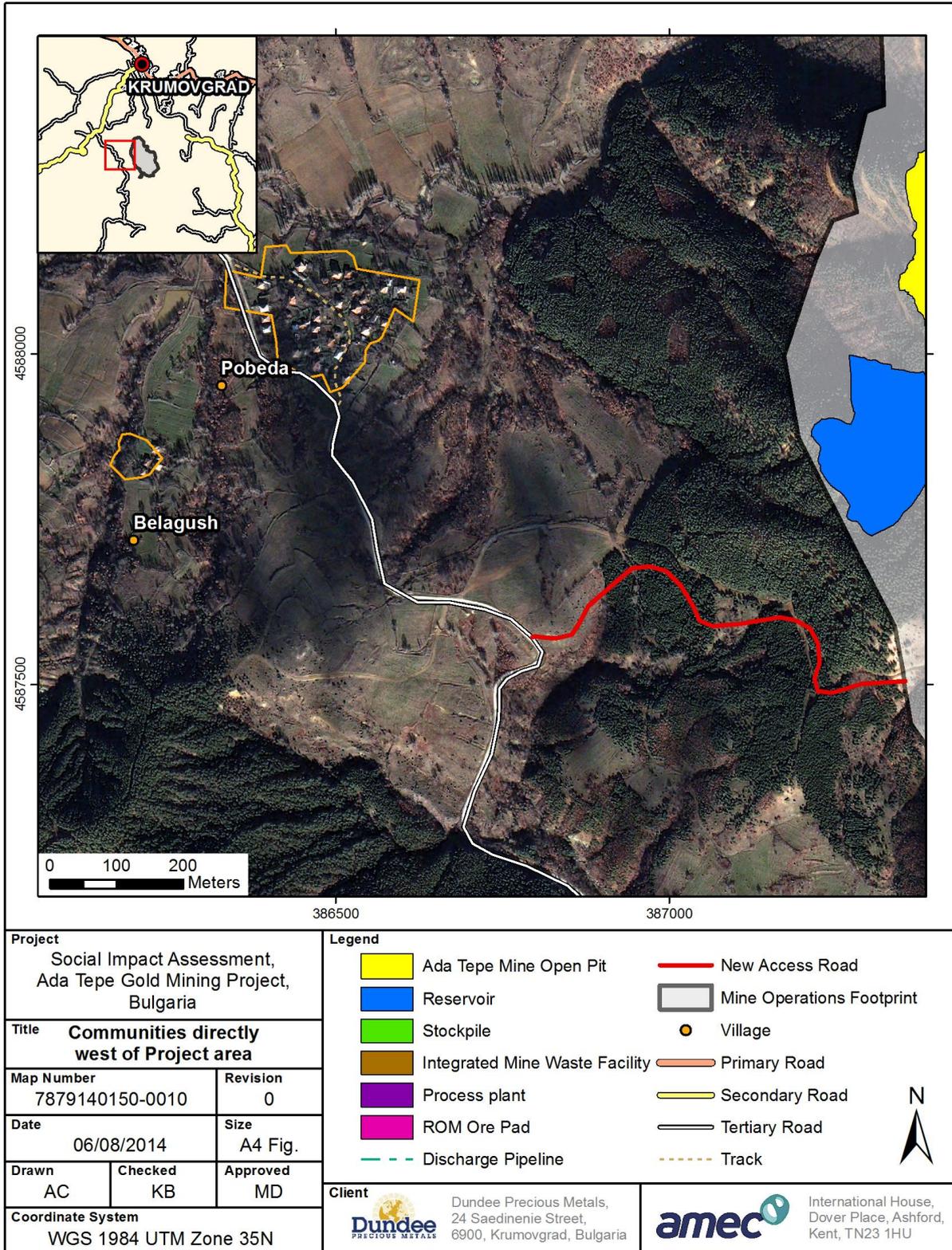
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Appendix C
Land Use Maps

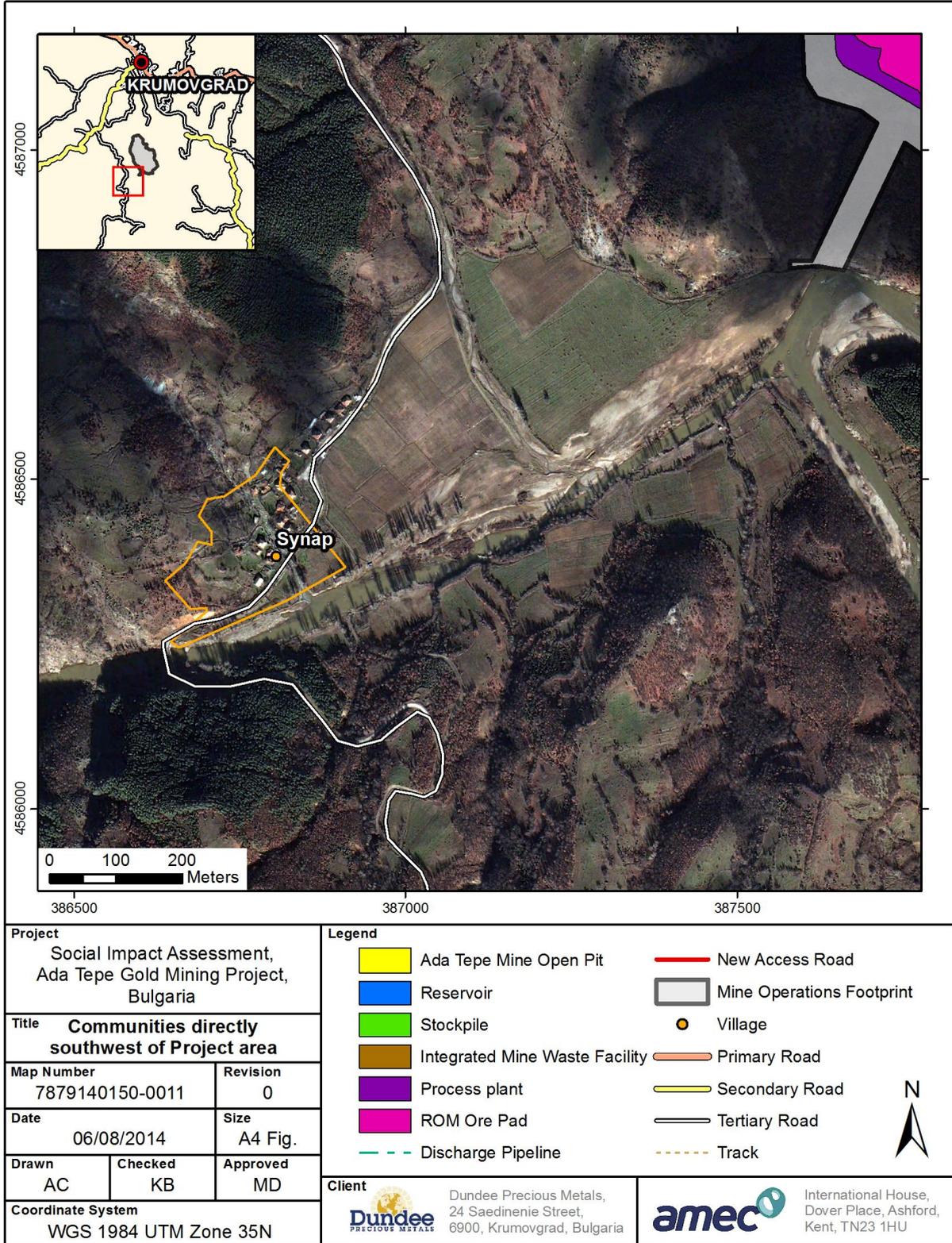
SOCIAL IMPACT ASSESSMENT
 SUPPLEMENTARY LENDER'S INFORMATION PACKAGE (SLIP)
 ADA TEPE GOLD MINE PROJECT
 KRUMOVGRAD - BULGARIA
 DECEMBER 2014



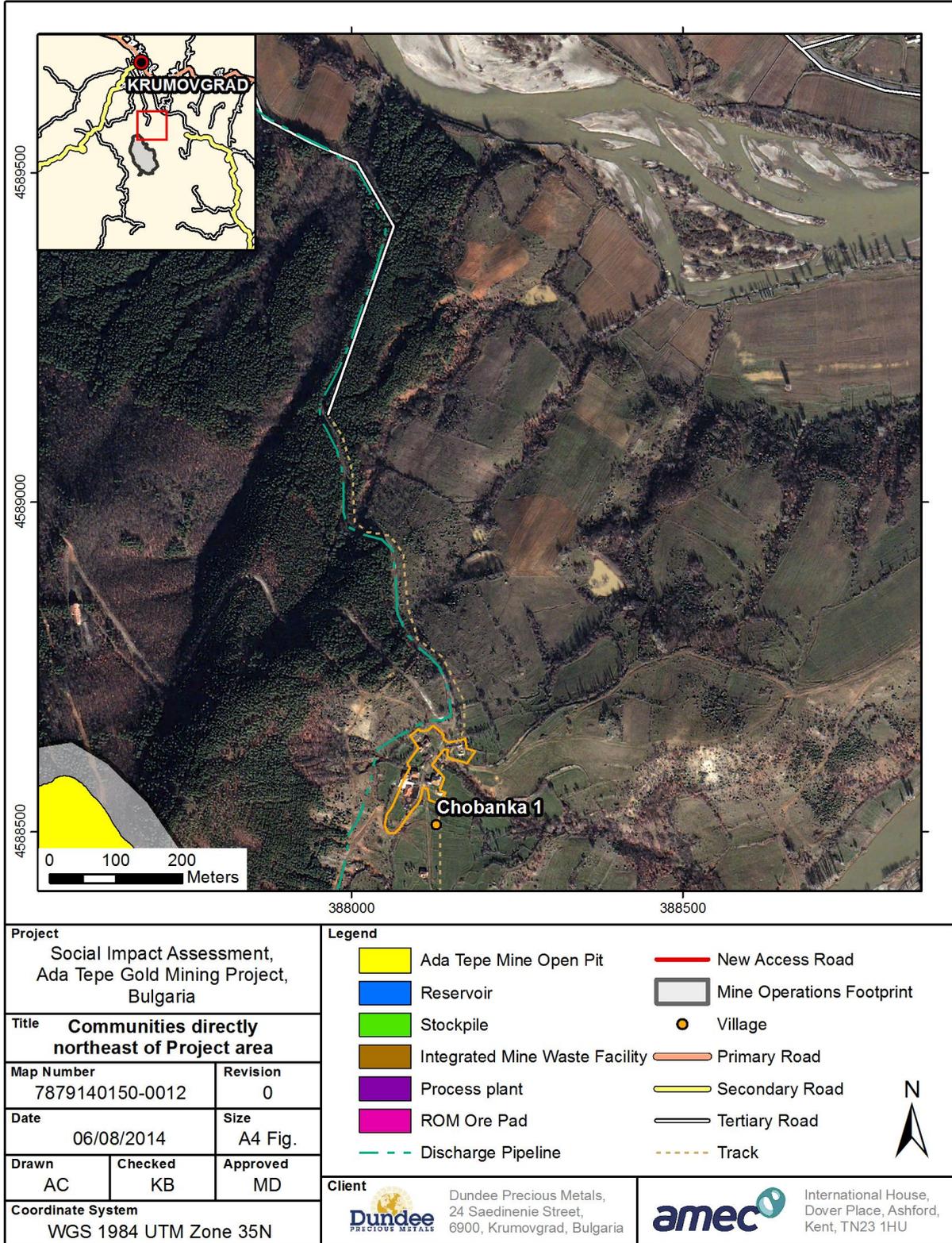
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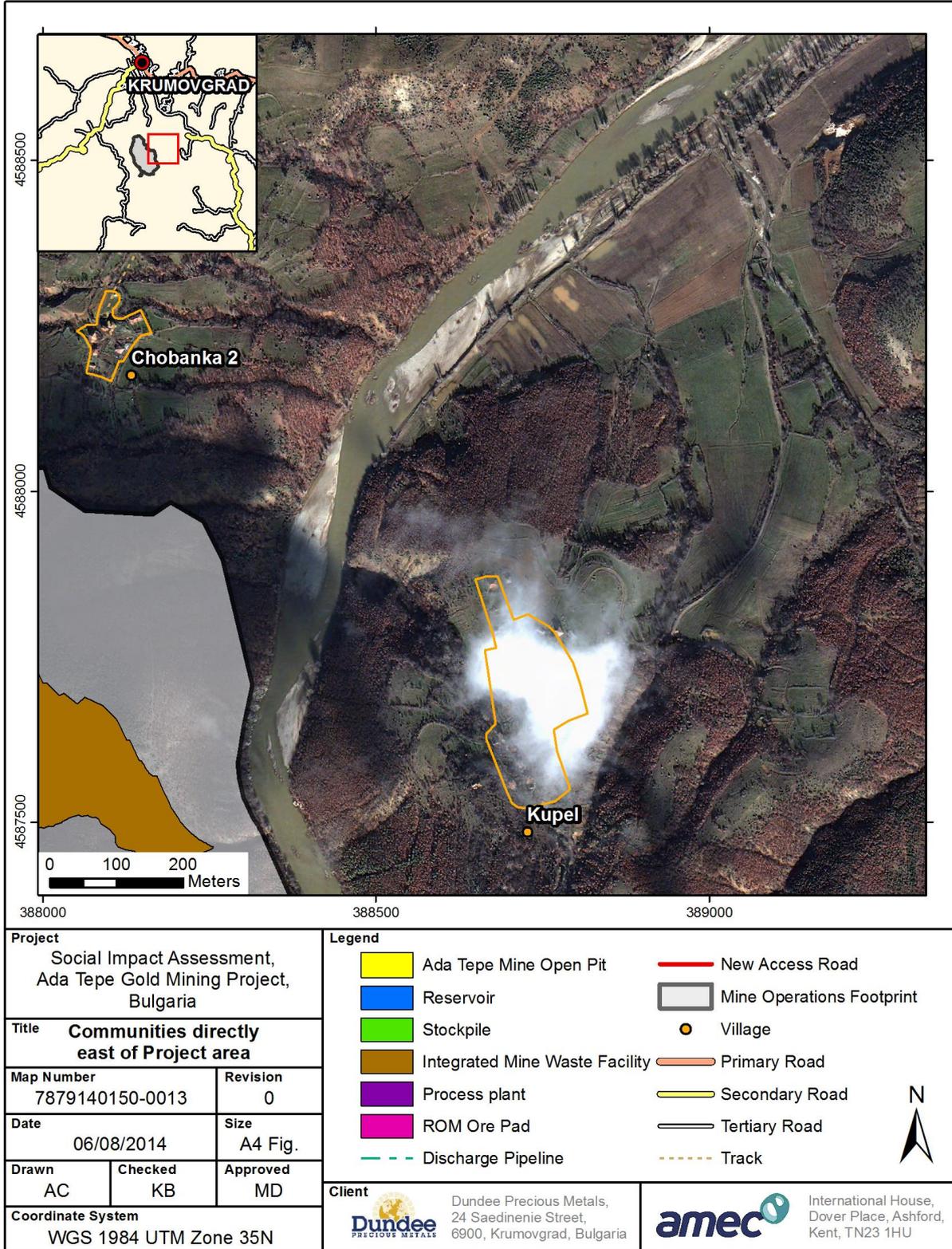
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 KRUMOVGRAD - BULGARIA
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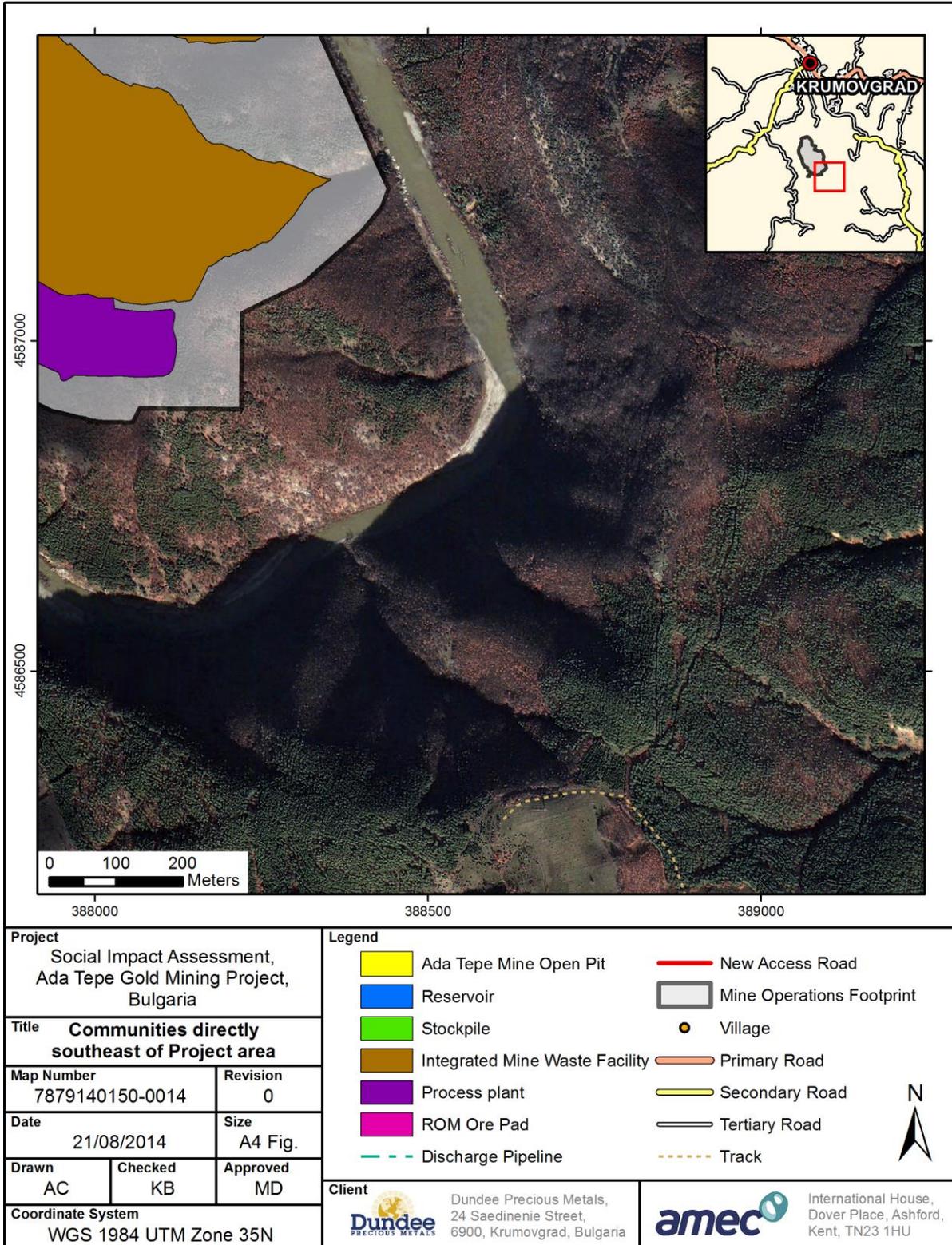
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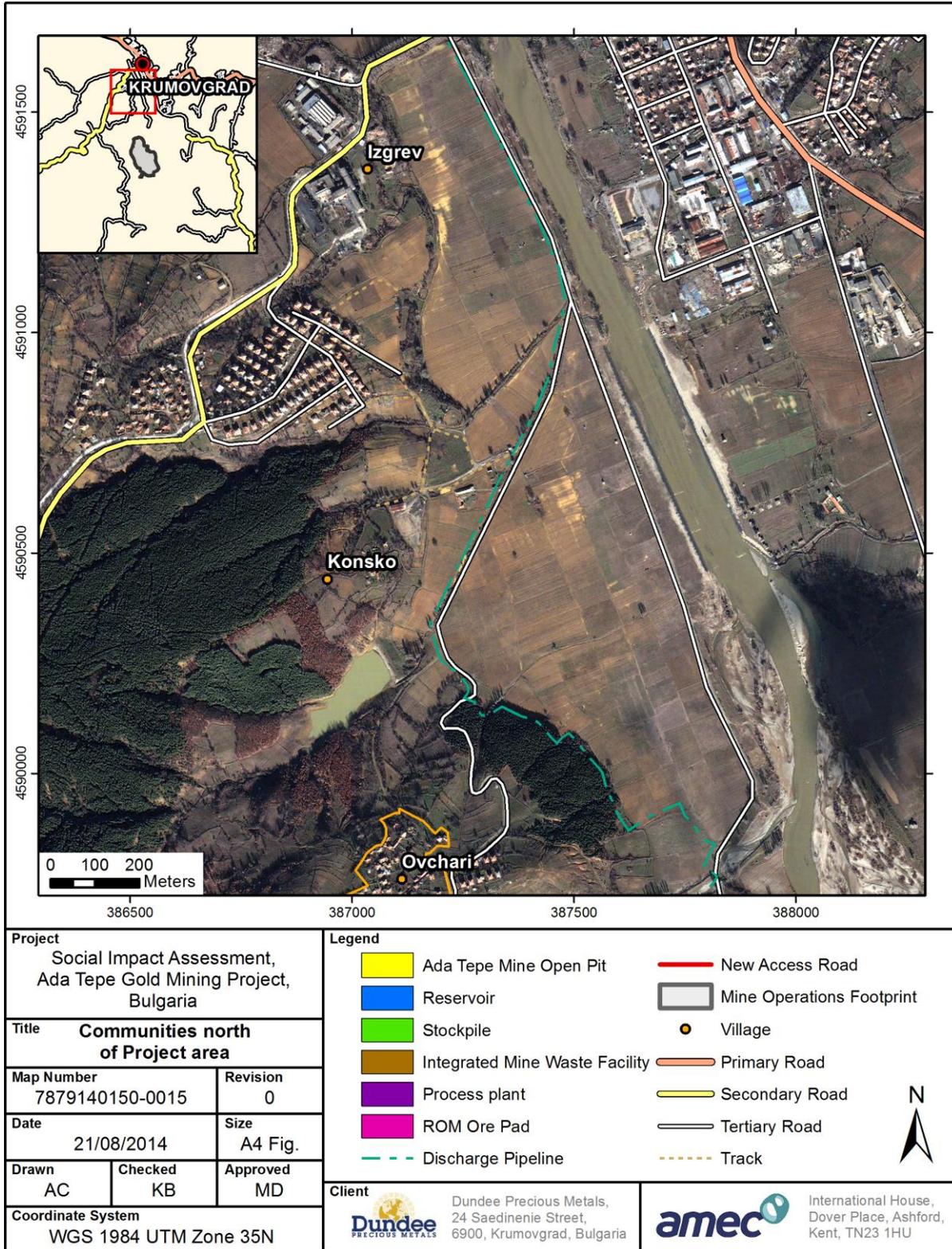
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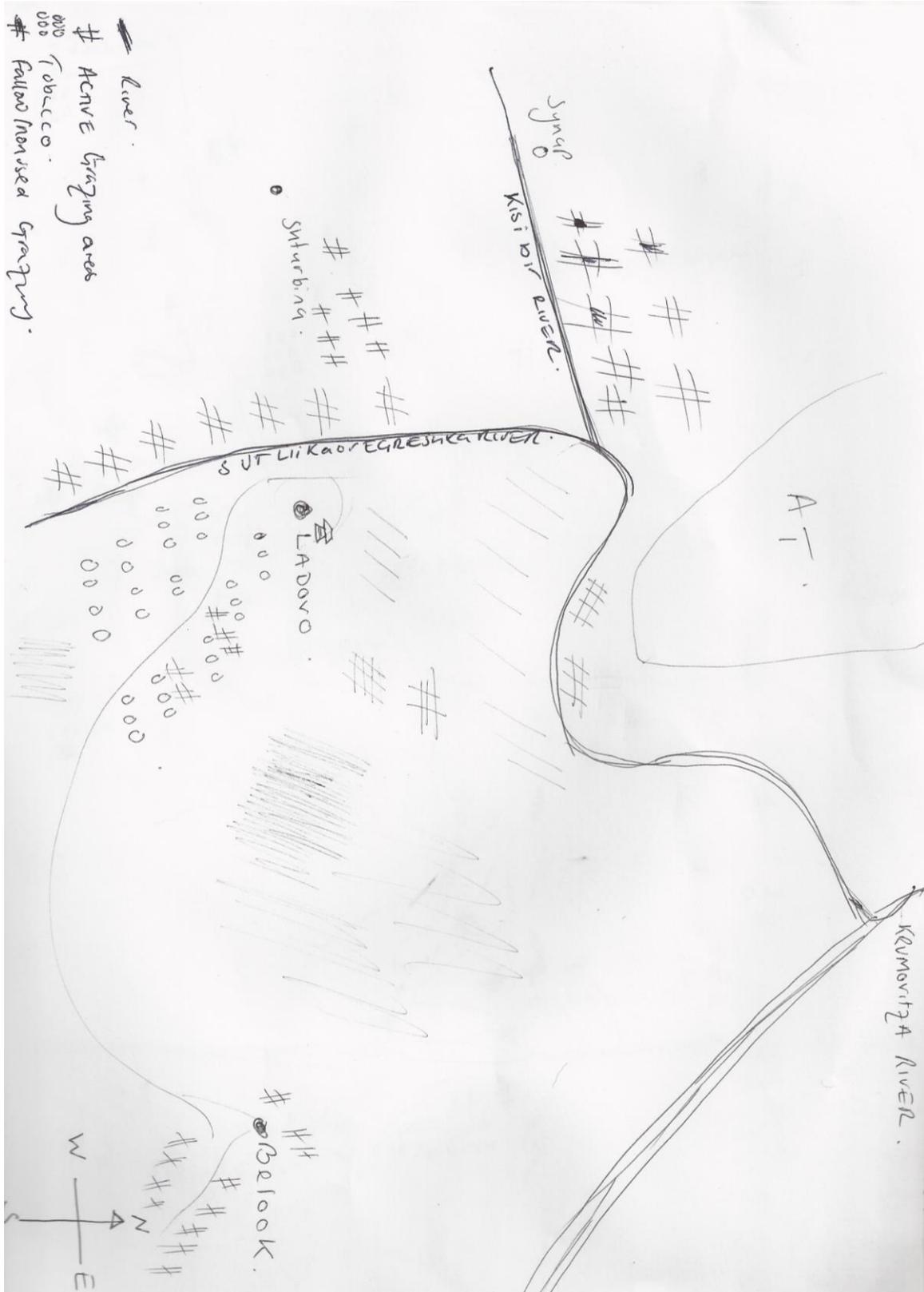


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DECEMBER 2014

