April 2016

ILOVICA GOLD-COPPER PROJECT

Non-Technical Summary of the Environmental Impact Assessment

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REPORT

Report Number 13514150363.701/A.0

Distribution:

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Non-Technical Summary

This document is the non-technical summary of the environmental impact assessment (the EIA) for the Ilovica Gold-Copper Project (the Project). It describes the main features of the Project, presents the current environmental and social conditions in the area and discusses the potential environmental and social impacts associated with the Project. Mitigation, management and benefit enhancement measures to avoid and minimise adverse impacts and maximise positive impacts are then presented.

Background

The Ilovica Gold-Copper Project (the Project) is a proposed copper and gold mine with supporting facilities. The location of the proposed mine is within the Municipalities of Bosilovo and Novo Selo in south-eastern Macedonia. The mine is situated approximately 180 km south-east of Skopje and 18 km east of Strumica. The region is characterised by forested hills up to 1,400 m high with the broad valley of the Strumica and Turija rivers to the south of the site. The surrounding land is extensive enough to support the proposed mining operations and facilities and the site is well connected to services and markets by paved roads. The Project will cover an area of approximately 500 hectares (ha) within a concession area of approximately 1,500 ha.

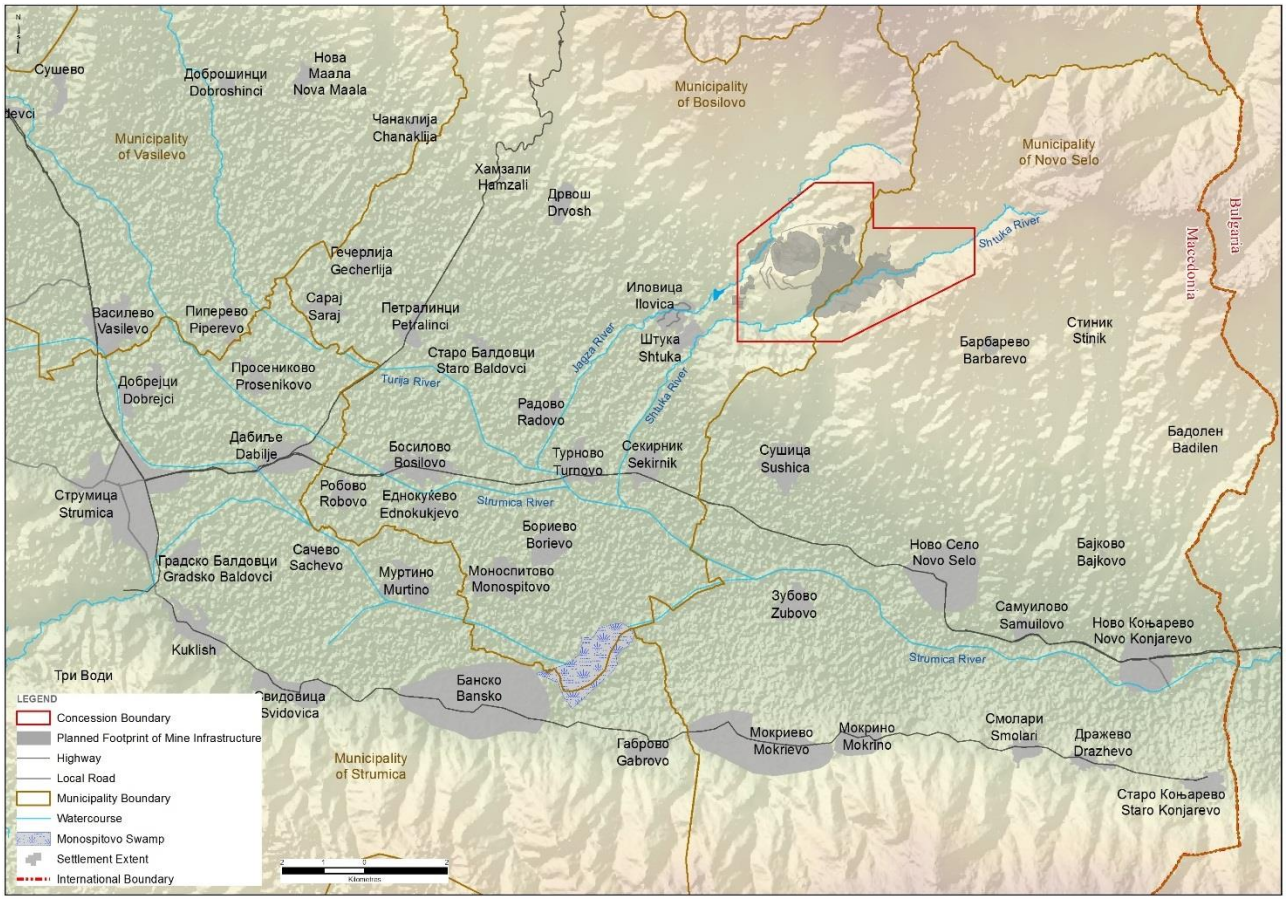

Figure 1: Regional setting of the Ilovica Gold-Copper Project

The Project will include an open pit mine, two areas of ancillary facilities and warehouses, a tailings management facility (TMF) into which mine waste will be deposited, and a stockpile of oxide ore. The mine will operate as an open pit, from which the ore will be extracted and crushed, then transported by a conveyor to the processing plant. The crushed ore will undergo flotation to remove the copper- and gold-bearing minerals.

Leaching will be used to extract gold from a portion of the crushed ore which has undergone flotation. The copper concentrate would be transported from the site in trucks to an existing smelter in Bulgaria. The gold leachate would be processed on-site to produce doré bars. An access road will be constructed to connect the site to the main road and power for the project will be provided by a dual overhead line (OHL) connection to the existing substations at Sushica and Berovo (approximately 7 km and 30 km from the site, respectively). These will be addressed in a separate EIA.

Construction of the Project is expected to take around 18 months. Production is scheduled to commence in 2017/2018 and will continue for 23 years.

Once in operation, the Project is expected to have around 500 direct employees, as well as indirect employment opportunities through local contractors and sub-contractors. The Project will also contribute to the local economy through its policy of seeking to maximise the procurement of goods and services from local suppliers through transparent and equitable purchasing procedures. These purchases affect the creation and development of local businesses that provide relevant products, inputs, and services to the Project.

A state royalty will be paid, which has been estimated to be approximately US$3.8 million per annum when the mine is at full production. According to the Minerals Law, royalties will be distributed between the national government (receiving 22% of the royalty) and the municipalities in which the concession activity is performed (receiving 78% of the royalty). As a result, the Municipalities of Bosilovo and Novo Selo will both have significant economic injections to their budget: the Project will contribute approximately US$77 million to the local municipalities over the life of mine.

Legal and permitting

Early geological exploration of the Ilovica resource was carried out by the Macedonian Bureau of Geology in 1973. An Environmental Impact Assessment (EIA) was approved for a smaller concession area by the Macedonian Government in November 2011 based on a Conceptual Study.

Subsequently, the exploration licence for the two concession areas (Ilovica village locality concession area, Municipality of Bosilovo; and Ilovica locality concession area, Municipality of Bosilovo and Municipality of Novo Selo) transferred to Euromax Resources DOO Skopje, who have conducted further geological, engineering and environmental studies between 2013 and 2015.

This EIA has been undertaken in accordance with the requirements of the Law on the Environment and all relevant secondary regulation. In addition, the EIA has taken account of the relevant international conventions and treaties to which Macedonia is a party, relevant EU legislation and policy (which is applicable given Macedonia's status as a candidate for accession) and international guidelines and standards for good international industry practice.

Shtuka Valley

Stakeholder Engagement and Information Disclosure

Stakeholder engagement is important to gain an understanding of how the Project will affect stakeholders and to gather their ideas on how the impacts should be mitigated and managed. Feedback from stakeholders provides an important input to project design. Stakeholder engagement also provides an early opportunity for stakeholders to become informed about planned Project activities and the process followed to refine the project design to maximise benefits while minimising adverse impacts.

Stakeholders include national and municipal government (who are interested and affected parties by virtue of their roles in the approval process, as well as their responsibilities for populations under their jurisdiction) and people living in the communities of Ilovica, Shtuka and Strumica due to their proximity to the Project site and their greater potential to benefit from the Project and be affected by any environmental changes. Other communities may experience effects (e.g. visual, noise, traffic).

The results of stakeholder engagement for the EIA showed that people are generally supportive of the Project and would like to see it move ahead for the economic and employment benefits that it will bring to the region and Macedonia as a whole. A lack of employment opportunity was cited in many discussions as being a primary cause for the out-migration of young, educated people from the south-eastern region to the EU to pursue employment. While being generally supportive, a number of concerns and questions were raised regarding environmental and social impacts of the Project. Aside from employment opportunities, the most common questions related to:

- **Impacts to water:** Stakeholders were concerned that mining activities will result in negative impacts to water quality and availability, as surface water and groundwater are currently used for human consumption and irrigation of gardens and agriculture.
- **Noise and vibration:** Noise generated by mining activity and heavy transport can be a disturbance, while some stakeholders were concerned that vibration associated with blasting and other activities could cause damage to buildings.
- **Soil and agriculture:** There was concern that mining activity will result in air pollution and that this could impact upon soils, reducing agricultural productivity.
- **Perceptions of harm:** People were concerned that having a mine so close to farmland will have a negative effect on sales of agricultural products.

The results of stakeholder engagement were provided to the EIA team so that the issues and questions could be addressed in the appropriate section of the EIA. Each section of the EIA lists the relevant environmental and/or social issues that were raised during consultations and how they have been addressed through the impact assessment process.

Information Disclosure

This non-technical summary has been prepared for the purposes of information disclosure and to enable a wide range of stakeholders to participate in the decision-making process. More detailed information is available in the EIA document.

Information disclosure has been conducted in accordance with the requirements of the Macedonian Law on the Environment and in line with international good practice. This non-technical summary and the EIA are available in the Sustainability section and download centre of the Euromax Resources website:

www.euromaxresources.mk

If you have any comments on the EIA, please send them to:

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Comments will be submitted to the EIA team who will address any outstanding issues in the final EIA.

View towards Ilovica and the Project location from the Strumica Valley

Project Design and Consideration of Alternatives

The design of the Ilovica Gold-Copper Project has been refined over a number of years as the result of studies on the engineering feasibility and the potential environmental and social impacts of the Project. The engineering studies included a Preliminary Economic Assessment, various trade-off studies (tailings and waste rock, process plant location, process flowsheet), the Pre-Feasibility Study and the Feasibility Study.

These studies applied a number of criteria to determine the best project design, including:

- The health and safety of workers and residents in surrounding communities;
- The significance of potential social, health and environmental impacts and the ability to mitigate adverse impacts through evaluation of alternative options;
- The economic extraction and production of copper concentrate and gold to meet market specifications;
- Minimising the number of residents that would be displaced or disadvantaged economically and physically;
- The availability of infrastructure and labour, including the integration of local skills base;
- Compliance with all applicable laws and regulations in the Republic of Macedonia and the international standards which the Project is committed to meeting; and
- Cost-benefit analyses to enhance Project benefits to surrounding communities, workers, investors, and the Macedonian government (through tax revenue and social investment).

Project description for the Ilovica Gold-Copper Project

The EIA assesses the potential environmental and social impacts of the Ilovica Gold-Copper Project based upon a design freeze established in October 2015. There may be subsequent design changes through the completion of the Feasibility Study and detailed design works, however the project description presented below (and in greater detail in the EIA) presents a ‘worst case scenario’ with the inclusion of some facilities which may be determined to be unnecessary due to the presence of existing facilities in the south-eastern region of Macedonia.

The EIA assesses impacts associated with three phases of the life of mine:

- Construction: an 18 month period during which mine facilities are constructed and the pit area is stripped in preparation for mining;
- Operations: a 23 year period of open pit mining, processing of the ore, production and export of copper concentrate and gold doré, and deposition of the tailings; and
- Closure: a 2 year period during which mining infrastructure is decommissioned and removed (where possible) and land is rehabilitated and revegetated.

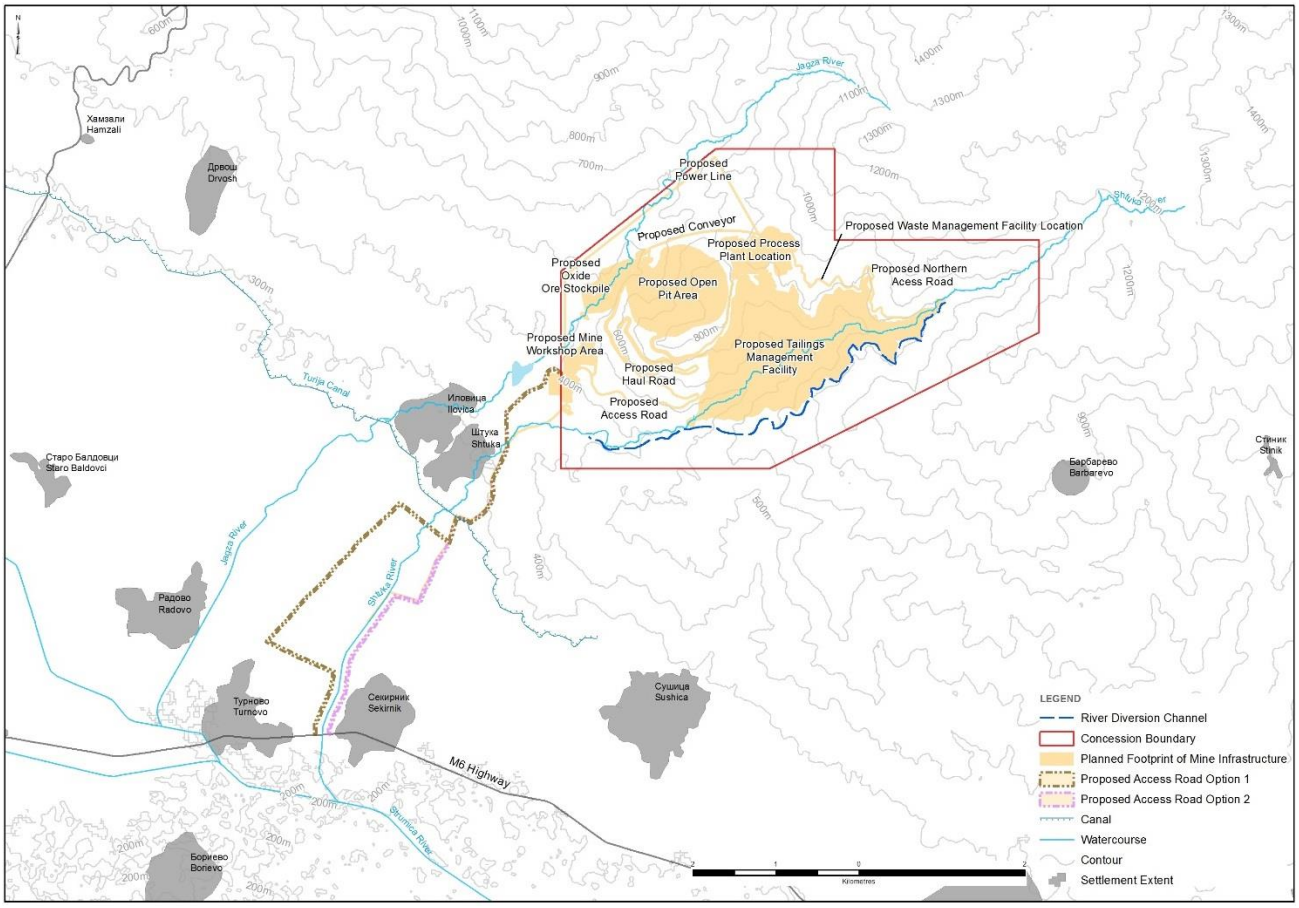

Figure 2: Components of the Ilovica Gold-Copper Project

Open Pit

The mine will be a conventional open pit mine, using drilling and blasting to excavate the pit to an elevation of 240 m (approximately 600 m below current ground level) with the material loaded by shovels and transported out of the pit by haul trucks.

During the construction phase, the open pit area will be stripped in preparation for mining. Stripping will involve blasting and earth moving to excavate covering materials, including waste rock which will be used in construction of the tailings management facility. Any soils which can be stripped and recovered will be stockpiled for future use in rehabilitation and revegetation of the site. Around 5 blasts per week are anticipated during the construction phase (for which the noise and vibration assessment assumes 5 delays per blast).

During operations, the pit will operate 24 hours per day. Blasting will occur in the daytime only and will vary between 0 and 3 blasts per week, averaging 2 blasts per week. Prior notification of blasting will be provided to police and local authorities. Communities are usually notified of blasting by the municipalities or emergency response institutions, such as the Crisis Management Centre, via the media.

Plant Site

Following extraction from the open pit, the mined ore will be delivered to the primary crusher where it will be crushed and fed onto a conveyor which transports the crushed ore to the process plant (a distance of approximately 1.6 km). At the process plant, ore will be milled to smaller sizes before being fed into the flotation circuit. The flotation circuit consists of a number of processes which result in a copper concentrate. Another product of the flotation circuit is a solution (‘cleaner scavenger tails’) which is then fed into a carbon-in-leach circuit followed by elution and electrowinning to produce gold doré. Waste materials (tailings) are treated prior to release to the tailings management facility.

The process plant is designed to process 10 million tonnes of ore per year. During mine operations, the process plant will operate 24 hours per day, with the exception of the crusher and conveyor which will only operate 16 hours per day.

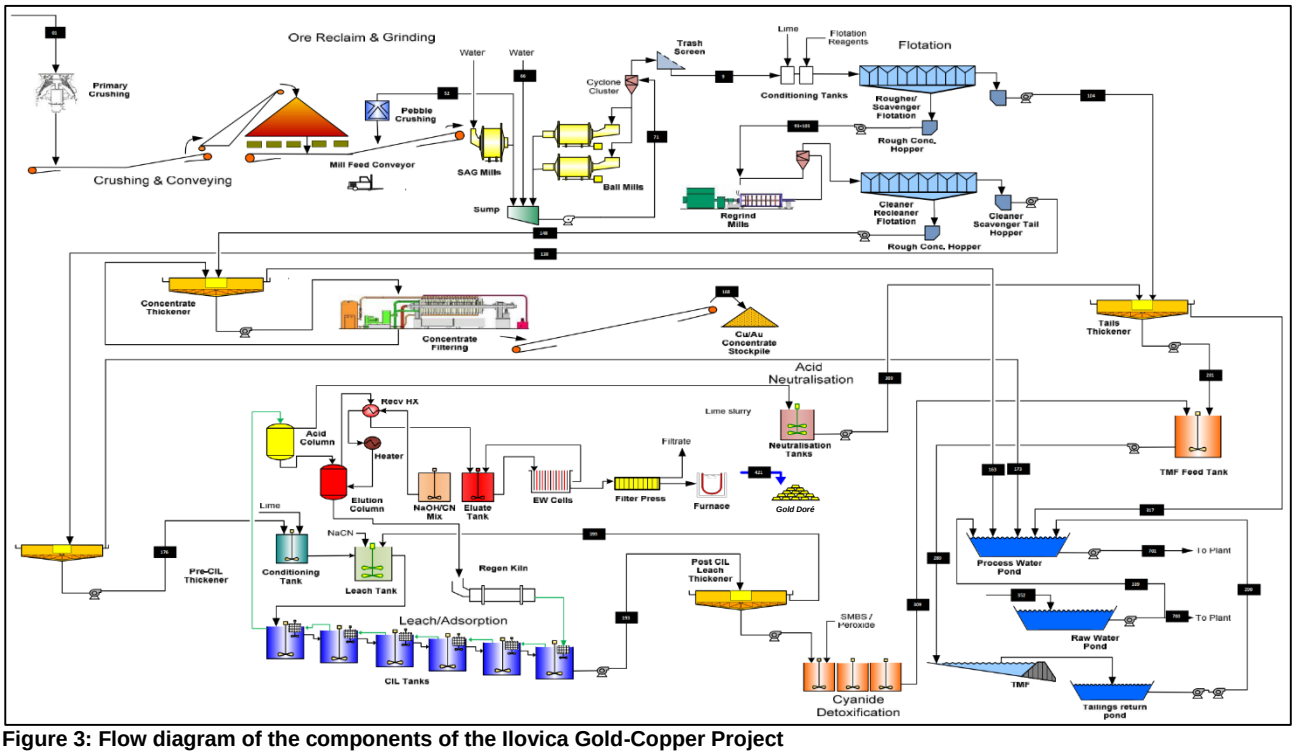

Figure 3: Flow diagram of the components of the Ilovica Gold-Copper Project

Tailings Management Facility

The tailings management facility (TMF) will be a dam within the Shtuka Valley which is designed to contain the mine waste which results from the processing of ore. The tailings in the facility will be contained along the northern, eastern and southern sides by the natural contours of the valley, and on the western side by the TMF wall.

Prior to construction of the TMF, vegetation clearance and site preparation will occur within the footprint of the starter TMF (a subsection of the TMF which is designed to hold tailings for the first years of operation). Any salvaged soils will be stockpiled for future use in rehabilitation and revegetation of the site. During construction, waste rock from the open pit area will be used to construct the TMF starter wall.

A channel will be constructed to divert the Shtuka River around the TMF and discharge the flows downstream.

Throughout the operations phase, approximately 7 million cubic metres (Mm^3) of tailings will be produced each year. Tailings will be gravity-fed or pumped from the plant to the TMF and deposited via pipeline and spigots. Surplus water from the TMF will be returned to the process plant where it will be reused.

At the end of operations, the TMF will have a storage capacity of approximately 210 Mm^3 and the TMF wall will have a closure elevation of approximately 776 metres above sea level (masl) (approximately 2 m higher than the final tailings elevation). At closure, the TMF will have a surface area of approximately 191 Ha.

At the conclusion of mining, the TMF will be closed and revegetated.

Other facilities

The mining and administration complex will be an infrastructure area located to the southwest of the pit. The mine workshop area will consist of buildings and workshops (offices, truck and equipment workshops, tyre repair facilities, boiler workshop, component stores, control room and gate houses, construction phase worker accommodation and sewage treatment plant).

A new off-site access road is planned to connect the Project to the existing M6 highway which runs between Strumica and the Bulgarian border. Two options are under consideration regarding the alignment of the off-site access road (shown on Figure 4). The access road will be used by project traffic only and will be maintained by Euromax (or an appointed contractor).

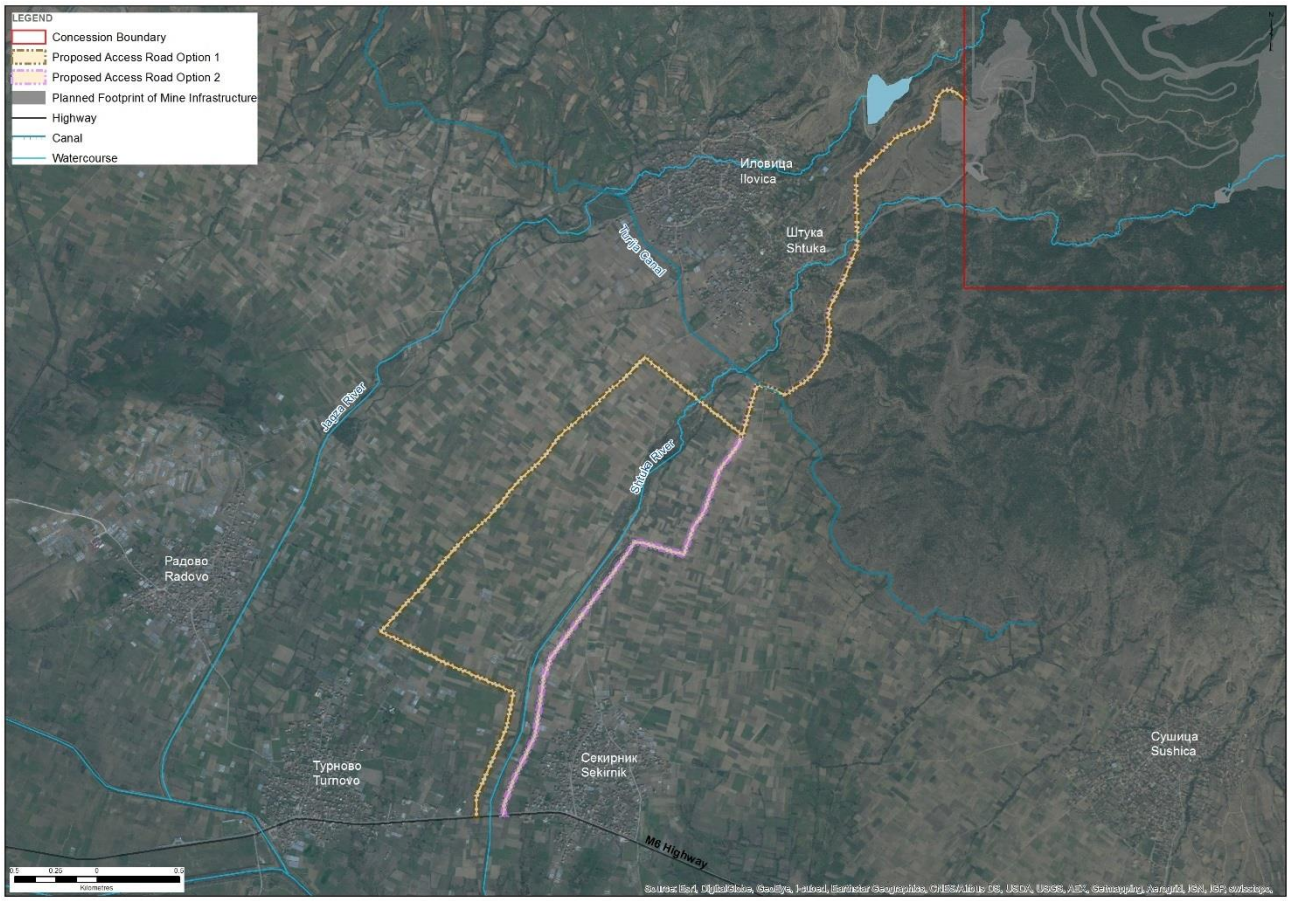

Figure 4: Alternative options under consideration for the project access road

Haul roads will be constructed from the pit to the TMF embankment and the mine workshop area. The road surface will be crushed aggregate. Haul roads will be in use 24 hours per day. The speed limit within the concession area is assumed to be 50 km/h.

All surface water run-off from project infrastructure within the concession area will be diverted to sedimentation ponds, to meet Euromax's zero discharge policy for surface water.

The oxide stockpile will commence construction between year 3 and year 5. As detailed information was not available, the EIA assumes that the maximum volume of oxide ore (5 million tonnes) will be stockpiled from year 3 to the end of mine operations. The oxide ore will be reclaimed from the stockpile and processed through the mill and plant during the final two years of the operations phase.

The EIA assesses the potential impacts of an on-site accommodation facility during the construction phase. During operations, all workers will live in nearby towns and villages.

The electrical power supply for the operations phase will be provided via a new 110kV OHL from the existing substation at Sushica (approximately 7 km from the project site) and a new 110kV OHL from the existing substation at Berovo (approximately 30 km from the project site) to a new substation at the process plant site, where the main transformers will be situated. A medium and low voltage distribution network will supply power from the substation to other site facilities. Diesel-powered generators will also be used during construction until the Project is connected to the existing electricity distribution network.

Two sewage treatment plants will be constructed: one at the plant site and one at the mine workshop.

The proposed on-site waste management facility will be located to the east of the process plant. The waste management facility will be a multi-product waste storage, handling and treatment facility for waste streams which are produced throughout the project life-cycle (non-mining waste).

Water Supply

The major potential source of water supply assessed in the EIA is from the Turija Reservoir via a pipeline to be constructed to the Ilovica Reservoir. The potential use of groundwater from the Strumica valley is still under investigation and so is not considered in the EIA. If groundwater proves to be a viable option for mine water supply, an assessment of impact will be made in appropriate documentation for submission to the Macedonian authorities.

Euromax currently plans to use Ilovica reservoir as a water supply storage reservoir and to share the reservoir with existing users: Strumichko Pole Water Management Company (SPWMC; which supplies irrigation water to Ilovica and Shtuka villages) and Ograzhden Public Utility Enterprise (PUE; which supplies seven villages in Bosilovo Municipality with treated water for domestic purposes). Water for mine supply will be pumped from Ilovica Reservoir to a water storage facility at the process plant site.

Transport

It is expected that the majority of construction personnel will be housed in the construction camp for the duration of construction and as such there is no need for transport to site. A provisional estimate of 40 personal vehicles are expected to enter the site each day. The vast majority of operations personnel are expected to live in the surrounding areas. It is expected that a bus service will be used to transport workers from the surrounding towns and villages.

During construction, between 84 and 115 trucks per month are expected for the delivery of materials. In addition, throughout construction between 2 and 4 diesel fuel tankers per day and between 2 and 5 food delivery trucks per week are expected. Delivery of reagents and fuel will form a large portion of truck activity during operations, totalling between 196 and 260 vehicles per month.

Copper concentrate will be exported from site to the Bulgarian border (and on to the smelter in Bulgaria), with the haulage contractor expected to use 30 tonne articulated trucks with an estimated 210 to 270 trucks traveling each way per month. The option assessed in the EIA is to export the copper concentrate during the night.

Capital and Operating Expenditures

The total capital cost of Project construction is preliminarily estimated at between €425 and €450 million. The procurement of construction and mining equipment is expected to account for the majority of this expenditure. Labour, fuel and light vehicles will represent smaller, but still significant, capital costs during construction.

Operational expenditures are expected to be approximately €95 to €100 million per annum. Mine operation, including equipment and labour, will account for nearly a third (€30 million) of total annual operational expenditures. Reagents and power represent a further third (€36 million) of annual operational costs, while consumables, maintenance materials, equipment and laboratory costs are anticipated to cost €16 million.

Employment

During construction, peak workforce requirements will amount to about 800 full time equivalents (FTEs)[1], 720 (90%) of which are expected to be filled by Macedonian workers. Approximately 80 managerial and technical construction FTEs will be filled by expatriates as needed. Similarly, the majority of operations phase FTEs are expected to be filled by Macedonians (474 positions or 96%), with a small number (18) of managerial roles being filled by expatriates during early mining activities. Expatriate managers will gradually be replaced by local managers mentored and trained during the early years of Project operation.

[1] A full time equivalent (FTE) is the hours worked by a full-time employee, and is calculated based on Macedonian labour conventions, which suggest an eight hour work day, with five days of work per week. This amounts to a FTE of 2,080 hours per annum.

Existing Environmental Conditions

Environmental and social baseline data gathering was completed as part of the EIA. Baseline data provides a characterisation of the existing environmental and social conditions. This characterisation provides a baseline from which the EIA can be used to predict potential environmental and social changes as a result of the Project. The baseline also provides a benchmark against which any future changes can be monitored and managed.

Baseline data gathering commenced in October 2013 and was completed in September 2015; some monitoring is ongoing. Local study areas (LSAs) and regional study areas (RSAs) were established for the baseline study. For the biological and physical disciplines, the areas are generally delineated based upon natural geographic boundaries (e.g. river catchments) or a polygon based upon a set radius from the site (e.g. 10 km from the centre of the site). For the socio-economic discipline, studies focussed on the communities, namely the villages in the municipalities of Bosilovo and Novo Selo and the town of Strumica.

Geology

The Ilovica copper-gold deposit is situated at the southern margin of a northwest-southeast striking Cenozoic magmatic arc, which covers part of central Romania, Serbia, Macedonia, southern Bulgaria, northern Greece and western Turkey. The deposit is situated on the northern border of the Strumica half-graben and Ograzhden granite massif, which is one of a number of Neogene-age sedimentary basins in Macedonia.

The Ilovica copper-gold deposit is one of several porphyry systems in eastern Macedonia and northern Greece. The Ilovica deposit sits within a mineralised section of a porphyry system, which is approximately 1.5 km in diameter. There is clear evidence of active faulting along the southern and western borders of the Strumica half-graben. Earthquakes have been reported in the northwest part of the Strumica half-graben.

Geomorphology, Soils and Land Use Capability

The majority of the LSA is dominated by rugged low altitude mountains which contrast with the lowland agricultural zone of the Strumica valley. The highest summit in the LSA is Anovi at 878 masl (part of Mount Ograzhden); the lowest elevation is located in the southwest corner of the LSA along the Shtuka River at about 256 masl. Slope gradients on the mountains range from moderately steep (30% to 60%) to very steep (>60%). In lowland areas, slope gradients are mostly <15%.

The geomorphology of the LSA is dominated by complex colluvial deposits (soil, debris or rocks that have been moved by gravity) and weathered bedrock in the mountains and alluvial deposits (material that has been deposited by running water) in the lowland plains. Colluvial soils are well- to rapidly-drained soils on moderately steep to very steep slopes. Weathered bedrock is decomposed or disintegrated rock in situ, broken down by the process of mechanical and/or chemical weathering in the absence of downslope movement. Alluvial materials are associated with floodplains, terraces, fans and deltas. In the LSA, they are characterised by well- to poorly-drained, coarse- to medium-textured soils with rounded to sub-rounded coarse fragments.

The most common soil map units in the LSA are those derived from colluvial deposits. These soils are located in the highland zone (mountainous regions) and are characterised by moderately well to rapidly drained soils of variable texture and coarse fragment contents (primarily angular to subangular). These soils developed on high relief (i.e., moderately steep to very steep) slopes, dominated by Regosols and Cambisols, occupying about 50% of the total LSA (about 64% of the highland zone).

The LSA is prone to geohazards due to the mountainous landscape, intense rainfalls, aridity and highly erodible soils. The majority of mass movement features in the LSA were recorded as inactive (not recently moving) and relic (historical) landslides.

Climate

Key meteorological parameters were recorded between 2013 and 2015 to characterise local climate conditions. The area has a mildly continental climate with typical seasonality, although some effects on measured conditions, such as higher wind speed, may be attributed to the elevation and position of the monitoring station.

The following key trends were identified:

- Temperature is highest during the months of June to September with peak temperatures generally recorded in August and the lowest temperatures recorded during the winter months, particularly December and January. The same trends are seen in the solar radiation data.
- Relative humidity displays the same seasonal variation as temperature, but with lower relative humidity during the summer months (approximately May to September) and higher relative humidity during the autumn and winter months (approximately October to March).
- Precipitation data for the EOX station suggests that there are a large number of low intensity rainfall days in the spring and winter, with shorter duration high intensity rainfall days tending to occur during the summer months. Monthly precipitation levels in the region tend to be consistent throughout the year with slight increases in June and towards the end of the year.
- The wind direction at the EOX meteorological station is predominantly south-easterly in direction. This is in contrast to wind directions at Sandanski station which are predominantly north to north-westerly. The location of the EOX monitoring station within the Ograzhden mountain range is likely to influence the wind direction due to channelling of the wind. The same effect is potentially also observed in the wind speed data where the average monthly wind speeds at the EOX station are greater than those recorded at the Strumica station. Wind speeds in the area are generally greater during the spring and early summer and are slightly lower for the remainder of the year.

Water Quantity

The baseline report on water quantity described the baseline conditions of surface water and groundwater in the local study area in qualitative and quantitative terms.

The proposed mine site is located in the upper Jazga and Shtuka catchments. Ilovica and Shtuka villages with their water supply systems, including the Ilovica Reservoir, are situated downstream of the proposed site. Further downstream, the Jazga and Shtuka catchments discharge surface water and groundwater into the Strumica valley where they contribute to the flow in the Turija and Strumica Rivers and groundwater is abstracted for agricultural production.

Groundwater

Baseline groundwater data was collected through testing conducted in 2015. The testing found that the geology of the deposit/open pit area has higher permeability (a measure of the ability for water to move through rock) near the surface and lower permeability near the base of the pit.

Observations during drilling indicated that the granite underlying the TMF is weathered and highly fractured. Permeability values were higher than those in the deposit. The weathered and fractured upper surface of the granite underlying the TMF appears to form a minor aquifer that is in hydraulic continuity with the Shtuka River.

Groundwater underlies Ilovica and Shtuka villages at a relatively shallow depth. The depth to water correlates closely with proximity to the Jazga and Shtuka Rivers, with wells located close to rivers showing the shallowest depth to water and those further away from the river showing greater depths to water. A survey undertaken in 2013 identified approximately 60 wells and boreholes and two springs that are used for water supply purposes in the two villages.

The northern side of the Strumica Plain is underlain by a substantial thickness of alluvial deposits. The alluvial deposits support only a very few public or industrial water supply boreholes in the vicinity of the local study area (the public supply source for Sushica village and the dairy at Radovo). However, groundwater is a major

source of water supply for agriculture on the Strumica Plain. Approximately 350 irrigation boreholes were identified in a survey of the area around Radovo, Turnovo and Sekirnik.

Surface Water-Groundwater Interaction

Baseline studies found that the Jazga River loses small volumes of water to the groundwater system as the river passes the proposed open pit.

In the Shtuka valley, there is a complex system of interaction between groundwater and surface water. Studies showed that approximately 30% of surface water flow was lost within the TMF footprint. Immediately downstream of the TMF location, surface water flow increases due to inflow from groundwater in alluvial gravels.

Jazga River

Flows in the upstream reaches of the Jazga River were observed year round during baseline monitoring.

Immediately downstream of the Ilovica Reservoir, flows are very low and are mainly fed by minor seepage through the reservoir embankment, supplemented by spills from the reservoir when it is full. The SPWMC estimates the reservoir spills 54% of the time. Under dry weather conditions, flows increase slightly to the south of Ilovica as a result of inflow from the groundwater system.

The Jazga River is used for public water supply system in Ilovica and is used for domestic purposes (other than drinking) and for irrigation of plots and gardens. The water abstracted at the intake has been adequate to meet the (non-potable) needs of the residents of Ilovica. The only time that the Ilovica distribution system was supplied from the water treatment works was during repair works to the intake in late 2008 and early 2009.

The Ilovica Reservoir supplies agriculture and public water supply for Bosilovo, Sekirnik, Turnovo, Radovo, Borievo, Ednokukjevo and Robovo, plus intermittent supplies to Shtuka and Ilovica. Peak demand occurs in the summer months (between July and September) when agricultural and domestic water demand increase. Information provided by SPWMC indicates that the area irrigated by the reservoir is approximately 20 ha and about 2,500 people in Ilovica and Shtuka use the water for irrigation.

Ilovica Reservoir

Shtuka River

Flow in the upstream reaches of the Shtuka River were observed to flow year round during baseline monitoring. The river has been observed to dry up and become seasonal between the upper village intake and the lower village intake (both upstream of Shtuka village). Under dry weather conditions, the river channel through Shtuka village and further downstream has been observed to be mainly dry with occasional pools.

Two intakes on the Shtuka River are used for public water supply system to Shtuka. Water is used for domestic purposes (including drinking) and irrigation of plots and gardens. The water abstracted at the intake has not been adequate to meet the needs of the residents of Shtuka and is augmented by treated water supply from the Ilovica water treatment works for an average of 39 days each year during summer months.

Fluvial flood modelling (supported by anecdotal evidence) indicates that the baseline risk of minor scale flooding is likely to occur every few years.

Water Quality

The majority of waterbodies monitored during the baseline campaign present relatively clean, unimpacted waters dominated by calcium, magnesium and bicarbonate. There has been little evidence of seasonal variation.

Several surface water and groundwater monitoring points showed different water chemistry, generally believed to be influenced by water draining from mineralised zones. These monitoring points showed higher concentrations of sulphate, iron and copper and lower alkalinities and pH.

A minor tributary to the Jazga River passes in close proximity to the deposit. Water quality in this tributary shows significant alkalinity towards the top of the tributary, but as the stream flowed past the mineralised zone alkalinity and pH decreased.

Shallow groundwater in the vicinity of Ilovica, Shtuka and Sushica, as well as surface waters downgradient, has been impacted by anthropogenic activities such as wastewater discharges and agricultural practices, as indicated by elevated nitrate and ammonia, sometimes exceeding drinking water guidelines.

Surface waters and groundwaters in the Strumica Plain had higher alkalinities and thus a more neutral pH. One of the exceptions to this trend was the piped spring Bela Voda (JZSP10) in the Jazga catchment. The major ions, as well as parameters like strontium, were elevated at this spring, which suggested an older or deeper groundwater source than other springs in the upper catchment.

Sediment

Suspended sediment sampling was undertaken at three locations: one in the Jazga River (at the village intake location) and two in the Shtuka River (one at the village intake location and one at an undisturbed upstream location). Only the upstream location on the Shtuka River currently meets the IFC guideline for total suspended solids. The other locations did not meet the IFC guideline, which is likely to be associated with exploration activities including road building and vehicle movements. Therefore, it is considered that results from the upstream location on the Shtuka are most likely to represent baseline (i.e. pre-project) conditions, and should be applied as the project standard along the full stretch of both watercourses.

The capacity of the Ilovica Reservoir has decreased over time due to sedimentation from the Jazga and Treska[2] catchments. The reservoir has an average annual sediment accumulation rate of approximately 2,300 m^3/year.

Chemical analyses of sediments collected from the Jazga and Shtuka Rivers showed that aluminium and iron were the most abundant elements in the stream sediments. Concentrations for major ions such as Al, Ca, K, Mg and Fe seemed to be higher in samples taken in the Jazga catchment than in the Shtuka catchment. Copper, iron and sulphur levels were elevated at a stream sampling point close to the deposit (within the Jazga catchment). Lead was also elevated at this sampling location, with levels more than double that recorded at other sites.

Noise

Measured noise levels at the majority of receptors in the study area were found to be predominantly influenced by natural noise sources. These included wildlife, such as birds and insects and also domesticated animals including chickens, cows, dogs and pigs, as well as wind-induced noise from rustling vegetation. This is consistent with the rural nature of the study area, in which the industrial and commercial mechanized noise sources are largely absent. At monitoring locations with significant vegetative cover, such as Sekirnik, wind-induced rustling of vegetation was a significant contributor to the ambient noise environment.

The primary anthropogenic noise source in the study area is the M6 highway from Strumica to Bulgaria. Traffic flows on the road are typically low, however, there is a significant component of articulated HGVs.

[2] Within the local study area, there is a small tributary to the Jazga River, known locally as the Treska River, which flows directly into Ilovica Reservoir. This small river system should not be confused with the much larger Treska River located within the Vardar catchment.

Villages through which the M6 passes typically exhibited higher noise levels, with the highest ambient noise levels recorded at monitoring locations in Novo Konjarevo, Samuilovo and Novo Selo.

In villages close to the M6 where the monitoring locations were sited away from the road, including Sekirnik and Turnovo, noise levels were comparable with villages remote from major roads. This suggests that traffic noise alone is the dominant factor in the higher noise levels in villages close to the road, rather than additional anthropogenic noise associated with settlements on a major transport route.

Air Quality

Overall, the baseline monitoring indicates that ambient air quality within the study area is good and that sources of local atmospheric pollution are limited.

Ambient nitrogen dioxide (NO_2) concentrations were relatively consistent across the study area (slightly lower in more rural locations and higher at locations closer to roads or combustion sources in villages). Concentrations were substantially below limits[3] for the protection of human health and for the protection of habitats/vegetation.

Sulphur dioxide (SO_2) concentrations were consistent across the study area. Concentrations were substantially below limits for the protection of human health and for the protection of habitats/vegetation.

Ozone (O_3) concentrations were high across the study area, with maximum concentrations exceeding the limit for the protection of human health. This reflects the situation throughout Macedonia, with monitoring conducted by the Ministry of Environment and Physical Planning recording exceedances at Skopje and the eastern and western zones. The MOEPP report states that the highest ozone concentrations occur in rural areas far away from the emission sources. Ozone will react with NO_X in air to form NO_2, which explains why higher concentrations would typically be found where lower concentrations of NO_X are present.

Measured levels of deposited dust were typically higher closer to roadside locations than in other parts of the villages or in rural locations. The levels of measured deposited dust are influenced by meteorological conditions, with higher concentrations measured during dry summer periods.

Monitoring of particulate matter (PM_{10} and $PM_{2.5}$) indicates that annual average levels were substantially below the project limits, however short term periods of elevated concentrations were observed in the data.

Biodiversity and Ecology

Habitat diversity in the vicinity of the Project includes intensive arable production in the Strumica valley which contrasts with the unimproved pastures that become more species-rich with greater altitude toward the sources of the Jazga and Shtuka streams. Forest communities are represented by broadleaved riverine fringes, boreo-alpine riparian galleries and continental forests. Many of the forest communities are subject to licenced and un-licenced felling which in many cases has resulted in large areas of coppice regeneration growth rather than standard trees in evidence. Habitat quality within the LSA is underlined, to some extent, by the presence of species such as the Large Blue butterfly (*Phengaris arion*) a species listed as endangered at the European scale by the IUCN. Much of the LSA is designated by Butterfly Conservation Europe as a Prime Butterfly Area (PBA).

Large blue butterfly (Phengaris arion)
Photo credit: Biomaster

Anthropogenic pressure at the lower altitudes of the LSA has resulted in natural habitats becoming at best semi-natural and more likely modified habitat. In contrast, some forest communities at higher altitudes can be considered more natural owing to the lack of access and related harvesting pressure. Grasslands above

[3] Project-specific limits were established for air quality, noise, water quality and soils in the Environmental Design Criteria (included in Annex 1D to the EIA). The EDC limits were established as a result of a review of limit values established in Macedonian and European Union regulations and other relevant international guidelines and standards.

800 masl are generally more species rich as a result of lower nutrient contribution from grazing animals. The diversity of flora that had developed in these areas appears to be of value to insects.

Biodiversity, especially species richness, has been evaluated within the LSA over a number of years. A total of 271 of the most prominent vascular plant species were recorded within the LSA during baseline surveys. Furthermore, 138 species of fungi were recorded within the LSA with widespread distribution including in pasture, oak and beech forest and pine plantations. Floral and fungal species of conservation concern (SoCC) include bladder campion (*Silene vulgaris*), *Boletus quelletii*, and Caesar's mushroom (*Amanita caesarea*).

A high level of faunal species richness has been recorded within the LSA, with approximately 40% of the butterfly species known to occur in Macedonia, over 50% of herpetofauna (reptiles and amphibians) and 36% of bird species. Coleopterans, dragonflies and other insect groups were collected widely throughout the LSA. Special attention was given to saproxylic beetles due to their conservation status. Numerous faunal species of conservation concern (SoCC) were recorded, with designations including national protection, the European Habitats Directive and the IUCN Red List.

Rosalia Longicorn (Rosalia alpina)
Photo credit: Biomaster

Aquatic habitat surveys targeted communities of aquatic, emergent and marginal vegetation. Four habitat types were recorded: reed bed, willow (*Salix*) woodland, small permanent streams, and ephemeral streams. For aquatic fauna, nine species of fish were captured, all of which were common and widespread with no SoCC noted. Stone crayfish were recorded at numerous sites within the LSA and freshwater crab at one site on the Shtuka River. Stone crayfish is a protected species in Macedonia, listed on Habitats Directive-II and Bern I & III, but has not been evaluated by IUCN.

Cultural Heritage

The cultural heritage findings were classified into three types of cultural heritage: 'living' cultural heritage, intangible cultural heritage and archaeology. An historic structure at Novo Selo is the only nationally designated site within the LSA.

Living Cultural Heritage

Fifty-one potential 'living' cultural heritage receptors were recorded during the baseline study in the LSA. A brief summary of these is presented in the table below.

Location/associated settlement	Cultural heritage receptors
Project footprint	Two receptors were recorded: a spring site with an inscribed memorial stone and a waterfall that is a focal point for collecting Herb-Robert (*Geranium robertianum*), a plant which is used to decorate homes at Easter.
Ilovica	Thirteen receptors were recorded: two cemeteries, a church, a mosque, three sites of religious/ritual significance, five springs and the site of an historic event.
Shtuka	Eight receptors were recorded: two cemeteries, two churches, a site of religious/ritual significance, two springs and the site of an historic event.
Turnovo	Two receptors were recorded: a cemetery and a church.
Sekirnik	Five receptors were recorded: a cemetery, two churches, a communal feature (Sekirnik Park) and a structure of architectural significance.
Sushica	Six receptors were recorded: a cemetery, a church, a communal feature (the Sushica Cultural Centre), a former mosque and two springs.
En-route to Bulgarian border	Six receptors were recorded: four churches, a monastery and a site of religious/ritual significance.
Wider region	Nine receptors were recorded: eight churches and a monastery.

Intangible Cultural Heritage

The following three elements of intangible cultural heritage were recorded during the baseline study: Religious beliefs and practices, traditional music and dance, and a traditional agricultural way of life.

- Orthodox Christianity and Islam are prominent faiths in the region, with Catholicism also practiced by a minority of the population. These religious beliefs are sincerely held and actively practiced throughout the region. Religious holidays and festivals are an important aspect of the cultural heritage of the population.
- Traditional music and dance, relating in particular to the Rusalii tradition, is preserved and commemorated in a number of the settlements, with an annual meeting of Rusalii dance groups held in Sekirnik.
- The traditional agricultural way of life is widespread and is observable in the landscape.

Archaeology

Seventy-six potential archaeological receptors were recorded during the baseline study, with a total of twelve located within, or in close proximity to, the proposed project footprint. These 12 receptors comprise a variety of archaeological site types, including settlements, burials and sites of historical industry. Varnica (AR-01) and Crkvishte (AR-04) are the only receptors in proximity to the project footprint which have been ascribed a date, with both believed to be Late Antiquity period sites. Exact dates remain unknown for the other ten receptors.

St. Demetrius' Church, Ilovica

Benli Tash

Landscape and Visual

The landscape within and surrounding the concession area is not designated or protected. It is attractive, yet reasonably commonplace within the wider region. The project footprint extends into three landscape types: Mountain Forest, Flat Agricultural Land, and Undulating Pasture/Scrub.

Due to its elevated position on the side of the Strumica valley, the mine components may be visible from a large number of receptors. Baseline analysis showed that inhabitants located in the Strumica valley to the south, southwest and west of the concession area may be afforded views of the proposed mine (or part of it). The higher ground to the north and east and the Belasica Mountains to the south prevent any views of the proposed project from these directions and limit the potential visual effects of the project on the Strumica valley.

Socio-economics

The populations of Ilovica (1,907) and Shtuka (781) have similar demographics. Ilovica has a younger population (median age 35.0) than Shtuka (median age 36.0), and more even gender ratio of males to females (51:49 in Ilovica, compared to 54:46 in Shtuka). Ethnically, both communities are predominantly Macedonian, though small Turkish, Roma and Bulgarian[4] populations do exist in Ilovica.

[4] Largely comprised of Bulgarian women who marry into Macedonian households.

Agriculture dominates economic activity in Ilovica and Shtuka. Most households (72%) maintain arable land, and receive an average net agricultural income of €2,690 annually. Some households (34%) also maintain vineyards for personal consumption, or pasturable land (40% of households) for grazing livestock. In terms of crop production, potatoes are grown by most households, while tobacco, peppers and grapes are other common crops. Corn is grown in the fields around the villages for fodder.

Few households in Ilovica and Shtuka raise livestock for sale, with cows and goats being kept in small numbers for milk, chickens for meat and eggs, and pigs for meat alone. A few households keep flocks of sheep, and there are several small-scale (i.e. 50 head) cattle ranching operations run out of the villages. Supplementing incomes from agricultural activity, some villagers harvest mushrooms on the forested slopes of Ograzhden Mountain for sale at local markets and collection centres, and few keep bees for small-scale honey production.

Non-agricultural industrial activity in the Southeast Region includes small-scale construction, manufacturing, and textiles. The manufacturing industry in Southeast Macedonia is concentrated in Strumica, and services the agricultural industry by producing shipping crates, packaging materials, and other items used by farmers. Food processing and packaging is also an important part of the local manufacturing industry, preparing local agricultural produce and other consumable goods for sale. Some manufacturing of ceramics, bricks and metal products also occurs in the city. Textile producers in the city focus largely on the manufacture of clothing, and boutique sales, while a smaller number produce industrial apparel and protective garments. Mining has not been a major industry in the Southeast Region, with only a small feldspar mine on Ograzhden Mountain and the Buchim Copper and Gold Mine near the town of Radovish.

Incomes in the Southeast Region are lower than any other regions in Macedonia, with average monthly wage incomes of 16,500 denars (€269) at the regional level (influenced by the industrial, manufacturing and service sectors) and 15,600 denars (€256) at the local level (influenced by the greater reliance on agricultural and seasonal employment). Average monthly incomes for local agricultural producers (i.e. not influenced by the wage economy) are lower still at 13,700 denars (€224).

With no access to a shipping port, 93% of Macedonia's freight was transported via roads in 2014. The country's public enterprise rail system extends geographically from north to south and east to west, and across national borders with Kosovo, Serbia and Greece. There are, however, no rail lines that extend into the municipalities of Strumica, Bosilovo or Novo Selo. The Southeast Region is connected by regional highways and roadways and local access roads. The M6 highway is used to access the Southeast Region, and runs through Strumica to the Bulgarian border. Local roads connect adjacent villages (e.g. Ilovica and Shtuka). Traffic on the M6 east of Strumica is mixed, including large trucks, personal vehicles (e.g. pick-ups, cars), motorcycles, tractors, bicycles, horse and cart, and pedestrians.

Agricultural production along the Ilovica/Shtuka road

Cattle grazing on the hills above Ilovica

Environmental and Social Impacts

The following section presents the predicted environmental and social impacts associated with Project activities. These impacts are predicted based upon spatial analysis and qualitative and quantitative modelling. In most cases, the impact assessments have taken a conservative approach by adopting a 'worst case' scenario. The impacts presented below include the application of mitigation measures to avoid, minimise, restore or offset the impacts presented above. With the application of these mitigation measures, the majority of residual impacts are reduced to low or negligible impact classification.

Geomorphology, soils and land use capability

The Project will result in the permanent loss of forested land in the Shtuka Valley for the TMF and the loss of forested land in the mine pit area. Due to the requirement to prevent deep rooting trees from establishing on the closed TMF (to prevent disturbance to the capping layer), 250 ha of land previously suitable for forestry will not be returned to forestry after the closure of the mine. Instead, the TMF will be capped with a layer of material (e.g. rock, soil) that will enable vegetation growth. Vegetation on the TMF will include grassland and scrub which is suitable for grazing, subject to long-term monitoring of soil and vegetation quality, including ecological health and risk assessment.

Effects to agricultural land use are minor as the only agricultural land lost is due to the construction of the access road. Construction of the road will be routed to minimise loss of productive agricultural land.

Access to grazing land within the concession area will be restricted during the lifetime of the Project. Upon closure of the mine, restoration and revegetation of the site will return grazing land to local use. The addition of suitable grazing land on the TMF results in a low impact classification overall.

Erosion is predicted to occur during the construction phase due to the exposure of soil surfaces to erosive forces during the construction of the haul road, access roads, the pre-strip area of the open pit, the TMF starter embankment and deforestation of the TMF starter area. Installation of erosion controls (e.g. silt fences, ditches, rock check dams, temporary surface water diversions, soakaways and small sediment ponds) during the construction phase will limit the magnitude of erosion across the site.

Additional mitigation measures include the stockpiling of soils for reclamation of the site, with stockpiles to be seeded with native plant species to establish vegetation cover and minimise erosion. Waste rock to be used for reclamation of the TMF will be stockpiled at or above the elevation of the final tailings level to minimise double handling and transportation at closure.

Through the application of these mitigation measures, all impacts related to geomorphology, soils and land use capability are rated as low or negligible.

Water quantity

Jazga River

In the Jazga River, the Project will result in a reduction in median and low flows due to reduced catchment surface area and losses of flow into the open pit. Reduced flow in the river has implications for wetted perimeter (assessed as a proxy for impacts to aquatic ecology), water supply to Ilovica via the village water intakes and reduced inflow to the Ilovica Reservoir. In relation to water supply to Ilovica, the Municipality of Bosilovo already plans to replace the water supply distribution network in Ilovica and Shtuka and abandon the existing water supply intakes on both the Jazga and Shtuka rivers. Euromax will support the Municipality in the financing, design, planning and implementation of this replacement water supply distribution network and residents of both villages will be permanently connected to the treated water supply system for household (drinking) water. The existing irrigation supply pipe network owned and operated by Strumichko Pole Water Management Company (SPWMC) will also be extended to supply those in Ilovica and Shtuka who 'have need' for irrigation

water from the Ilovica Reservoir but cannot currently access it. Wells and springs in the villages will be unaffected and will remain available for local use, although sampling carried out by the Public Health Institute and Euromax has confirmed the occasional presence of faecal bacteria in these supplies.

Lower in-flows to the Ilovica Reservoir have the potential to negatively impact security of water supply from the reservoir during the closure phase (during construction and operations, Euromax will actively manage water levels in the reservoir via a new water supply pipeline from the Turija Reservoir). Impacts to security of supply after mine closure will be mitigated by the pipeline from Turija Reservoir which will enable SPWMC and PUE to switch the supply of water to the Ilovica WTW from the Ilovica Reservoir to the Turija Reservoir, thereby providing security of supply.

Downstream of the reservoir, lower flows are expected in the downstream reaches of the Jazga River due to reduced spills from the Ilovica Reservoir during the operations phase.

With the application of the mitigation measures, residual impacts to security of supply to Ilovica and the water treatment works are classified as negligible. Residual impacts to wetted perimeter in the upstream reaches of the Jazga are classified as major, while lower flows in the Jazga downstream of the reservoir are classified as a moderate residual impact.

Shtuka River

No significant change in low and median flows is anticipated for the Shtuka River at the point of the village intake and further downstream.

The physical changes to the Shtuka catchment will alter the rainfall-runoff relationship, resulting in increased flood risk at Shtuka village and further downstream after the mine has closed. To mitigate this risk, the storm water dam below the TMF will be designed to provide sufficient flood retention storage to attenuate flood peak flows in Shtuka village and downstream. No increased flood risk is anticipated during project operations, during which time Euromax will be actively managing rainfall runoff from project facilities.

With the application of this mitigation measure, the residual impacts to flood risk in the Shtuka River are predicted to be minor.

Groundwater

Modelling was conducted of potential impacts to groundwater resources in Ilovica, Shtuka and the Strumica Plain (between Ilovica and Turnovo). The modelling found that there would be no discernible change from baseline levels during mine life and post-closure.

Water quality

Jazga River

Initial modelling of water quality impacts in the Jazga River showed major impacts associated with the oxide ore stockpile and spills from the pit lake (predicted to occur 34 years after mine operations cease). Both would result in reductions in the pH (i.e. more acidic water than at baseline) and increased levels of metals and other parameters of concern (including zinc, sulphate, arsenic, cadmium, copper, iron, nickel, lead, aluminium, manganese, and selenium). Due to these water quality impacts and economic considerations, the oxide stockpile is no longer proposed as part of the project and the impacts to water quality in the Jazga and in the Ilovica Reservoir are thus avoided. To mitigate the impacts from the pit lake spill, the overflow will be collected from the pit and piped to a treatment plant where the pH will be neutralised and metal concentrations will be reduced. This will enable the water to be used (e.g. for irrigation) or discharged to the Jazga River or Ilovica Reservoir, depending on the location of the treatment plant.

As a result of these mitigation measures, residual impacts to water quality in the Jazga River and Ilovica Reservoir are classified as negligible.

Shtuka River

Initial modelling showed that water quality impacts in the Shtuka River would occur throughout the lifetime of the project, starting with increased sediment load in construction and increasing throughout mine life and into the closure phase due to runoff from the TMF embankment and seepage from the TMF. The water quality changes include reduced pH (more acidic water) and increased concentrations of metals and other parameters (including zinc, aluminium, arsenic, copper, iron, nitrate, sulphate, WAD-CN [weak acid dissociable cyanide], selenium, manganese, cadmium). To mitigate these impacts, a storm water dam will be constructed downstream of the TMF embankment to attenuate and control discharge of high flows and to store poor quality water and capture sediment. Water quality in the storm water dam will be monitored throughout the operations and closure phases. If monitoring shows the water quality is not acceptable, Euromax will ensure that poor quality water is captured and actively treated to ensure acceptable water quality prior to discharge or reuse. The storm water dam will be constructed prior to stripping of the TMF area and placement of waste rock for the TMF embankment.

Re-evaluation of contaminant containment will be undertaken during detailed design stage, once further data are available on geochemistry and the TMF design has been re-evaluated..

With the application of these mitigation measures, the residual impacts to water quality in the Shtuka River are currently predicted to be low or negligible for both ecology and security of water supply to the village of Shtuka.

Sushica River

The Sushica River was considered as a receptor in the EIA due to stakeholder concerns. Water quality impacts to the Sushica River may be associated with groundwater contamination associated with the TMF. There is a very low risk of cross-watershed flow occurring between the Shtuka and Sushica watersheds. This risk would depend on the depth and extent of fracturing in the granite of the Shtuka Valley and the elevation to which groundwater levels may rise as a result of the TMF. If cross-flow does occur, and if it carries supernatant water from the TMF, there could be a possibility that this could affect water quality in the Sushica River. However, the likelihood that this would affect the Sushica village water supply is considered to be low.

Further analysis, possibly including field investigations and further groundwater modelling, would be required to improve the confidence in this assessment.

Groundwater

Potential water quality impacts to groundwater were assessed at community water supplies in Ilovica and Shtuka and at irrigation wells between Ilovica and Turnovo. Water quality modelling predicted that no significant change will occur to groundwater quality at any community water supply receptors in Ilovica or Shtuka villages. Minor contamination to groundwater is predicted to peak approximately 14 years after mine closure.

Sediment

The primary source of sediment entering the Jazga River will be the preparation of the pit area during construction. During operations, the mine site will operate on a zero discharge basis, consequently erosion within the site will not affect the Jazga River and TSS in the watercourse will remain similar to baseline levels. During closure, the site will be revegetated to minimise erosion and act as a natural sediment trap.

The pre-strip area of the pit, which is situated on the steep slopes along the ridge line between the Jazga and Shtuka catchments, will be approximately 23 hectares. Exposed surfaces will lead to increased erosion within the catchment, though the natural catchment between the stripping area and watercourse will act as a “buffer strip”; which will effectively act as a natural sediment trap. Exposed surfaces will lead to minor impacts in the Jazga River between the site and Ilovica Reservoir. Best practice will be adopted to minimise erosion and control discharge of sediment. This includes the installation of sediment dams, water management infrastructure and erosion control measures, phased removal of vegetation, and the maintenance or establishment of a vegetated buffer around watercourses. During construction, a temporary sediment pond/sump within the pit area will manage runoff and finer sediment.

Downgradient of the mine, sediment levels will be comparable to baseline levels.

The primary source of sediment entering the Shtuka River will be from stripping of the TMF area during construction; direct rainfall on this area could lead to sediment-laden surface water runoff entering the Shtuka River. During operations, the mine site will operate on a zero discharge basis, consequently erosion within the site will not affect the Shtuka River and TSS in the watercourse will remain similar to baseline levels. During closure, the site will be revegetated to minimise erosion and act as a natural sediment trap. To minimise erosion, the diversion channel will be lined and feature a stilling basin before discharging back to the natural channel of the Shtuka.

To mitigate sediment impacts during the construction phase, a storm water dam with a capacity of 70,000 m^3 will be constructed downstream of the TMF to manage runoff from the TMF embankment. This volume is sufficient to contain the 1 in 25 year, 24 hour rainfall event from the upstream catchment. Full containment of surface water runoff from such an event will ensure sediment laden runoff has time to settle within the storm water dam before discharging to the environment with a TSS concentration of less than 50 mg/l.

With the application of these mitigation measures, the residual impacts from sediment are negligible in both the Jazga and Shtuka Rivers.

Noise and vibration

Initial noise modelling identified moderate and major impacts at Shtuka, Turnovo, Sekirnik, Novo Selo, Samuilovo and Novo Konjarevo, primarily related to construction and operation of the project access road (for Shtuka, Turnovo and Sekirnik) and the night-time export of copper concentrate to Bulgaria (for Novo Selo, Samuilovo and Novo Konjarevo). A number of mitigation measures are required to minimise these impacts, including:

- The cut-fill profile of the road will be used to maximise screening;
- Movement of HGVs to transport copper concentrate will be confined to daytime and evening periods, with departures to be staggered throughout the day (i.e. not travelling in convoys);
- An acoustic barrier will be constructed during the construction phase alongside the access road at Shtuka and maintained for the life of the project;
- An acoustic barrier will be constructed during the operations phase alongside the access road at Sekirnik if access road option 2 is selected;
- Sensitive timing of the highest intensity access road construction works;
- Nearby residents will be consulted prior to access road construction;
- Euromax will consider the use of additional noise protection for properties within 50 m of the access road if the impacts of the road construction are deemed unacceptable by residents; and
- Construction activities with unacceptable noise impacts will be confined to the daytime and evening.

In addition, to prevent any noise impacts to residents of the construction phase worker accommodation camp, layout of the camp will be designed to ensure noise sources are located away from sleeping quarters. Residential buildings will be designed to include appropriate noise insulation.

With the application of these mitigation measures, moderate residual impacts remain at Shtuka, Turnovo and Sekirnik associated with construction of the access road. The short duration of the access road construction works will limit the scale of the noise impacts at individual receptor villages and sensitive timing of noisy works will aid in reducing annoyance. Good community relations and the selection of low-noise plant during the construction works will further assist in minimising impacts. During the programming of access road construction works, the proposed schedule will be discussed with the municipalities and local residents. Actions will then be put in place to minimise noise impacts.

All other residual noise impacts are classified as minor or negligible.

The assessment of potential vibration impacts considered ground-borne vibrations and air overpressure associated with the mining operations and potential impacts on nearby villages. The assessment found that during both the construction and operations phases, vibration impacts will be minor or negligible at all receptors.

Good practice will be adopted to minimise any concerns related to blasting. Blasts will occur during the daytime period only and the proposed blasting schedule will be clearly communicated to neighbouring communities in advance and vibration monitoring will be undertaken in the event that complaints arise. In response to stakeholder concerns, Euromax will undertake a condition survey of all properties in Ilovica and Shtuka prior to commencement of any blasting and will monitor them throughout operations for any change in condition due to blasting.

Air quality

The air quality impact assessment looked at the project's contribution to air quality parameters (NO2, NOx, SO2, CO, TSP, particulate matter, dust, odour) associated with a number of project activities (including earthworks drilling and blasting, traffic on unpaved haul roads, material transfer, ore processing, carbon regeneration, combustion emissions from vehicles and mobile equipment, emergency generators, solid waste landfill, sewage treatment plant).

Impacts to human health were assessed at surrounding villages (Ilovica, Shtuka, Turnovo, Sekirnik and Sushica) with relation to the project's emission as well as the resulting total concentration (including baseline concentrations). For all parameters and at all locations, the results were below the limits for human health. The only parameter which exceeded a threshold was the short term (1 hour) NO2 emissions which, while falling well below the human health limit, were contributing more than 25% of the overall limit value. However, given the low baseline levels of NO2, the resulting total concentration is still well below the limit.

Loss of amenity due to dust deposition was also assessed at the villages listed above. At all locations, the predicted dust deposition fell below the limit values for loss of amenity.

The assessment for impacts to habitats (vegetation) were assessed with relation to emissions of nitrogen oxides and sulphur dioxide. The results for sulphur dioxide were below the limit for the project's emissions and for overall environmental concentrations. For nitrogen oxides, the project is predicted to contribute more than 25% of the limit value, but overall environmental concentration will still be below the limit value for the protection of habitats.

As all air quality impacts were classified as low, no additional mitigation measures are required.

Biodiversity

Terrestrial Habitat and Species

Impacts to terrestrial habitats and species vary by habitat type and quality. Of most concern are impacts to natural habitat and flora and fauna SoCC. However, the more natural forest communities and most species-rich grassland occur at higher elevations than the mine and are impacted less than the average loss across all habitats.

At its maximum extent, the project footprint will result in approximately 400 hectares of habitat loss. The bulk of this habitat loss is from turkey oak forest (approximately 200 hectares), which is widespread across the LSA. Other areas of habitat loss comes from sessile oak forest (82 hectares), oak and hornbeam forest (54 hectares) and natural grassland pastures (43 hectares). The complete avoidance of impacts to beech and beech/pine forest, which only occur at higher elevations, reduces the overall impact to natural forest communities. However, some SoCC are associated with modified forest habitats, including fauna such as bats and fungi which are associated with oak and hornbeam forest.

Some forest clearance will be permanent due to the construction of the pit and the TMF, however a conceptual revegetation plan developed for the EIA proposes that much of the site be rehabilitated with forest species which reflect baseline conditions. In addition, flora SoCC will be salvaged during site clearance for use in progressive ecological restoration, revegetation trials will be undertaken during operations, mandatory

environmental training will take place for all workers and contractors, and potential bat roosting locations will be surveyed prior to construction. These mitigations reduce the residual impact to forested habitat to minor, with the exception of forested habitat associated with the TMF which, due to its permanent loss, is classified as a moderate residual impact.

To prevent disturbance to the capping layer of the TMF, the closure surface of the TMF will be unsuitable for deep-rooted vegetation such as forestry. Instead, the surface of the TMF will be revegetated to scrub and grassland suitable for grazing and as habitat for Large Blue butterfly and other invertebrates. This will result in a positive residual impact to the pastures habitat type, with a gain of approximately 200 hectares.

Additional mitigations for terrestrial fauna SoCC include:

- Pre-clearing rapid surveys plus selective SoCC salvage and relocation;
- Where possible clearing will be in a direction that would push mobile species away from the Project area;
- Undertake progressive ecological restoration to minimise impacts to wildlife;
- Develop and apply species action plans for SoCC;
- Placement of artificial bat roosting habitat;
- Implement invasive fauna and flora mitigations;
- Seasonal constraints applied to earthworks (where practicable) and hibernacula for which active searches will be carried out during spring, summer and autumn; and
- Removal of bird nesting habitat outside of the nesting season. Bird scaring techniques used to prevent ground nesting species from using the construction footprint.

As a result of the mitigations presented above, residual impacts to terrestrial flora and fauna SoCC are classified as minor.

Priority Habitat Supporting Endangered Species

The focus of priority habitat recognition has been generating an understanding of the biodiversity features of the Ograzden Prime Butterfly Area (PBA) and associated designating species such as the Large Blue butterfly. The quality of habitat varies across the PBA and the Project footprint avoids much of the best quality habitat.

Although the high biodiversity PBA butterfly zone is avoided, the predicted 9.5% impact to the moderate biodiversity zone resulted in an impact classification of major. Given that the high biodiversity zone was avoided and the Large Blue butterfly was also observed outside the PBA, it is possible that impacts would be classed as low if a fuller understanding of species regional distribution and habitat use was obtained. This species is likely to be under-recorded at the regional scale.

Mitigation measures to minimise impacts to the PBA include avoiding disturbance to high quality pasture at higher elevations (with fences to be installed to prevent traffic access), maintenance of the existing grazing regime (or replication of the grazing regime through artificial means) for the higher elevation grasslands and compensatory habitat creation by revegetating the TMF to grazing pasture and scrub mosaic at closure, designed for suitability for Large Blue butterfly and other invertebrates. With the application of these mitigation measures, the residual impact to the PBA is classified as moderate. This classification incorporates uncertainty regarding the uncertainty of habitat creation on the TMF for the Large Blue. If the habitat creation is successful, the residual impact would be a moderate positive impact to the PBA.

Aquatic Habitat and Species

In the Shtuka River, the main impact to aquatic habitat and species is from the loss of 4 km of natural aquatic habitat when the Shtuka is diverted into the channel around the TMF. As a permanent impact, this results in a major impact consequence. Mitigations for aquatic ecology on the Shtuka include undertaking fish and decapod rescue prior to diversion of the Shtuka River and investigating the feasibility of naturalising the

diversion channel at closure, if possible. Due to the uncertainty of success in naturalising the channel, this mitigation does not alter the residual impact classification which remains at major.

In the Jazga River, lower flows as a result of the project will result in lower suitability for aquatic flora and fauna in both the upstream and downstream reaches. The key impact is in the Ilovica Reservoir, where Project-related water abstraction and reduction in inflows from the Jazga River is predicted to result in increased fluctuation of water levels in the reservoir. As described in the water quantity section, during construction and operations Euromax will manage the water levels in the reservoir to mimic baseline water levels which reduces the residual impact to aquatic ecology to minor.

Cultural heritage

The cultural heritage assessment considered the potential for impacts to 19 'living' cultural heritage sites (sites used for cultural or religious purposes, including churches, mosques, cemeteries, parks and memorials), intangible cultural heritage (practices that are integral to the local culture, such as religious beliefs and practices, traditional music and dance, and traditional agricultural lifestyle) and 10 archaeological sites. The assessment included consideration of ground disturbance through earthmoving or excavation and the effects of noise, vibration, dust or visual changes.

The assessment found that ground disturbance and noise would result in moderate or major impacts to two 'living' cultural heritage sites, one intangible cultural heritage receptor, and five archaeological sites. Other cultural heritage receptors were assessed to have minor or negligible impacts associated with temporary noise, visual or dust disturbance.

'Living' cultural heritage sites

Preslop Spring Memorial Stone is dedicated to a local inhabitant who died during an accident whilst felling and gathering wood in the area. As the memorial stone sits within the project footprint, it is expected that it will be removed during construction. In consultation with the family affected, it is proposed that the stone will be relocated to an area of the concession where it will not be disturbed or damaged and will remain accessible to the family. A photographic record of the stone in its current (original) context has been made.

Shtuchki Vodopad is a waterfall within the Shtuka valley which is a popular recreation spot. The cultural value of this site is derived primarily from the plant Herb-Robert (*Geranium robertianum*) which is gathered there around Easter by the local community. This plant is widely available elsewhere in the landscape. The Cultural Heritage Management Plan will identify alternative accessible locations for this plant and methods of enhancing access to ensure it can be collected, thereby reducing the impact of the loss of this site.

As a result of these mitigation measures, all impacts to 'living' cultural heritage sites are classified as minor or negligible.

Intangible Cultural Heritage

The key source of impact to religious beliefs and practices will be as a result of noise disturbance associated with the construction phase of the Project. Noise modelling indicated that moderate impacts could occur at Ilovica Christian cemetery, Shtuka Christian cemetery, Shtuka Muslim cemetery, Sts. Cyril and Methodius Church, and the Monastery of St. George, although the inclusion of good practice noise mitigation and a sympathetic construction schedule will help to reduce the noise disturbance.

Archaeological Sites

Five archaeological sites sit within the project footprint and are expected to be lost as a result of ground disturbance in the construction or operations phases. They are:

- Anovi – the remains of a former settlement, potentially fortified, which is believed to have been established as a resting place along a road which once existed through the mountains. The antiquity of the site remains unclear. Located within the open pit area of the project footprint.
- Preslop - a burial site with evidence that many of the graves have been illegally excavated by those searching for grave goods. Located within the process plant area of the project footprint.

- Krvavichevo and Golemata Niva - burial sites with evidence that many of the graves have been illegally excavated by those searching for grave goods. Located within the process plant area of the project footprint.
- Gradishte - undated settlement site in the Shtuka valley with evidence of potential fortifications.
- Old Mill – few details are available about this site, but it is representative of widespread use of the Shtuka River for water-powered mills.

Archaeological evaluation and excavation will be undertaken for each site as mitigation, which reduces the residual impact to moderate for four sites (Anovi, Preslop, Krvavichevo and Golemata Niva, and Gradishte) and minor for the fifth site (Old Mill).

Landscape and Visual

Elements of the Project will be visible throughout the LSA. The Project will have an effect on the mountain forest landscape, given the removal of forested areas and the presence of an open pit mine, the tailings management facility (TMF), and associated Project infrastructure. The capping layer on the TMF would not be compatible with deep-rooting vegetation such as timber-producing trees and so reforestation would not be expected in the indefinite future, although reclamation to pasture and scrub, as found in parts of the LSA, will be the favoured end use for the TMF.

The Project's effect on the landscape of the agricultural plains in the Strumica Valley and undulating pastures/scrubland in the hills approaching the Ograzhden Mountain is expected to be less pronounced, with the only changes to the landscape being the addition of the access road and the electric supply corridor.

Visual disturbance will vary by the viewer's location, with some villages affected by permanent changes in the skyline associated with the TMF or pit, whereas lower disturbance is associated with the temporary presence of Project infrastructure. Visual disturbance decreases with distance, so villages that are closer and affected by permanent changes will have a greater degree of disturbance than those at a distance or where views are temporary (e.g. views from a road). The landscape and visual assessment concluded that visual effects will range from low in most communities, to moderate in Ilovica, and to high in some parts of Shtuka which are closest to Project infrastructure.

The following mitigation measures will be incorporated into the construction, operational and closure management plans to reduce the adverse landscape and visual effects of the mine:

- Trees will be planted around the periphery of the mine workshop area to reduce the prominence of the elevated buildings/plant from Shtuka and Ilovica.
- Project lighting will be located away from the prominent summit and southern faces of Čukar.
- The outer face of the TMF embankment will be revegetated at closure to minimise the extent of bare earth visible from the surrounding areas.

Socio-economics

The Project is expected to have a highly positive effect on the economies of Macedonia, the city of Strumica, and the Municipalities of Bosilovo and Novo Selo. The Project's effects on national GDP, national government revenue, and the growth of the mining sector will be of high magnitude and will continue for the life of the Project. The same is true of the Project's effects on municipal government revenues and business development. Consumer spending of employee incomes, while a less pronounced effect, is expected to result in a moderate positive effect on local economic activity over the life of the Project.

As with economic effects, the Project's employment effects are positive. Nationally, the impact of Project employment is positive but low in magnitude, given that most employment is expected to accrue locally. In the local area, the Project's effect on employment is expected to result in a high positive impact, representing a substantial increase in the availability of high-quality, permanent employment. The effect of consumer spending by employees is expected to generate induced employment growth locally, but at a lower magnitude. All of the Project's impacts on employment will be realised in the medium-term (over the life of the Project).

Incomes earned from direct, indirect and induced employment will have a positive impact on incomes at the national and local scale. At the national scale, the impact of Project-generated direct incomes outside the local area is low. While direct incomes will be relatively high, the number of individuals impacted is relatively small compared to the national labour force. Indirect and induced employment will also be generated outside the local area, but incomes associated with these positions are expected to be in line with those in industries in which employment occurs. The Project is not expected to influence wages in sectors outside of mining. As a result, the impact of national indirect and induced incomes is expected to be low.

Locally, the relatively high incomes paid to direct employees are expected to have a high impact, given the Project's maximisation of local employment and high direct wages paid. Project-related indirect and induced employment incomes, while similarly affecting a large number of people locally, will be in line with those in the industries in which employment occurs. As a result, their impact is expected to be less prominent, but still of moderate magnitude. As all income effects are related to Project-generated employment, the impact of incomes will persist over the life of the Project.

The Project's ability to influence population increase or decrease in the local area is limited: most of the workforce is expected to already reside locally. The Project will not result in substantial in-migration that would offset the current trend of out-migration from the region. The Project's effect of slowing out-migration through the provision of employment opportunities is expected to have a negligible impact on population, but one that is permanent.

The Project's effects on community health, safety and security are mixed in direction. The small amount of in-migration will result in continued demand for healthcare services. This is of negligible magnitude given the Project's negligible population impact. The effect of potential accidental injuries on the demand for healthcare services could be considered adverse given their unplanned nature and unknown severity and extent. The impact on healthcare services is, however, expected to be low given the capacity of the system and presence of an on-site medical clinic. This on-site clinic could potentially result in a positive effect on local healthcare services, providing for the medical needs of employees. Given the number of people employed by the Project, this would be a moderate positive impact.

Effects to quality of life as a result of the Project are similarly mixed in direction. The Project's positive effects on community investment and income generation are moderate to high (respectively) and will persist throughout the life of the Project. The Project's adverse effects of increased noise and heavy truck traffic, alteration of the visual environment, and generation of perceptions of harm are expected to be of high impact when taken together, given that they have the potential to alter peoples' day-to-day lives and that they cannot be fully mitigated. The impact of increased noise in communities beyond guideline values will persist into the medium-term, but not at unacceptable levels given the mitigation/management applied in the noise impact assessment. Perceptions of harm may extend beyond operations into the long-term due to perception that the environment is contaminated, and some people may not accept that reclamation has addressed any potential environmental issues. The impact of the alteration of the visual environment for those in the viewshed of the mine (particularly the TMF) is expected to be permanent.

The Project's effect on transport infrastructure and utilities is expected to be of low impact, not substantially changing current conditions. The replacement of the water reticulation system in Ilovica and Shtuka has the potential to have a moderately positive impact on water distribution and treatment systems in both villages, and a negligible adverse impact on the cost of water for users.

Project effects on land use in the local area are expected to have a negative impact on agriculture, forestry, and other land uses. The removal of arable and grazing land due to Project land-take is expected to have a high impact on those who currently use that land, particularly given the relative lack of suitable alternative grazing land with access to water in the area. The removal of forestry land for the TMF is expected to have high impact on users. Though the Forestry Management Company and other users (e.g. fuel wood collectors) will be able to continue operating in other forested parts of the Ograzhden Mountain, the land over the TMF will no longer produce forestry resources, effectively removing forestry land permanently. The Project's land take will also temporarily displace other land users (e.g. recreational hunters in the concession area, beekeepers on the slopes of the Ograzhden Mountain, and mushroom harvesters in the forested areas). The

number of individuals affected by these displacements is small and in most cases they are not primary livelihood activities.

Overall, the Project is expected to have substantial economic benefits to the Republic of Macedonia, representing a major contributor to national economic activity and government revenues. It will also benefit the local economy through procurement of goods and services, payment of municipal royalties, employment, and associated incomes. The Project is not expected result in important population or demographic change in local communities, or the associated changes in demand for and pressure on public infrastructure and community services. Project-related impacts on community health, safety and security, and on the quality of life for residents of nearby communities (primarily in Ilovica and Shtuka), have the potential to be both positive (e.g. community development, increased incomes, medical services on site) and negative (e.g. noise along roads, changes to the visual environment, increased traffic). Positive effects will be supported by benefit enhancement measures, while negative effects will be minimised to the greatest extent possible through mitigation. The Project's effects on land use will be mitigated through the implementation of a Land Acquisition Framework and a Livelihood Restoration Plan.

Environmental and Social Management Plans

Environmental and social management plans will provide a framework for the implementation of mitigation measures and monitoring required to help avoid or minimise adverse impacts and to optimise beneficial effects of the Project. These management plans will be adopted by Euromax and developed throughout the life of the Project to form live management plans and company policies which will be updated on a regular basis throughout the life of the Project. The management plans presented below may change after consultation with stakeholders, based on their suggestions and feedback.

The plans will be aligned with relevant international good practice guidelines including the EBRD Environmental and Social Policy (2014) including Performance Requirements, IFC Performance Standards (2012), International Cyanide Management Code, Equator Principles and Sustainable Development Policies of ICMM, as well as meeting Macedonian Legislation.

Contractors working on the Project will be required to adhere to the obligations of the environmental and social management plans and their ability to do this will be established during the pre-qualification and bidding phases, with requirements included in relevant contract clauses. Contractors will be required to submit health, safety and environment plans, or demonstrate their understanding of these issues to the HSEC Manager for approval prior to commencing work.

An Environmental and Social Management System will be established which will include the following environmental and social management plans, which will be developed in the next stage of the Project:

- Environmental Monitoring Plan
- Water Management Plan
- Sediment and Erosion Control Management Plan
- Construction Management Plan
- Biodiversity Action Plan
- Cultural Heritage Management Plan
- Social Management Plan:
  - Occupational Health and Safety Plan
  - Land Acquisition and Compensation Plan
  - Training and Recruitment Plan
  - Community Investment Plan
  - Community Health, Safety and Security Management Plan
  - Local Procurement Plan
  - Livelihood Restoration Plan
- Closure Plan
- Traffic Management Plan
- Waste Management Plan
- Hazardous Materials Management Plan
- Emergency Preparedness and Response Plan
- Stakeholder Engagement Plan

Conclusion

The EIA presents how positive effects of the Project will be supported by benefit enhancement measures, while negative effects will be minimised to the greatest extent possible through management and mitigation measures. The EIA demonstrates that, with the successful implementation of the mitigation measures and management plans presented herein, any adverse environmental and social impacts identified are considered acceptable throughout the life of the Project.

All residual impacts identified for geomorphology, soils and land use capability, water quality and quantity, sediment and vibration, are low or negligible. The following residual impacts were identified as moderate or high and warrant reference in this conclusion:

- Noise in Shtuka, Turnovo and Sekirnik during access road construction has potential to present a moderate residual impact. Mitigation has been presented, but may not fully mitigate the impacts. Community consultation and sensitive working will be maintained throughout the construction period;
- Noise during religious practices at Ilovica Muslim cemetery, Ilovica Christian cemetery, Shtuka Christian cemetery and Sts. Cyril and Methodius Church during construction has potential to present a moderate residual impact. Mitigation has been presented, but may not fully mitigate the impacts. Community consultation and sensitive working will be maintained throughout the construction period;
- Land take of habitats supporting endangered species in the Ograzhden Prime Butterfly Area has the potential to have a moderate residual impact. However Euromax has committed to maintain the existing grazing regime (or replicate through artificial means) and avoid disturbance to high quality pasture at higher elevations and revegetation of the TMF to pasture and scrub mosaic at closure, designed for suitability for Large Blue butterfly and other invertebrates. In line with the suggestions of Butterfly Conservation Europe, Euromax will work with the Macedonian Entomological Society (ENTOMAK) to establish net gain to the biodiversity of an extended range Prime Butterfly Area;
- The placement of the TMF within the Shtuka river valley, with a loss of 4 km of natural aquatic habitat when the Shtuka is diverted into the diversion channel around the TMF has the potential to have a high residual impact. The decapods will be translocated and at closure the diversion channel will be restored to a natural channel as far as possible while maintaining engineering design criteria and function;
- Despite archaeological evaluation and excavation proposed as mitigation and management at five archaeological sites (Anovi, Preslop, Krvavichevo and Golemata Niva, Gradishte and the old mill) which are located within the direct footprint of the Project, a moderate residual impact may result. Strumica Museum has been engaged by Euromax to implement this mitigation and with successful execution of the CHMP, the residual impact would be reduced;
- Project components altering the visual character of the landscape may present a residual impact. Revegetation and restoration will partially mitigate this, however a permanent visual impact will remain;
- The Project will result in the permanent loss of productive forestry land-use over the reclaimed TMF, which results in a high residual impact on forest land use. Euromax has committed to revegetation of the TMF to pasture and scrub mosaic at closure, designed for suitability for Large Blue butterfly and other invertebrates, which has the potential to have a net positive impact on biodiversity at closure.

Despite these residual impacts, the Project is expected to have substantial economic benefits to the Republic of Macedonia, representing a major contributor to national economic activity and government revenues and benefits to the local economy. In addition, positive impacts on the quality of life for residents of nearby communities (primarily in the Municipalities of Bosilovo and Novo Selo and more broadly in the Strumica region) will include community development, increased incomes and improved infrastructure and services.

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