

Ambient Conditions

The project area is characterised by a dry, continental interior climate with extremes of temperature from high summer temperatures to very cold winter temperatures. Spring months are characterised by frequent dust storms which can adversely impact mining-related operations and disrupt air transport. Rainfall is under 100 mm annually with a significant excess of evaporation over rainfall.

The Project is located in a remote area with no existing industrial facilities in the vicinity of the MLA, thus baseline studies show that air quality in the project area is good except for high natural dust concentrations in the air in the Gobi region, particularly associated with seasonal dust storms. Dust concentrations are generally higher in areas of overgrazing and in heavily disturbed areas such as along roads. Dust plumes are clearly visible along many of the highways.

No permanent settlements exist within a 10 km radius of the mine site. The nearest soum centre, Khanbogd, is located approximately 45 km to the north-east. Hence there are no sensitive community receptors close to the mining and construction operations in the MLA. However, wildlife and herders are potential receptors of noise associated with heavy vehicle traffic on the Oyu Tolgoi-Gashuun Sukhait road and the construction of the Gunii Hooloi water supply pipeline. Baseline noise surveys show that noise levels are varied but within IFC guideline limits and are dependent on irregular localised noise sources such as road traffic.

Vibration monitoring shows that levels decrease with distance from the OT site and that current blasting has no measurable effect outside the MLA boundary.

Pollution Prevention and Resource Conservation

Water is one of the most critical aspects of the project in relation to environmental and social impacts and management. OT has considered water in a strategic regional context, examining its role in cross cutting ecosystem services affecting local communities and herders. OT is committed to working with the local communities for the life of the operation to ensure that they are not negatively impacted by the project's use of water and that improved water management practices are applied by all users. Over grazing in the area is occurring and thus water resource management must carefully consider influx to the region which would place additional burdens on the carrying capacity of the land. Provision of additional water resources for herders could worsen the over-grazing conditions but the Project will ensure that existing herders are not impacted.

Groundwater occurrence in the project area can be summarised as follows (i) Deep basins (up to 400 m depth) filled with clastic sediments containing large volumes of generally brackish groundwater with minimal recharge. These water sources are not generally used and to date only limited connectivity to upper aquifers systems has been identified in one small area (one herder well). Less than 20% of the available water resources will be consumed, leaving water for other users in the future. OT has undertaken hydrogeological evaluations of the deep basins around the project, including an assessment of the water resource, its sustainability and the potential for impact on other groundwater users, fauna and flora. Intermediate basins (~100m depth) at the

edge of the granite massifs filled with coarse-grained sediments and recharged with water flowing off the massif. One of these basins adjacent to Khanbogd soum centre is intended to be exploited for the township's water supply. Hydrogeological assessments are continuing. (ii) Small amounts of water present in the upper sections of the bedrock (at various depths, but 10-50 m depth in the vicinity of the MLA) present in weathered and fractured bedrock. This groundwater has been exploited for mine construction purposes and, as construction is completed, OT will switch over to the Gunii Hooloi supply. (iii) Shallow groundwater (typically 2-5 m below the ground surface) present in the alluvium within the stream beds in the project area. This is typically fresh water, which is recharged annually, and is the principal sources of groundwater used by herders and wildlife, and also supports groundwater-dependent vegetation.

OT has sought to mitigate the impact of its operations through appropriate design and planning. The network of wells installed into the deep aquifers of the Gunii Hooloi basin, which extends some 75 km northeast of the MLA, have been designed to minimise the drawdown in the basin. The layout of the wells has been derived from a groundwater model for the Gunii Hooloi basin. This model has been developed to enable the water resource and its interaction with the surrounding formation to be managed, and is subject to on-going improvement and evaluation.

Khanbogd soum centre is currently reliant for its water supply on a few shallow groundwater wells, with further groundwater exploitation limited by a lack of understanding of the local aquifers. To address these water supply issues OT has completed a geophysical appraisal of the local aquifers and is undertaking hydrogeological investigation and detailed assessment of a deeper water resource which is located outside the soum centre. The Asian Development Bank (ADB) is planning to finance the development of this water resource to provide a piped water supply into the soum centre.

Surface water in the project area of influence is limited (largely due to the low annual rainfall). Other than the intermittent summer flows in the watercourses, it is restricted to a few springs in the major watercourses and around the periphery of the Khanbogd Massif.

Although surface water is limited, the most significant ephemeral watercourses within the project area of influence is the Undai. It is called a river locally but is dry most of the year. The Southern Oyu pit excavation will extend into the Undai watercourse and the waste rock dump is planned to lie across the course of the Undai with the loss of the Bor Ovoo spring and associated impacts on both wildlife and herders. To avoid any significant impact on the surface and groundwater flow in the Undai, and the herders and fauna and flora reliant on this flow downstream of the MLA, the Undai will be diverted around the operations, and a replacement spring installed in the Undai watercourse downstream of the project fence line which will be accessible for herders and wildlife.

This diversion of the Undai, and the creation of replacement spring, will be constructed in accordance with the Government-agreed engineering design requirements. The design of these and the location of the spring have also been discussed with the herders, and are designed to provide a sustainable permanent solution which will not require future maintenance, and will protect downstream water users from disrupted water flow.

OT recognises that water in the southern Gobi region is a very valuable and finite resource and is focused on minimising water use throughout all aspects of the project. To this end water recycling forms a key part of this plan, as follows (i) 84% of production water will be recycled for use on the plant site with the remaining 16% of additional water required for the project being supplied from the ground water reserves in Gunii Hooloi, (ii) 80% of drinking and public use water will be treated and recycled into the production water and (iii) 50% of water used for cleaning machinery and equipment will be re-used.

Given that some hydrological uncertainties remain, OT is monitoring the groundwater level in the vicinity of herder wells and springs through a network of dedicated shallow bores located adjacent to the herder wells. The results are being used to develop a robust dataset of baseline water levels, which enable OT and the herders to appreciate the seasonal variations in water levels in the herder wells and the river bed aquifers. The monitoring by OT is complemented by the independent participatory groundwater monitoring with the herders which is supported by the training and equipment provided by OT.

Based on the monitoring data collected by OT to date, the water levels across the project area of influence appear to be stable with only small fluctuations recorded. These small fluctuations are considered to reflect the limited use of the aquifers by the herders and the annual recharge of these aquifers by the summer rain events. OT fully understands and appreciates the critical importance of water to the on-going development of the southern Gobi region. It is committed to playing a leadership role together with other public and private sector partners to develop a model of water use for the region that is as efficient and as sustainable as possible.

Waste

Flotation tailings will be thickened to 64% solids before pumping to the tailings storage facility (TSF). Water from the TSF will be recycled back to the processing plant. The selected TSF site is adjacent to the open pit for operational reasons and to maximise the use of suitable land within the MLA that will not compromise future mining activities. The TSF will be lined with clay to minimise any downward seepage into soils and groundwater.

Waste rock will only be produced from the open pit as rock extracted from the underground operations is almost entirely ore, due to the mining method which creates little waste. The Waste Rock Dump (WRD) is located within the MLA, adjacent to the open pit to reduce haulage distances. It will form a semi-circular structure around the southern part of the open pit and reach an ultimate height of 90 m above the surrounding land surface.

Non-hazardous non-mining wastes are currently sent to a temporary waste management facility. A new permanent fully engineered facility is being constructed after which the temporary facility will be rehabilitated.

Hazardous Materials

The ore will pass through a grinding and flotation circuit typical of porphyry copper processing with no unusual features or equipment. Reagents required for ore processing (eg: frothers and

settling agents) will be managed according to good international industry practice and will be obtained from international suppliers.

Other hazardous materials are fuels and lubricants which will also be managed in accordance with good international industry practice with recycling of used oils.

Air Quality & Greenhouse Gas Emissions

The baseline studies show that air quality in the Oyu Tolgoi area is unaffected by industrial emissions. However, there are sometimes very high natural dust concentrations in the air in the southern Gobi region, particularly associated with seasonal dust storms. Dust concentrations are generally higher in areas of overgrazing, vehicle traffic and mineral exploration drilling and at heavily disturbed areas such as roads, exploration camp and drilling sites. Dust plumes are clearly visible along many of the highways accessed by mining-related vehicles, and are also very apparent along the existing “coal road” to the Chinese border.

The long-term climate change trend for temperature is a steady increase which is not expected to have any significant effects on the project. The same trend predicts a marginal decrease in rainfall which is not expected to affect project operations as the principal source of water is the Gunii Hooloi deep aquifer. Conditions for herder wells (which exploit the shallow aquifer) could be affected and OT LLC has designed a programme of well monitoring to assess changes over time.

Construction activities generate dust through the operation of construction traffic, cut and fill operations, construction and use of access roads and the preparation of camps and other infrastructure. Construction phase impacts are expected to be minor and transient; a potential adverse impact is in relation to dust nuisance to herders and vegetation along the Oyu Tolgoi to Gashuun Sukhait road prior to surface sealing. These impacts are short term and OT LLC has offered relocation to the closest herders. International good practice measures will be used to minimise any adverse impacts, should they arise. The operation of mobile mining equipment, process heaters, power generation and the ore processing plant will lead to the generation of gaseous emissions to the atmosphere.

A dispersion modelling assessment has been undertaken in order to predict the potential impacts to air quality associated with the operations. Although the modelling predicts that levels of some pollutants could at certain times exceed ambient air quality standards, the remoteness of the area and lack of nearby residents mean that project activities will not adversely impact permanent herder winter shelters which are located at least 10 km from the centre of the MLA. The arid climate and high evaporation levels will mean that dust treatment will be required for roads, the TSF and, potentially, other project features.

Most recently, during the preparation of the ESIA in 2010-12, additional activities have been undertaken, including: re-evaluation of dust modelling results for the Tailings Storage Facility (TSF); re-running the air dispersion model to take account of the current plant design and layout; modelling of potential climate change scenarios and impacts on the Project. OT is also preparing

a greenhouse gas inventory but this is predicted to be below the level requiring reporting under PS3.