



OYU TOLGOI MINE PROJECT



IESC REPORT

Interim Report: October 2017





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Prepared for:

Senior Lenders Group

Team Members:

Giovanni De Franchi	Project Manager and Team Leader -Environmental Health and Safety Specialist
Robert Snow	Senior Reviewer – Health and Safety and Mining Specialist
Dana Strength	Environmental / Hydrologist Specialist
Amy Sexton and Angela Reeman	Social / Community Specialists
Rowena Smuts and Joanna Treweek	Biodiversity Specialists

RINA Consulting S.p.A.

Società soggetta a direzione e coordinamento amministrativo e finanziario del socio unico RINA S.p.A.
Via San Nazaro, 19 - 16145 Genova
Tel. +39 010 3628148 - Fax +39 010 3621078 - www.rinaconsulting.org - rinaconsulting@rinaconsulting.org
C.F. / P. IVA / R.I. Genova N. 03476550102 - Cap. Soc. € 20.000.000,00 i.v.

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ACRONYMS

AEMP	Atmospheric Emissions Management Plan
AQMP	Air Quality Monitoring Plan
ARFFT	Aircraft Rescue and Firefighting Team (
BAP	Biodiversity Action Plan
BMEP	Biodiversity Monitoring and Evaluation Programme
BMP	Biodiversity Management Plan
BRMP	Business Resilience Management Plan
CAO	Compliance Advisor Ombudsman
CBM	Core Biodiversity Monitoring
CCFV	Critical Control Field Verification
CCV	Critical Control Verifications
CEMS	Continuous Emissions Monitoring System
CEO	Chief Executive Officer
CH	Cultural Heritage
CHMP	Cultural Heritage Management Plan
CHMS	Cultural Heritage Management System
CHP	Central Heating Plant
CHSSMP	Community Health, Safety & Security Management Plan
CIC	Community Interaction Centre
COS	Coarse Ore Stockpile
CRM	Critical Risk Management
CSE	Community and Stakeholder Engagement
CSETS	Community and Stakeholder Engagement Tracking System
CSP	Communities and Social Performance
CSP MS	Communities and Social Performance Management System
DSF	Development Support Fund
EBRD	European Bank for Reconstruction and Development
EC	Electrical Conductivity
ECAs	Export Credit Agencies
EDC	Export Development Canada
EFIC	Export Finance and Insurance Corporation
EHT	Elected Herder Team
EPRP	Emergency Preparedness and Response Plan
ER	Employee relation
ERP	Emergency Response Plan
ERPr	Emergency Response Procedure
ERT	Emergency Response Team
ESAP	Environment and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMEP	Ecosystem Services Monitoring and Evaluation Plan
GBC	Global Biodiversity Conservation
GH	Gunii Hooloi
GHGs	Greenhouse Gas Emissions
GIIP	Good International Industry Practice
HR	Human Resources

HSE	Health, Safety and Environment
HSEC MS	Health, Safety, Environment and Community Management System
HSEC	Health, Safety, Environment and Community
HSESC	Health, Safety, Environment, Security and Communities
IESC	Independent Environmental and Social Consultant
IEP	Independent Expert Panel
IFC	International Finance Corporation
IFIs	International Financial Institutions
IMP	Influx Management Plan
IWRC	Interim Waste Recycling Center
KCB	KlohnCrippen Berger, Ltd.
KPI	Key Performance Indicator
LBAP	Lender Biodiversity Action Plan
LDCRMP	Land Disturbance Control and Rehabilitation Management Plan
LDP	Land Disturbance Permit
LMP	Labour Management Plan
LTI	Lost Time Injury
LTIFR	LTI Frequency Rate
LUMP	Land Use Management Plan
MAS	Mongolian Academy of Sciences
MDT	Multi-Disciplinary Team
MEGD	Ministry of Environment and Green Development
MIGA	Multi-lateral Guarantee Agency
MLA	Mine License Area
MoC	Management of Change
MUST	Mongolian University of Science and Technology
MWMP	Mineral Waste Management Plan
NAF	Non-acid forming
NoC	Notice of Change
NPPC	Native Plant Propagation Centre
NPI	Net Positive Impact
OMP	Offsets Management Plan
OT	Oyu Tolgoi
OT-GS	Oyu Tolgoi – Gashuun-Sukhait
OT-KB	Oyu Tolgoi – Khanbogd
PAF	Potentially acid forming
PEM	Participatory Environmental Monitoring
PLIMP	Pastureland and Livelihoods Improvement Management Plan
PMP	Pastureland Management Plan
PR	Performance Requirement
PS	Performance Standard
RAP	Resettlement Action Plan
RT	Rio Tinto
RTBS	Rio Tinto Business Solutions
SC	Standard Chartered Bank
SEP	Stakeholder Engagement Plan
SMART	Spatial Modeling and Reporting Tool

SOW	Scope of Work
SPA	Strictly Protected Area
TDS	Total Dissolved Solid
TMP	Transport Management Plan
TPC	Tripartite Council
TPD	Tonnes per day
TSF	Tailings Storage Facility
UG	Underground
US EXIM	Export-Import Bank of the United States
VWP	Vibrating Wire Piezometer
WCS	Wildlife Conservation Society
WMC	Waste Management Centre
WMP	Water Monitoring Plan
WRD	Waste Rock Dump
WRMP	Water Resources Management Plan

EXECUTIVE SUMMARY

The Oyu Tolgoi Project (“the Project” or “OT Project”) is a world-scale copper/gold mine located in Khanbogd *soum*¹ of Ömnögovi *aimag*. The project is located, in the South Gobi region of Mongolia, approximately 600 km south of the capital city, Ulaanbaatar, and 80 km north of the Mongolia-China border. The mineral resources consist of a series of deposits containing copper, gold, silver and minor amounts of molybdenum. The project is being developed by Oyu Tolgoi LLC (the “Project Company” or OT), a joint venture between Turquoise Hill Resources (66 per cent) and Erdenes Oyu Tolgoi (34 per cent), a company wholly owned by the Government of Mongolia. Rio Tinto (RT) is a major shareholder in Turquoise Hill Resources and since 2010 is formally managing the Project on behalf of all shareholders. The Project comprises the operation of an existing open pit copper/gold mine and associated ore processing operation as well as the development, construction and operation of an underground copper/gold mine.

Since September 2013, D’Appolonia S.p.A. (from June 5th, 2017 RINA Consulting)² located in Genoa, Italy, has been appointed to act as the Independent Environmental and Social Consultant (IESC) on behalf of the Senior Lenders³ group financing the OT Project.

The key role of the IESC is to monitor the compliance of the Project against commitments with applicable Lenders’ standards through desk-top reviews and periodic visits to the Project and, specifically to:

- evaluate the implementation of the commitments contained within the OMPs and the ESAP;
- identify deviations and/or gaps with respect to the OMPs and ESAP commitments, including recommendation for possible HSE improvements based Good International Industry Practice (GIIP)⁴, if any identified; and
- identify specific issues, and conduct follow-up and closure of findings and observations identified in the May 2017 IESC site visit report⁵.

This report details the findings of the IESC during the October-November 2017 audit conducted as a desk-top review of the documentation provided and teleconferences with OT site personnel held between the 26th October and 10th November 2017. The main scope was to review the most recent environmental, social, health and safety documentation/data associated with Project operation, to highlight any impacts/incidents reported by the Project since the last IESC site visit and to identify whether the Project mitigation measures are being implemented as required.

The audit has not covered topics for which it would be necessary to observe performance through a “standard” site visit. If any, these will be addressed during the next site visit, which is likely to occur in Q2 2018. Also, the present audit does not cover the review of water resources-related topics as these will be subject to a separate standalone water audit scheduled for December 2017.

The report provides follow-up on the status of non-conformances, excluding “Water and Wastewater Management” (see Issues Table in Section 3), with respect to the Project commitments as included in the Operational Phase Management Plans (OMPs), the Environmental and Social Impact Assessment (ESIA), the Environmental and Social Action Plan (ESAP), and other reference documents.

The main observations of this desk-top exercise are summarized as follows.

¹ In Mongolia, a *soum* is a second-level administrative subdivision. There are currently c.300 *soums* in Mongolia.

² On the 5th of June D’Appolonia S.p.A. and the other engineering consulting companies of RINA will integrate to form RINA Consulting. RINA Consulting is therefore the result of the mixing of a number of internationally respected companies including D’Appolonia, Centro Sviluppato Materiali, Edif ERA (ERA Technology), G.E.T., Logmarin Advisors, OST Energy, Polaris, SC Sembenelli Consulting and Seatech, RINA Consulting brings together a rich heritage of engineering consultancy expertise into one unique organisation.

³ The Senior Lenders group includes: the International Finance Corporation (IFC), the European Bank for Reconstruction and Development (EBRD), Export Development Canada (EDC), Export-Import Bank of the United States (US EXIM), Export Finance and Insurance Corporation (EFIC), the Multi-lateral Guarantee Agency (MIGA), Standard Chartered Bank (SC) and BNP-Paribas.

⁴ Good International Industry Practice (GIIP) as defined in the April 2007 IFC EHS General Guidelines as “the exercise of professional skill, diligence, prudence and foresight that would be reasonably expected from skilled and experienced professionals engaged in the same type of undertaking under the same or similar circumstances globally...”.

⁵ RINA Consulting, “Independent Environmental & Social Compliance Monitoring Report – May 2017 – Site Visit Report”, Doc. No. 13-391-H10, August 2017.

Environmental and Social Management System

The Environmental and Social Management System provides for administering the project and meeting the Project Standards, the laws and regulations of Mongolia, permit conditions, Investment Agreement of 6 October 2009, as well as the environmental, health & safety and social policies, standards and requirements of the IFC and EBRD. The management system and associated Environmental and Social Management Plan (ESMP) include planning, operations, reporting checks, and review elements with a focus on continual improvement. Specific operating plans define the project commitments, key performance indicators and monitoring parameters, and reference specific implementation documents. Updating of the operating plans has been performed over 2015 and 2016, and the ESMP is scheduled to be updated by the end of 2017. Also included in the system is a Management of Change (MoC) process, which has been implemented by the Project to address modifications of project plans and commitments, as discussed in associated sections of the report. The Lenders have accepted most of these.

Water and Wastewater Management

Note.

The review of water resources-related topics has been excluded from the Scope of Work of the present desktop review. Water and Wastewater Management was subject to a separate standalone water audit in December 2017 (see IESC Report Doc. No. 13-391-H12 Rev. 0 – January 2018).

Mineral Waste Management

Mineral waste management associated with the Open Pit, Waste Rock Dump (WRD), and Tailings Storage Facility (TSF) is continuing under the Project strategy. Waste rock stockpiled or placed in dumps is subject to segregation of potentially acid forming (PAF) materials from non-acid forming materials, and monitoring under the geotechnical ExPit program and MWMP. With resumption of underground mine development, waste rock is being hauled to the new integrated waste rock dump for PAF materials. Initial work on the WRD Re-Vegetation Trial Project at a remote area of the South Dump advanced with placement of NAF and PAF mineral waste layers; establishment of topsoil / vegetation remains to be implemented at the trial area.

Tailings from the Concentrator are pumped to the TSF for disposal and recovery of process water. Cell 1 of the TSF continues to be operated, with construction of rockfill for the embankments to provide for projected tailings deposition into 2018 about 96-percent complete. Reclaim water management within the TSF has been effectively managed by the barge pump station. Surveillance is critical to identifying and addressing geotechnical conditions, and OT installed additional instrumentation and updated the TSF Construction, Operations and Monitoring Manual. Seepage emanating from the toe areas in the northeast section of the TSF is within design estimates for the facility, and is being monitored. Water quality within the tailings reclaim pond and seepage contains generally high concentrations of TDS and salts, and fencing has been installed around the seepage pond area to restrict wildlife access. Consistent with the TSF design, seepage water is collected and pumped back to the TSF for recovery to the Concentrator.

Non-Mineral Waste Management

The Project continues to be self-sufficient in the management of waste produced during operation. The Interim Waste Recycling Center (IWRC) is no longer in use and since May 2017 the Waste Management Center (WMC) is operated by a local contractor company with the different waste streams segregated and stored on concrete or plastic sheds in dedicated areas. According to the latest waste production forecasts provided, cell 1 will be able to receive general waste until end of 2018. Meanwhile, cell 2 and cell 3 are in their engineering drawing stage and construction is planned to start in Q2 2018. The incinerator has been shut down and it has been replaced by an autoclave since October 2017.

Since the last audit, there are now 6 contractor companies in charge of recycling selected waste categories including plastic, scrap metal, wood, and technical oil and the overall recycling process at site has significantly improved.

Air Quality

Historically there has been significant dust generation at the coarse ore stockpile (COS) facility. As mitigation a foam dust suppressant system (surfactant system) has been installed. This has resulted in visual reduction of TSP concentrations from within the COS facility; however ambient air particulate monitoring data continue to exceed the Project Standard. Significant improvements have been made over the last year. These include installation of canvas covers on drive ends of conveyors, scrapers to minimize material carry-back on the grinding (SAG mill) circuit, and safety netting underneath conveyors to allow safe access for period cleaning. Near term

plans include installation of “curtains” along the east, south and west walls of the COS. These curtains are recycled filters and rubber mats from press filters at the concentrator circuit. These will be installed in 2018 and create a physical barrier to wind scouring of fine-grained material within the COS. Various foam dust suppressants are also being trialed.

A new ambient air quality network has been installed at site and commissioned. The system is now operational and resultant data, which will be produced on a continuous monitoring basis, will be reported on in future IESC audit reports.

Emissions quality of the CHP has been a persistent issue having historically been poor relative to Project Standards. A third party Plant Emissions Testing Review identified numerous serious flaws with the existing sampling methodology. Thus data are suspect and accordingly in 2018 a Continuous Emissions Monitoring System (CEMS) will be installed on a single main chimney as part of the Phase 2 CHP expansion to 130 MW. This is in accordance with continuous monitoring requirements of the AQMP. Other improvements have recently been made to the CHP including full refractory jobs at all boilers and replacement of over 1,500 bag filters.

There have been long-term issues with incinerator performance as emissions quality has not historically met Project Standards. The incinerator is now in the process of decommissioning, as it is no longer needed. An autoclave has been installed for the treatment of the approximately 100 kg of medical waste that is generated on a monthly basis. Other potentially hazardous waste streams, such as oily rags, are managed at the double lined waste management center or via other recycling initiatives.

OT records greenhouse gas emissions (GHGs) and reports 2016 total emissions of a value of 1,429,619 CO₂ (eq). This is relatively consistent with the generation in full year 2015 of 1,463,057 tonnes of CO₂ (eq). Of the 2015 total over 80% of GHGs generated were related to the purchase of electricity with Scope 2 emissions of 1,159,647 CO₂ (eq). Scope 1 direct emissions were 269,972 CO₂ (eq) and indirect Scope 3 emissions are negligible. Thus far in 2017 (i.e., from January through October) total GHG emissions are 1,137,824 CO₂ (eq).

A third party *Review of Oyu Tolgoi's Greenhouse Gas Emissions* report was prepared in 2016. This report described current GHG tracking efforts undertaken to comply with RT's Greenhouse and Energy Usage workbook requirements. The approach has since been validated in accordance with the 2016 *Rio Tinto Guidance for Greenhouse Gas Energy Workbook*. Rio Tinto's GHG inventorying is based on definitions described in the World Business Council for Sustainable Development/World Resources Institute Greenhouse Gas Protocol.

Emergency Preparedness & Response

The Emergency Preparedness and Response Plan (EPRP) is supported by Emergency Response Procedures (ERPr) to address potential incidents specific to Project areas/departments where high and critical risks exist. Fifteen ERPr have been prepared to address the general site area or specific areas/departments, and the Khanbumbat Airport Emergency Response Plan and the ERPr – TSF have been updated in 2017. The Emergency Response Team and Communities Team initiated engagement with government officials to acquaint them with the TSF, distributed copies of the ERPr – TSF, and updated the procedure to reflect emergency contact information and TSF personnel. Further engagement planned to brief community residents on the TSF and emergency response plans was suspended in May 2017 in consideration of changes to the emergency coverage area as mapped in the ERPr – TSF. Further review and studies have not been initiated to refine the emergency coverage area as mapped in the ERPr – TSF, such that updating and plans for implementation of the TSF Community and Stakeholder engagement plan should resume under the current ERPr – TSF.

The Underground Emergency Response Plan was updated in July 2017 and submitted to the Ministry of Mines, which identifies key ongoing activities for the underground mine development through the second half of the year.

Transport Management

Transport Service Providers have maintained their induction, communities and environmental awareness training programs, and have implemented the fatigue monitoring and management program for copper concentrate truck drivers, including the use of SmartCap (providing operator alerts in real time) and Readiband technology (improving understanding of sleep patterns). The fatigue monitoring and management program is implemented with support from the Health Department to help address this risk.

Ecological Management and Biodiversity

Two of the three non-conformances reported during the previous audit have been closed during the present desktop audit and one remains open. The non-conformance on dust monitoring has been closed as the implementation of the dust monitoring started in August 2017. The non-conformance on the propagation of priority plant species has been closed as IESC acknowledges the planning in place to investigate successful propagation

of priority plants. The non-conformance on the road mitigation strategy will remain open until OT/lenders have agreed the planned Mitigation Strategy regarding actions (per the BAP) and next steps following review of the panel report recommendations. With regards to avoidance of priority plants, and specifically *Spongipcarpella grubovii*, IESC has made a number of recommendations that would need to be implemented before the Spring 2018 Audit to prevent a new non-conformance being raised. A new non-conformance on avoidance of priority plant species has been raised (specifically for *Spongipcarpella*).

Managing impacts associated with powerlines

The effectiveness of OT's insulation is still being monitored although preliminary results indicate the insulation project is reducing bird related mortalities. Post mitigation surveys of non-OT power lines indicate reduced electrocution (0.25 to 0.05) on poles with new insulation. A follow-up re-evaluation of OT's powerlines in 2017 indicated 11 additional poles may require insulation if the 2017 monitoring results indicate electrocutions are taking place on these poles.

Powerline insulation is one of OT's four offset projects intended to contribute to net positive impact (NPI). During a pilot phase, OT retrofitted powerline insulation to an additional 50 km of non-OT dangerous powerline. Insulation will be extended to a further 300 km of non-OT dangerous powerline in 2018 through a contract with the Wildlife Science and Conservation Center (WSCC).

In 2017, a total of 128 (115 Pallas' sandgrouse) bird collision incidents occurred along OT powerlines including two houbara bustard (priority species) collisions. A local NGO recently initiated a multi-year houbara bustard study with a project study area that overlaps with OT's project area. It is hoped that this study will improve understanding of population, life history and habitat requirements of houbara bustard in Mongolia. OT will engage with the NGO to determine what support it could contribute.

Notwithstanding an unexpected delay, the new national standard for 15 kV powerlines should still be prepared in 2018 as originally planned as part of one of OT's four offset projects. Initial implementation and monitoring will carry over into 2019.

Stakeholder Engagement

The need for more detailed, topic-specific stakeholder engagement action plans was identified in the previous audit to improve programming of key engagement activities for OT's four offset projects. During the previous audit the IESC recommended some modifications to Table 1 (Annex F) of the biodiversity related Stakeholder Engagement Plan (SEP) to assist strategic planning & scheduling of future stakeholder engagements & ensure overall objectives for each offset project were appropriately tracked, monitored and reported on. Most of these recommendations have been acted on. While the SEP is considered fit for purpose for general biodiversity-related engagement it lacks detail regarding the planned specific, targeted engagement needed to progress the offset plans. Topic-specific engagement plans for its four offset projects or an equivalent level of detail should be developed as part of OT's 2018 stakeholder engagement schedule.

Ecosystem Services

No update on Ecosystem Services was provided to IESC since the last Audit. Results of the Ecosystem Services Monitoring and Evaluation Plan (ESMEP) will be documented in an Annual Report made available in Q1 2018. The plan and results need to be reviewed during the next audit to check whether it is fit for purpose and to amend indicators and adjust monitoring criteria appropriately based on experience.

Land Disturbance Control and Land Rehabilitation

Avoidance of impacts on priority plant species

IESC recognizes that OT has been following the mitigation hierarchy and has demonstrated efforts to avoid impacts on priority plant species through adjustments of surface infrastructure location, however some populations have been impacted. Due to: a) the likelihood that OT's future infrastructure placement requirements will conflict with avoidance of impacts on populations of *Spongipcarpella* located on OT's MLA and b) recognition that successful propagation and translocation may take considerable time to demonstrate and c) some impacts on *Spongipcarpella* in the interim may be unavoidable, the IESC recommends a number of actions to be undertaken to avoid raising a new non-conformance on this issue.

OT will continue to follow the priority plant procedure and the priority plant research plan. Application of the approved LDP and Priority Plant procedure will continue to be used to minimize impacts to priority plants. Work to further improve propagation methods will continue. Incorporation of priority plants into rehabilitation areas will occur as rehabilitation programs progress and appropriate habitat is available or appropriate land-forms can be constructed.

Technical Rehabilitation

OT did not meet its technical rehabilitation targets in 2015 and 2016. OT is currently meeting its reduced primary technical rehabilitation targets for recontouring and topsoil placement. Net area of disturbed land off-site is decreasing as, aside from the KB-OT paved road, OT has technically rehabilitated approximately 90% of its off-site disturbed areas. Some areas of rehabilitated land are ready to be handed back over to the government. Rehabilitation is being done within the MLA when areas are being released and no longer required. Given the observed success of volunteer vegetation establishment from the topsoil seed bank and from windblown seed OT is investigating if secondary seeding (biological rehabilitation) is necessary. A systematic approach is needed to establish when natural revegetation can be relied upon and when not.

Biological Rehabilitation

By Q3 2017 OT had undertaken 7.45 Ha of technical rehabilitation (including 5 Ha off-site and 2 Ha on-site). 53.85 Ha of land were biologically rehabilitated through drill seeding and planting of saplings, including 27 Ha of "new" land and 27 ha requiring adaptive management. Biological rehabilitation lagged in 2016 due to contractor issues, which were resolved in 2017, when the contractor met or exceeded targets and it is anticipated that good progress will continue on all areas that are technologically rehabilitated.

Propagation of priority plants

The previous Lenders' Audit (May 2017) identified a non-conformance related to priority plants. The non-conformance required OT to demonstrate a comprehensive programme of research on propagation techniques for all priority species under way".

To address Lender concerns regarding priority plant species and this non-conformance, OT has now developed short- and long-term objectives and a program of specific actions to improve the ability of the NPPC to propagate priority plant species so they can be included in the rehabilitation planting. The priority plant research plan will initially focus on three of the priority plant species (*Spongiocarpella grubovii*, *Potania mongolica*, and *Zygophyllum potaninii*), which are currently not grown from seed in the Native Plant Propagation Centre.

The NPPC started being managed by Ecomineral from July 2017 onwards. Ecomineral collected seed from some priority plant species and has conducted some germination trials. Since the last audit period (between June to September), a total of 2408 individual plants were translocated to the NPPC because they were within the footprint of planned activities. However research on propagation techniques for priority plants is ongoing.

IESC acknowledges the considerable progress made on addressing this issue. There is now a focused research program that will help develop propagation methods over the 2018-2020 timeframe, and OT continues to build the knowledge of the habitat requirements of the priority plant species, so that they can successfully be integrated into rehabilitation. OT also plans to collaborate with researchers from the National University of Mongolia to conduct post-rehabilitation monitoring. The results of the first year of monitoring will be available in March 2018.

This non-conformance is now closed.

Bor Ovoo Spring

Re-vegetation of Bor Ovoo Spring (a two-hectare fenced area adjacent to the spring) had to be redone by Ecomineral in 2017 due to poor outcomes from the first revegetation trial. In September 2017 a joint group of Ecomineral and OT Flora team representatives found an average sapling survival rate of only 13%, with four species having zero survival. The high mortality rate was thought likely to be due to lack of watering by the contractor during the first year after planting. OT will continue monitoring re-vegetation against the completion criteria for the Spring for the next three to five years as per OT's Biological Rehabilitation Procedure.

Waste Rock Dump revegetation trials

There has been some progress on the WRD revegetation trial since the last audit. The correct potentially acid-forming (PAF) rock has now been deposited at different depths and non acid-forming (NAF) rock was subsequently deposited above the PAF layer on the four distinct stockpiles. Topsoil will be placed during the winter as equipment becomes available to move topsoil from stockpile. During the November 2017 audit IESC were informed seeding would take place in Spring 2018, either by hydroseeder or seed drill.

Managing impacts related to traffic and transport

Since the May 2017 audit there have not been any wildlife fatalities or accidents associated with OT-related traffic. In response to a khulan fatal incident in December 2016 the Specialist Fauna Research Team organized a workshop for one roster of approximately 100 drivers to discuss potential risks to wild animals in the vicinity of

OT's MLA and how to avoid them. Further workshops schedule is under discussion with the Logistics team for other rosters.

GPS data gathered from radio-collared khulan movements does not provide conclusive evidence as to the potential barrier effects of the OT-GS road. OT has instructed WCS to undertake a study that will specifically investigate avoidance behaviour of khulan on the road. Analysis of this khulan movement data will be included in the Core Biodiversity Monitoring (CBM) report due in December 2017.

The OT Road Mitigation Strategy Panel (The Panel) was tasked to provide an independent opinion and recommendations on a series of technical questions related to the OT Road Mitigation Strategy. The Panel's report concluded OT-GS road on its own does not pose a material risk to the viability of populations of khulan and gazelle in the South Gobi Desert.

Monitoring for avoidance and barrier effects on migratory (gazelle) and nomadic (Asiatic wild ass) animals along the approximate 100 km of road has not yielded conclusive results. On the basis of data from collared animals, the consultants and Road Mitigation Strategy Review Panel asserted, there is stronger evidence that they avoid livestock than the road per se.

Variation in behavior between individuals affects significance of barrier effects when interpreted against overall movement patterns of wild ungulates and the mitigation strategy needs to address this. The Panel also acknowledged that detecting effects from a small area within a wide-ranging population is challenging and OT is investigating how to adapt its current data collection methodology to address this issue. The RMS Panel recommended that the greatest contribution by OT, and the best way to achieve a net gain/net positive impact for these species will be to successfully implement biodiversity offsets that reduce cumulative effects over the long term across the south Gobi by targeting the greatest sources of pressure, which currently is not the OT-GS road, and supporting those efforts with the scientific knowledge that OT can generate from this program.

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The Panel suggested greater emphasis on studying black-tailed (goitered) gazelle since they are more threatened and less well understood. Deploying GPS collars on goitered gazelles is one of the objectives of the 2018 CBM plan.

The Panel recommended consulting the organizations directly involved in wildlife monitoring, to seek their input into report conclusions and recommendations before implementing proposed changes. OT met with individuals from Sustainability East Asia and Wildlife Conservation on October 31st 2017 to review the final recommendations. OT subsequently met with Lender representatives to review recommendations and implications with a view to updating the Road Mitigation Strategy before end of Q4 2017.

This non-conformance will remain until OT/lenders have agreed the planned Mitigation Strategy regarding actions (per the BAP) and next steps following review of the panel report recommendations.

However the non-conformance Class has been reduced from II to I to acknowledge progress made in addressing this issue.

OT is committed to delivering its offsets, some of which are designed specifically to reduce fragmentation (e.g., railroad fence removal) and others are designed to focus on other cumulative stressors (e.g., Sustainable Cashmere and anti-poaching). OT is also supportive of making its scientific data available to help address cumulative impacts in the Gobi. To this end OT are planning to sponsor a biodiversity conference in DZ in spring 2018 to bring researchers, industry and government together to discuss biodiversity research and issues.

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Construction of the paved OT-KB road has been on-going through the latter part of 2017 after safety issues were resolved. Each stage of the road development was subject to OT's LDP process to make sure adequate mitigations were in-place. Engagement regarding road issues is a regular part of the discussions with local communities and various levels of government.

Managing pollution impacts

Dust monitoring

OT has progressed dust monitoring since the last audit. In August OT contracted Prof. Boldgiv and team to carry out dust monitoring on 32 permanent vegetation plots. A research methodology to study impacts of dust on rangeland was developed and research sites were selected along two routes. A field survey was completed in mid September 2017. More details and results regarding this survey will be included in the contractors report to be submitted end of Q4 2017.

The non-conformance on this issue is now closed since the work is underway.

Selenium

No additional bird observation data have been collected at the TSF since the last audit but since the last audit, selenium levels in the TSF have remained within acceptable levels. Going forward the Fauna Team will continue to work with the TSF Operations Team to coordinate access to the TSF and conduct assessments when it is safe to do so. OT intends to conduct assessments during periods of peak bird migration. The Fauna Team members will also take area induction training that will improve the team's ability to access the TSF.

No other incidences of pollution affecting biodiversity have been identified since the last site visit.

NPI and offsets management plan

Through its NPI forecast and Offset Management Plan OT has committed to undertake interventions that will address its residual impacts on biodiversity and then go beyond this to deliver the enhancements needed to achieve a NPI on biodiversity in the southern Gobi. During the audit, an update was provided on progress with OT's four biodiversity offset projects.

Anti-poaching: As no additional anti-poaching activities were undertaken over the summer there is nothing to report since the May 2017 audit.

Sustainable cashmere initiative: a number of activities have taken place including for example training of herders and provision of guard dogs.

Powerline insulation expansion project: an update is provided above.

Railway fence removal: progress has been made on this project since the last audit. The contract with Sustainability East Asia/Wildlife Conservation Society (SEA/WCS) was finalized in August. A final authorization letter was required from the Minister of Transportation; however, due to the change in the Mongolian Prime Minister and Cabinet that occurred in September 2017, this letter has not yet been issued. The new cabinet has recently been named and SEA/WCS will contact the new Minister to seek the approval letter. Physical works to create openings in the fence or modify the fence will likely start in late Q1 2018; however, exact timing will depend on when Ministerial approval is received, schedule of the railroad authorities work crews, and the weather.

Monitoring and Adaptive Management

The 2017 CBM results are still in the process of being analyzed and the 2017 CBM report is scheduled to be ready by late November. Based on preliminary information provided by WCS, there were no exceedences of any of the monitoring thresholds. Some of the preliminary results were provided by WCS and included in the annual report submitted to the Ministry of Environment. Monitoring of khulan movement continued for 14 individuals as well as monitoring of carcasses. Development of a rangeland habitat quality metric has continued during 2017.

Resources and staffing

The number of staff within the Fauna and Flora teams has remained constant since the last audit although some staff have been relocated to Ulaanbaatar. Some of these relocations are being reassessed. During the previous audit IESC established the Fauna Team had sufficient staff capacity, partially because much of the actual implementation was contracted out. The Flora Team is supported by Ecomineral who were appointed in July 2017.

OT continues to use specialist and consultant support from organizations such as the Wildlife Conservation Society (WCS) and Global Biodiversity Conservation (GBC). OT appointed Ecomineral for a 3-year contract on 7 July 2017. OT specialist supervision and management of consultants will remain key to achieving successful NPI outcomes in the desert environment. WCS has a contract until 2020 relating to core biodiversity monitoring. GBC has supported OT with technical on-site support through its progression. GBC's contract terminates in December 2017 when it will be put out to open tender. By January 2018 a new contract will have been established to provide

biodiversity support. Ecomineral are responsible for managing the NPPC as well as work such as fencing, re-vegetation planting and collection of seed from native plants and specifically priority plants. During this audit The IESC was informed Ecomineral had met all its milestones.

Social

Labour and Working Conditions

As at 30 September 2017, there were 12,845 workers at the OT operation including both OT LLC and contractor company workers, at the mine site (including UG), Ulaanbaatar and Khanbogd. Employment figures remain well within Investment Agreement requirements, as 93.85% are Mongolian nationals. Of the 2,280 workers from Ömnögovi, 55.9% are from Khanbogd, and 29.8% are from Dalanzadgad. With the current exception of UG project, ongoing rationalization of expatriate roles continues, with ongoing development of Mongolian leaders. A review of the OT Recruitment and Selection Procedure was completed in July 2017, which emphasized OT's current business and reinforced commitments to employment in Ömnögovi.

Implementation of the relocation strategy "Project Rose" continues, where non-critical site based roles have been moved to UB, DZ or KB offices. In 2017, 240 roles have been relocated, and the remaining 60 roles are anticipated to be relocated in 2018, pending IT / technology solutions to support the move. Better work-life balance has been reported positively from relocated employees, and relocation has also assisted in reducing demand for accommodation on site.

A South Gobi Skills Database continues to be updated and now provides a dataset of available skills of 1,126 individuals to OT (including contractors) and the Ömnögovi Labour Office. Between June and October 2017, OT contractors employed 141 Ömnögovi residents through their registration on the database. A new, local HR Officer based in Khanbogd has been instrumental in promoting applicants to the database and preferential South Gobi employment to OT and contractors, and supporting applicants prior to interview.

The partnership between OT and the Inner Mongolian Administration Region (IMAR) to establish a representative office is progressing, with the appointment and pending relocation of a Manager of the Wulate Representative office. A risk assessment was limited in identifying additional action to reduce risks in operations in Wulate, outside establishment of appropriate Inner Mongolian permits.

OT recorded 48 grievances in the year to date, through its grievance mechanism, "SpeakOut". Of these, 54% have been recorded anonymously. Of the total across all categories, unsubstantiated personnel-related issues appeared most frequently, followed by business integrity issues. Three claims are currently open and under investigation at the time of the audit.

External audits and inspections relating to employee relations continue, including the GASI inspection which required action to establish a 'labour dispute commission'. This Commission is required under the Mongolian Labour Law, and has now been established, bringing OT into compliance with the national labour requirements. No findings were evident from the Immigration Office or GASI disabled employee status inspections. Results of two further inspections were not yet received at the time of the audit.

OT has continued its audits of Contractors' Employee Relations (ER) and a sample of contractors' monthly scorecards and supplier audit reports demonstrate that implementation of systems and improvement processes are in place. ER Management Plans (ERMP) and salary analysis have been completed for 12 major contractors, with 2 currently under review. ERMP audits have been completed for 8 contractors with 7 scheduled. Two Corrective actions have been completed, and 4 are ongoing.

The "Khamdaa / Culture by Design" program implementation continues, as a key mechanism to bring OT, RT, contractors and subcontractors working on the UG into alignment on a common work culture of delivering the Project "on time, on budget and safely". To date, 747 leaders and frontline 2,607 employees have attended workshops, and a coaching program is under development.

On site accommodation is expanding, with construction of the Oyut II camp delayed but ongoing. The first rooms are available in this camp but are limited by completion of facilities' testing prior to opening up newer sections. OT intends to have all 5,508 rooms available by May 2018. Until then, maximum available occupancy of Oyut II rooms alongside existing camps are being utilized, to accommodate the site-based workforce. At the time of the audit, 5,500 people were on site. In parallel, kitchen and wastewater treatment capacity is being increased. OT reports that it has been able to maintain all accommodation on site, with the exception of the Summer Camp (for OT-KB road construction) and GSK Road camp currently not operational.

Resettlement, Compensation and Livelihoods Improvement

The outstanding non-conformance from previous audits relates to the completion on an Outcome Evaluation (OE). The OE for economically displaced herder households has now been re-commissioned with oversight directly by OT. A consultant team comprising international and local partners has been appointed and a review of

existing data is underway. The study is to be delivered on 31 December 2017, following fieldwork in November-December. Non-conformance M1.23 remains open until the successful completion of the OE.

The Sustainable Livelihood Support Training (SLST) was developed for the 92 members from economically displaced herder families following closure of the Road Maintenance Worker Agreements, and seeks to build skills for compensated herders to manage livelihoods and animal herding practices in a sustainable manner. Twelve months of training classroom and practical training is underway, with support by Dornod Polytechnic College until December 2017. An annual monitoring report of the SLST program will need to determine restoration of livelihoods for this cohort of herders, in addition to satisfaction with course delivery.

The Pastureland and Livelihood Improvement Management Plan (PLIMP) has been finalized and disclosed on the OT website. Alongside this, thematic workshops to develop the Gobi Oyu DSF three-year strategy are in progress to support implementation of the PLIMP, with representatives from across from the *soum*, NGOs, herders, water management, animal health and veterinary experts. The "Pasture Assessment" Project is being implemented across four *soums*, with DSF funding of 320 million MNT. This will inform pasture carrying capacity and pasture use plans that are now under development at bagh level. The Animal Husbandry program is also continuing, as well as a number of other cooperatives and small businesses activities to support herder households.

Implementation continued of the Vulnerable Households Action Plan during the audit period and is now approximately 80% complete. It includes measures to support groups and individuals, as well as semi-annual events for vulnerable households. In addition, DSF funding has been directed to a repair centre and a 'Child Development Centre' which supports 2 vulnerable household women within a wider group. At completion, it will be necessary for OT to continue monitoring effectiveness of these interventions, until the completion audit can trigger closing out support to vulnerable households under the RAP.

Stakeholder Engagement

Ongoing engagement activities with specific stakeholder groups include participation in bagh meetings, engagement with economically displaced herder households and those downstream of the TSF to the Tsagaan Khad border. Additionally, the KB Community Interaction Centre has hosted 1,402 visitors, and 172 visitors have undertaken OT site tours over the audit period. Over 1,600 participants were present for the Dalanzadgad and Manlai Naadams supported by OT, and 230 elders at the Khanbogd *soum* elders' day. Information dissemination is additionally provided at these events, through distribution of 2,200 copies of the monthly community newsletter, quarterly operational scorecards and online news updates.

Engagement records continue to be tracked by CSP for completion of responses and attitude of the stakeholder. From May to October 2017, 141 engagement records have been tracked and 15 are work in progress. Changes in attitude assessed by CSP since the previous audit indicate a slight shift from negative, to neutral or positive perceptions by stakeholders of OT. Most engagement events have been consultations (113 of 156 events), followed by 36 information meetings. Lastly, CSP tracks engagement levels in line with OT's objective of increasing community empowerment. Since the previous audit, OT's results show an increase by two points in the 'empowerment' rating. Further, a joint 'Welcome to Khanbogd' event received an 89% satisfaction rating by over 200 participants. These results, and CSP's responsive community engagement system, are highly commended.

The OT 'Community Complaints and Feedback Procedure', which was updated in April 2017, is now being implemented. Grievances received are low; in the audit period, six community complaints have been received and resolved, with the last grievance received in August. No feedback was received in the reporting period. However 46 requests have been received from stakeholders in the community, of which 91% have been closed/resolved. The top three categories relate to donation support, procurement, HR and training requests. These suggest overall knowledge of the OT systems in the community and trust that reasonable requests will be considered.

At the previous audit, the CAO process had reached a milestone of agreement between TPC parties and the CAO of a detailed action plan and Compensation Claim Committee process. Twelve of the actions have been completed, and four Compensation Claim Committee meetings have been held thus far to discuss herder claims. These have not yet reached any agreement.

The Participatory Environmental Monitoring (PEM) program redesign will be finalised with the creation of an NGO in November 2017 to commercially conduct this work for OT. When established, the NGO will have 5 full time employees (new environmental graduates) and herders collecting environmental monitoring data in the areas of: water, pasture flora, fauna, dust and of the Undai River. OT will need to continue to provide support to the NGO and some level of up-skilling of the new graduate staff, and creation of targets for measuring success of implementation of the new PEM program.

Regional and Community Development

Regional and community development is one of the main functions of the CSP team, and is implemented largely through the Cooperation Agreement (CA) for the South Gobi. This is supported by OT investment into a

Development Support Fund (DSF), which is administered by a Relationship Committee and DSF Board, and implemented through a community partnership model. The first DSF Annual Report has been published since the previous audit; in the two years of DSF operation, 62 projects with an investment of USD \$10.9 million have been supported. In the current audit period, consultations are underway to inform the next DSF three-year strategy, and the DSF Board approved a three-year SME development plan.

At the October 2017 DSF Board meeting, 15 new project and program proposals were approved (investment total of 3.2 billion MNT). The Water and Environment subcommittee was established to provide technical support to the Board on these issues.

An independent audit of the DSF is scheduled for November 2017 to address DSF operations and finances. Further, development of a Monitoring and Evaluation (M&E) framework is planned at both DSF operational and project implementation levels. This is critical for enabling OT and all partners to determine if intended outcomes are being met, including for OT, whether and to what extent OT-affected households are benefitting from the DSF investments.

The Future Generation Fund (5% of the DSF) is currently funding 57 student scholarships with an overall investment of 151 million MNT, and 11 SME Microloans to a maximum value of 30 million MNT each, in the current audit period. OT reports good academic success of scholarship recipients and no defaults on SME loans to date. Donations and sponsorship (2% of the DSF) in the audit period has been approved for over 415 million MNT, with 77 million MNT is yet to be disbursed. Current donations/sponsorships have been made in support of cultural events, natural disaster recovery, and the annual preparation of fodder and hay for herders.

Community infrastructure projects continue to progress. Khanbogd infrastructure projects due for completion in 2017-2018 include the OT-funded OT-KB Road (on target for practical completion of Q4/2018), the DSF funded solid waste landfill (Q4/2017), Boiler house (Q4/2017) and school and kindergarten complex (Q3/2018).

The OT-funded, OT-GS Road project remains on hold, pending financial approval and then contractor appointment. Procurement is scheduled in advance of anticipated construction commencement in January 2018, and workforce mobilisation in February 2018. The Mongolian Border Authority has permitted land for the construction camp. A topic-specific Stakeholder Engagement Plan will be developed during the winter in advance of workforce mobilisation, and OT and the Border Authority will monitor the camp activities. Practical completion is scheduled for Q3/2018.

The approved OT In-Migration Management Plan (IMP) has been publicly disclosed. Implementation of actions to manage in-migration differs from the Plan in that the key delivery mechanism is an external 'Partnership Committee'. The Partnership Committee comprises representatives from Ömnögovi aimag; partner *soums*; OT and Erdenes Oyu Tolgoi; and the Gobi Oyu DSF. It held its second meeting in October 2017.

The Partnership Committee provides recommendations to five working groups: Local procurement; Local employment; Strategy alignment; Khanbogd development; and the Cooperation Agreement implementation and DSF Relationship Committee. The Working Groups are also able to make decisions on issues for reporting to the Partnership Committee. A South Gobi Strategy is planned for development in Q4/2017 with the Partnership Committee, and the Khanbogd development Working Group is anticipated to provide specific actions to be taken to manage and mitigation in-migration.

Local employment and local procurement efforts are continuing in line with the IMP. The Working Group on Local Employment agreed to revise the definition of local citizens to people who 'must be living permanently for three years or more in Ömnögovi'. As at 30 September 2017, 20% of the OT workforce (2,280 workers) are from Ömnögovi. Further, the Local Procurement Working Group agreed to define 'local entity' as one which: is registered in Ömnögovi; has a permanent workforce in excess of 75% Mongolian nationals; where national employees reside in the aimag; and the business/head branch is in Ömnögovi aimag. Local procurement is targeted to 14 categories of goods and services, and USD \$62 million has been locally spent to date.

Worker Health and Safety

The Health Team is a centralized entity under the HSES Department, and includes occupational health services and the main ISOS clinic. Occupational health services continue to focus on noise, respirable dust, silica and welding fume exposures to workers in high risk areas. Currently, diesel particulate matter in the underground mine is the primary risk, with emphasis on monitoring equipment and addressing maintenance needs to ensure proper operation. In addition to the assessments and improvement actions being performed, education programs for improving workers understanding of health risks are ongoing. As part of a mental health and wellbeing initiative, the Health Team initiated a six month program to train supervisors, provided training for ISOS clinic staff, and brought on additional medical specialists.

With ramping up of personnel on site for the underground project, OT's Security Department reassessed the risk profile in addition to preparing for compliance with new RT standards, and implemented additional measures to maintain camp safety. The Critical Risk Management program, focusing on 17 critical risks to site personnel and conducting critical risk control verification, has been implemented throughout the site, including underground activities and operations by contractors where task based CRM is replacing lengthy checklists for individual steps allowing work parties can to focus on rationalized tasks. Process Safety Management, to address potential hazards from the plant operating systems, considering chemical release, fire, explosion and other hazards, has been implemented in the Concentrator, Central Heating Plant, and Maxam explosives facility. The Health Team has also emphasized programs for fatigue management among truck operators in the Open Pit, TSF and Outbound Logistics areas, and conducted meetings with workers identified as high risk for fatigue to develop personal fatigue management plans.

Community Health and Safety

Community engagement on the TSF, specifically regarding emergency response in the event of TSF failure, is a specific component of the TSF emergency response plan. OT's CSP team has updated the local stakeholder list, following a quarterly field check up undertaken over summer. New households/people have moved into the potential emergency area, including 2 to 3 coal road construction maintenance teams, thus then updating the Emergency Response Procedure, including names and contact numbers of those who may be affected. The potential emergency area has not been finalised which limits, inter alia, the ability of the CSP team to engage most effectively with potentially affected community members in an agreed area. The CSP team is monitoring the area up to the Tsagaan Khad border area in the interim, while also engaging with relevant Government Emergency Response authorities.

No community safety incidents or concerns were reported during the audit period, and monitoring of crime statistics has continued through engagement by the CSP team with the *soum* Police Department. OT stated that 80% of crimes in Khanbogd are related to traffic incidents that occurred within Khairkhan bagh and related to coal transportation. While the Tsagaan Khad border crossing is not the responsibility of OT, this area has implications for community health, safety and security, particularly in relation to the forthcoming OT-GS road construction camp to be located near the border. Proactive engagement is recommended and planned through development of a topic-specific SEP for the OT-GS Road construction completion, including with the Border Authority, KB Police Department and Wulate IMAR office to ensure ongoing safety and security monitoring and situation response (as required).

DSF funding has been directed to a number of community, health, safety and security programs, including partnerships with schools, and, building on the Healthy Herder Program, screening and treatment targeting health of elders. A Skilled Doctor professional development program is also underway, along with the Gobi Region Rehabilitation Service in Dalanzadgad, the first facility of its kind for the region.

The Emergency Response Procedure (ERPr) – Tailings Storage Facility (TSF) includes records of potentially impacted households who are seasonally resident (i.e., have winter shelters in the potential emergency area). Plans for updating and implementation of the TSF Community and Stakeholder engagement plan should proceed, that will identify steps for communication with community officials and affected residents and herders within the emergency response coverage area to acquaint them with the OT emergency response program and preparedness measures in the event of an emergency. The IESC anticipates further discussion on both household identification and associated engagement activities at the next audit.

Cultural Heritage Management

The cultural heritage program continues to maintain a zero CH incident status, while providing 1,202 Community Relations and Cultural Heritage inductions during the audit period. Land disturbance permits continue to be issued with 64 in the year to date, and 1,018 visitors have been received at the OT Culture Ger. Cultural heritage monitoring is ongoing at 14 heritage sites.

The DSF provides support to a number of cultural heritage programs. Cultural heritage preservation and tourism promotion programs are underway at both the Shar Tsav dinosaur footprint site and Khurdet Cave. A ceremony acknowledging this progress was held with project partners in October 2017. Additionally, DSF funds are supporting KB heritage projects being delivered by the Elders Association and Elementary School.

1 INTRODUCTION

The Oyu Tolgoi copper/gold mining Project (“the Project” or “OT Project”) is located in the *aimag* of Ömnögovi, in the South Gobi region of Mongolia, approximately 600 km south of the capital city, Ulaanbaatar, and 80 km north of the Mongolia-China border. The mineral resources were discovered in 2001 and consist of a series of deposits containing copper, gold, silver and minor amounts of molybdenum. The project involves a combination of open pit and underground operations, with ore processed through a 100,000 tons per day concentrator and with an expected concentrate production in excess of 500,000 tons per year. Shipment of product to customers commenced in July 2013.

In September 2013, D’Appolonia S.p.A. (from June 5th, 2017 RINA Consulting), located in Genoa, Italy, was retained by Oyu Tolgoi LLC to act as the Independent Environmental and Social Consultant (IESC)⁶ for the OT Project being developed by Oyu Tolgoi LLC (the “Project Company” or OT), a strategic partnership between the Government of Mongolia, Rio Tinto (RT) and Turquoise Hill Resources. Since 2012 RT has also been appointed as the manager of the project on behalf of the shareholders.

RINA Consulting’s role as the IESC is to support the Senior Lenders by providing an external/independent monitoring evaluation of OT mine project activities with focus on Health, Safety and Environment (HSE) and social aspects during project operation that began on 1st September 2013. Within this role, the IESC reports periodically to the Lenders group on conformance with the environmental and social provisions contained within the Operational Management Plans which define how OT will implement the mitigation strategies set out in the ESIA and in the other relevant project documents. These include the Project’s Environmental and Social Impact Assessment ESIA, an Environment and Social Action Plan (ESAP) with a list of time-bound future commitments and the Operations Phase ESMPs that represent the reference documents used by the IESC to monitor the Project Environment, Social, Health and Safety (ESHS) performances throughout operation.

This report presents findings of the IESC during the October 2017 audit conducted as a desk-top review of the documentation provided and teleconferences with OT site personnel. The report provides an update on the Project status limited to some key topics as well as a follow-up of the status of the non-conformances identified in the previous IESC reports. Findings identified in this report are primarily based on written information made available by the Project through existing reports, disclosed studies and ad-hoc presentations, as well as from interviews via conference calls with OT employees. It is worth noting that the present audit does not cover the review of water resources-related topics as these will be subject to a separate standalone water audit scheduled for December 2017. Any other topic not covered in this report will be addressed during the next site visit expected to take place in Q2 2018 when the entire IESC team will be mobilized.

Specific activities conducted included the following:

- desk review of the HSE and social documentation and other project-related reports provided by OT;
- conference calls held between the 26th October and 10th November, 2017 with the project teams responsible for HSE and social compliance monitoring and review of relevant plans and procedures;
- evaluation of implementation of the commitments contained within the OMPs and the ESAP;
- identification of deviations and/or gaps with respect to the OMPs and ESAP commitments, including recommendation for possible HSE improvements based on Good International Industry Practice (GIIP);
- follow-up and closure of findings and observations identified in the May 2017 IESC Audit Report⁷; and
- drafting of an IESC report (this report) to be publicly disclosed.

The information, observations, and opinions presented in this report are those of RINA Consulting and are independent of those of the Project and/or the Senior Lenders. Where topics are not referred to, no risks to the Project have been identified.

⁶ IESC Team members: Giovanni Battista De Franchi (Project Manager and Team Leader – HSE Specialist), Robert Snow (Senior Reviewer - HS and Mining Specialist), Dana Strength (Environmental / Hydrologist Specialist), Angela Reeman (Social / Community Specialist), Jo Treweek (Biodiversity Specialist).

⁷ RINA Consulting, “Independent Environmental & Social Compliance Monitoring Report – May 2017 Site Visit Report”, Doc. No. 13-391-H10, August 2017.

2 PROJECT OVERVIEW

2.1 CONSTRUCTION AND OPERATIONS STATUS

The Project consists of a series of mineral deposits containing copper, gold, silver, and molybdenum to be mined by a combination of open pit and underground mining techniques. The Project has a mine life based on Proven and Probable Reserves of about 40 years (from 2016). Ore deposits are referred to as the Southern Oyu deposit and the Hugo Dummett deposit which together contain a currently identified resource of almost 25.4 million tons of copper, 81,600 tons of Molybdenum, about 5,150 tons of Silver, and 1,000 tons of gold. The development of the mine involves the construction of an open pit copper-gold mining operation at the Southern Oyu deposit, supplemented by production from the underground (Hugo Dummett deposit). The initial concentrator design is based on processing raw ore at a rate of 35 million tons per year (nominal capacity of 100,000 tons per day) with an expected concentrate production ultimately in excess of 500,000 tons per year.

The open pit mine started during Q2 2012 as a conventional truck and shovel operation operating 24 hours per day. The pit includes a series of 'benches' cut and blasted into the rock that act to stabilize the slopes within the open pit and also serve as the haul roads to enable ore and waste rock to be removed by trucks.

The underground mine is being planned as a block cave operation which involves the excavation of material that provides natural support from beneath the ore, causing it to fracture and collapse into the excavated void under the force of gravity. In addition to being a cost-effective underground mining technique, this process allows for the greatest proportion of ore body to be extracted relative to waste rock.

The process design to convert the ore into concentrate is based on conventional milling and flotation technology and proven equipment. The process includes primary crushing with coarse ore stockpiling. Crushed ore from the primary crusher is transferred via a 2.7 km overland conveyor to a stockpile near the concentrator and from here into the grinding circuit where a series of large diameter mills reduce the ore to small particles before either flotation and further processing or recycling to the grinding circuit. The flotation system separates valuable ore from less desirable minerals in large floatation cells where the Copper-containing materials are skimmed off for the next stage of the process while the sludge (tailings) are thickened to 60% solids in two thickeners and pumped to the Tailings Storage Facility (TSF) for disposal. Water from the tailings thickeners and TSF are recycled back to the concentrator. The final concentrate containing copper and gold is then thickened and filtered before storage in sealed bags for transport via trucks to the Gashuun Sukhait/Ganqimaodao border crossing with China.

Ancillary facilities that allow operation of the mine include a regional airport, main power supply currently via a dedicated 220 kilovolt (kV) overhead power line from the Inner Mongolian electricity grid in northern China, coal-fired central heating plant (CHP), water supply and treatment systems, maintenance facilities and warehouses, administration buildings, waste disposal facilities, fuel storage depots, administration facilities and accommodations camps, roads and transport facilities.

The Project achieved the operation phase in 2013 with open pit mining ongoing, the concentrator production rates progressively increasing, and the concentrate exported to China. For 2015, OT's second full year of production, productivity improvements in the concentrator led to throughput exceeding nameplate capacity by year-end. Copper production for 2016 was 201,300 tons, and gold production was 300,000 ounces. Concentrator throughput for the third quarter of 2017 was approximately 115,400 tons per day, which was a record throughput. However, OT expects to produce 130,000 to 160,000 tons of copper and 100,000 and 140,000 ounces of gold in concentrates in 2017. The lower production when compared to 2016 is primarily the result of approximately one-quarter less copper head grade and approximately one-half less gold head grade from the current operating areas of the Open Pit.

After suspension in 2013, underground mining activities under the Restart program resumed in 2016 with ramping up of resources and personnel in 2017 for the Phase 2 Underground Project. Lateral development, mine infrastructure, ore handling equipment and construction of the conveyor decline are all advancing with attention to safety and quality. Sinking of Shafts 2 and 5 have advanced about 1,249 meters and 878 meters, respectively, through the third quarter of 2017, with recent Shaft 5 advancement at a record rate. Progress on the decline has been increasing and is about 600 meters beneath the surface. The primary crusher has been commissioned, and the workshops, mine dry, and other infrastructure are coming along. Local partnerships with international contractors are supporting the Project. With completion of underground development and cave establishment, the mine plans substitution of open pit ore with higher-grade underground ore beginning in 2020 and resulting in significantly increased copper production.

No further decisions have been made regarding the potential development of a coal-fired project Power Plant and the expansion of the concentrator's capacity above 100 ktpd, both items subject to further environmental and social impact assessment as established in the ESAP.

2.2 REPORT ORGANIZATION

Subsequent sections of this report are organized as follows:

- Section 3.0– Issues Table;
- Section 4.0 – Health, Safety, Environment and Social Performance Management Systems;
- Section 5.0 – Environment;
- Section 6.0 – Social;
- Section 7.0 – Health and Safety; and
- Section 8.0 – Cultural Heritage.

The basic findings of the IESC review are presented in the form of observations, comments and recommendations that are generally described within this report. Two types of findings are included:

- non-conformances, included in the Issues Table (Section 3), which refer to issues related to Project commitments included in the Operational Management Plans and/or GIIP; and
- recommendations, included at the end of each section (4 – 8) which are suggestions for the proper implementation of required actions and closure of open issues and which are based on the collective experience and expertise of the IESC team members.

IESC's "recommendations" are not considered mandatory and therefore their implementation is not critical. However, the IESC encourages the Project to consider the usefulness of all these recommendations and incorporate them, as appropriate and if technically/economically feasible, into new management activities.

3 ISSUES TABLE

This chapter tabulates a summary of key non-conformances raised in this report based on observations made during the site visit, interviews with OT staff, as well as review of documentation provided during and after the site visit and consistent with our scope of work.

The table has been structured to provide a color-coding for strict non-conformances referenced with respect to Project commitments as included in the Operational Management Plans, in the ESAP and in the underlying OT monitoring documents and procedures which all together define how the OT operations comply with applicable Lenders' Environmental and Social Standards. The nomenclature of the color-coded categorizations is assigned based on the same non-conformance levels defined in the OT ESMP⁸ which reflects the RT Health, Safety, Environment and Community (HSEC) Management System classification.

The following descriptions are provided:

- **class IV** - A critical non-conformance, materially inconsistent with the Project Standards or Management Plans, resulting in or reasonably likely to result in irreversible impacts to sensitive receptors or important resources or significant damage or irreversible harm or damage to an ecologically or socially sensitive resource or has the potential for an extreme health and safety incident;
- **class III** - A material non-conformance, materially inconsistent with the Project Standards or Management Plans, that has not resulted in clearly identified impacts to sensitive receptors or important resources or material damage or irreversible harm or damage to an ecologically or socially sensitive resource or have the potential for an extreme health and safety incident, but it is reasonably likely to have such effects;
- **class II** - A material non-conformance with the Project Standards or Management Plans, but not reasonably likely to result in impacts to sensitive receptors or important resources or material damage or irreversible harm or damage to an ecologically or socially sensitive resource or have the potential for an extreme health and safety incident;
- **class I** - An incident not materially consistent with the Project Standards or Management Plans and not reasonably likely to present a threat to the environment, community or worker health and safety.

Action items are identified by the number of the mission (MX.Y), where X is the mission number and Y is the related action item number. It should be noted that the text description of the recommendations could be revised from one visit to the next to better reflect current field conditions; however the original item numbers are retained until closed as they refer to the same main issue.

Each non-conformance identified in the table will require actions from OT and will be followed-up by the IESC in subsequent site visits. The table includes a description of the finding, the level of non-conformance assigned, the reference to the Project commitments and/or relevant project document as well as recommendations for improvement based on the collective experience and expertise of the IESC. Please also note that non-conformances not sufficiently addressed, according to IESC opinion, could result in a level increase, independent from the actual material consequences due to the conditions, unless an explanation is provided to justify the decision to avoid any corrective action.

Overall, results of the present audit are as follows:

- no Class IV non-conformances have been identified;
- no Class III non-conformances identified;
- no Class II non-conformances identified; and
- six Class I non-conformances identified*.

The table below summarizes the status of non-conformances starting from the October 2013 IESC site visit.

⁸ Environmental and Social Management Plan (ESMP) - Doc. No. OT-10-PLN-0003 dated 01.09.2013.

Table 3.1: Status of Non-Conformances Identified by the IESC

Mission No.	Site Visit	New Non-Conformances identified	Non-Conformances closed	Non-Conformances remaining open
M1	October 2013	26	N.A.	N.A.
M2	April 2014	11	8	29
M3	Desktop Audit August 2014	2	3	28
M4	November 2014	7	10	25
M5	Desktop Audit April 2015	0	3	22
M6	September 2015	4	6	20
M7	Desktop Audit April 2016	1	9	12
M8	August 2016	4	2	14
M9	May 2017	1	6	9
M10	October 2017	0	3	6*

Note:

* Among these, one is related to Water and Wastewater Management which has not been reviewed as a part of the present audit and it has been treated in a separate standalone water audit in December 2017 (see IESC Report Doc. No. 13-391-H12 Rev. 0 – January 2018).

Table 3.2: Issues Table

Mission/ Issue No.	Site Visit	Closing Date	Description	Non- Conformance	Reference	Status	Comments / Report Reference
Environment – Water and Wastewater Management							
M2.3 ⁹	April 14 Desktop Audit Aug. 14 Nov.14 Sept.15 Desktop Audit April 2016 Aug. 16 May 2017		The drilling and installation of supplementary monitoring bores, as discussed in the WMP, has not yet been implemented.	I	Water Monitoring Plan, Section 3.2.6, 3.3.5 Water Resources Management Plan (WR14, WRm06)	Open	See Section 5.1.2.9. The drilling and installation of supplementary monitoring bores, as discussed in the WMP, has not fully been completed. A total of 20 supplementary bores were installed in the 2016 field season with an additional 11 piezometers installed to the southeast of the TSF, in an area of previously limited monitoring points. Additional supplementary monitoring bores in the Guuni Hooloi region will be installed during the 2017 field season (nine monitoring points across three sites). This has been reduced to a Class 1 non-conformance (from Class 2) reflecting near-term confirmed plans by OT to complete supplementary monitoring bore installation.
Environment – Air Quality							
M1.11	Oct.13 April 14 Desktop Audit Aug. 14 Nov. 14 Desktop Audit April 15		Significant dust (particulate) emissions are generated intermittently at the coarse ore stockpile. A foam dust suppressant system installed and other mitigations have been employed with anecdotal overall good results. Better ambient air monitoring will allow more meaningful interpretation	I	Atmospheric Emissions Management Plan (AQ05)	Open	See Section 5.5.2.1. There has historically been significant dust generation at the coarse ore stockpile (COS) facility. Numerous operational changes and other forms of mitigation have been realized resulting in visual reduction in TSP presence within the vicinity of the COS facility. Ambient monitoring to quantify particulate reduction has been difficult as samples have to date been collected only on a monthly basis, and thus highly susceptible to wind conditions and other operational

⁹ This issue has not been reviewed as a part of the present audit.

Mission/ Issue No.	Site Visit	Closing Date	Description	Non- Conformance	Reference	Status	Comments / Report Reference
	Sept. 15 Desktop Audit April 16 Aug. 16 May 2017 Oct. 17		of overall success of these mitigations.				<p>considerations. A new continuous ambient air quality network will allow much better tracking of the efficacy of dust mitigation efforts and resultant potential impacts to sensitive environmental receptors (primarily the concentrator workforce and the Manlai camp). Significant mitigations have been implemented to reduce dust emissions from the COS. Other efforts are ongoing including installation of dust “curtains” that will significantly reduce wind erosion through the COS.</p> <p>This non-conformance will be closed when meaningful ambient air quality monitoring data reflect adequate protection of the concentrator and camp environmental receptors. A much-improved ambient air quality monitoring network will soon become operational, as referenced in M1.12 below. Future interpretation of this data, in conjunction with demonstration of adequate occupational health and safety precautions, will allow closure of this item. This has been reduced to a Class 1 non-conformance (from Class 2) reflecting installation of the ambient air quality network, planned additional mitigations (dust curtains), and pending review of ambient air quality data.</p>
M1.12	Oct.13 April 14 Desktop Audit Aug. 14 Nov. 14 Desktop		There are limitations to the existing ambient air monitoring network. The revised AQMP describes additional necessary equipment to monitor ambient air conditions relative to Project Standards.	I	Atmospheric Emissions Management Plan (AQMP-KPI02; Air Quality Monitoring Plan Sections	Open	See Section 5.5.2.1. As noted in prior audits the existing ambient air monitoring network required improvement to meet commitments made in the revised AQMP, and to monitor ambient air quality relative to Project Standards. In Q4 of 2016 the necessary equipment was delivered to site and commissioning/on-site training has been completed. The system is now operational and data produced

Mission/ Issue No.	Site Visit	Closing Date	Description	Non- Conformance	Reference	Status	Comments / Report Reference
	Audit April 15 Sept. 15 Desktop Audit April 16 Aug. 16 May 2017 Oct. 17				2.5, 4.1; Appendix B;)		from continuous monitoring is being collected. This has been reduced to a Class 1 non-conformance (from Class 2) reflecting installation of the ambient air quality network and pending IESC review of data to be produced from the network.
M1.13	Oct.13 April 14 Desktop Audit Aug. 14 Nov. 14 Desktop Audit April 15 Sept. 15 Desktop Audit April 16 Aug. 16 May 2017 Oct. 17		Stack emission sampling results from boilers at the Central Heating Plant (CHP) and KB airport do not meet Project Standards.	I	Atmospheric Emissions Management Plan (AM03) Air Quality Monitoring Plan – Appendix B)	Open	See Section 5.5.2.2. Emissions quality of the CHP has been a persistent issue being historically poor relative to Project Standards. A third party Plant Emissions Testing Review identified numerous serious flaws with the existing sampling methodology. A Continuous Emissions Monitoring System (CEMS) will be installed on the single stack, in accordance with AQMP requirements, as part of the Phase 2 CP expansion to 130 MW. Other improvements have recently been made to the CHP including full refractory jobs at all boilers and replacement of over 1,500 bag filters. This has been reduced to a Level 1 non-conformance as OT has demonstrated application of Best Available Technologies (BAT) in conformance with applicable Project Standards. However data is still pending from the planned CEMS to definitively demonstrate with numeric thresholds contained in the revised Project Standard as adopted in NoC 2017-001.
M2.4	April 14	Oct. 17	Stack emission sampling results	I	Atmospheric	Closed	See Section 5.5.2.2. There have been long-term

Mission/ Issue No.	Site Visit	Closing Date	Description	Non- Conformance	Reference	Status	Comments / Report Reference
	Desktop Audit Aug. 14 Nov.14 Desktop Audit April 15 Sept. 15 Desktop Audit April 16 Aug. 16 May 2017		from the incinerator do not meet Project Standards.		Emissions Management Plan (AM06) Air Quality Monitoring Plan – Appendix C		issues with incinerator performance as emissions quality has not historically met Project Standards. OT has since contracted to a contractor with autoclave for treatment of the approximately 100 kg of medical waste that is generated on a monthly basis. Other potentially hazardous waste streams, such as oily rags, are now managed at the lined waste management center. This has been removed as a Level I non- conformance as decommissioning of the incinerator is in progress. The unit has not been operated since August 2017. Alternative recycling, disposal and treatment methods are now employed for the disposal of potentially hazardous waste streams (e.g., oily rags and autoclaving of medical waste).
Environment – Biodiversity and Ecological Management							
M8.2	Aug. 16 May 2017 Oct. 17		Road Mitigation Strategy	I	BAP (13)	Open	Section 5.9.2.5. OT undertook to “develop and implement an OT-GS road mitigation strategy that explores, but will not necessarily be limited to, the following elements: a) road closures, restrictions on vehicle movements; b) formal engagement with regional bodies and institutions involved with regional-scale sustainable development on the implementation of certain mitigation measures that have relevance to regional-scale sustainable development; and c) traffic monitoring of the OT – GSK road as well as non-OT roads and monitoring of its impact on animal behavior”. As per the specifications of the BAP, OT and the Lenders agreed upon the formation of an independent expert panel (The Panel) to review

Mission/ Issue No.	Site Visit	Closing Date	Description	Non- Conformance	Reference	Status	Comments / Report Reference
							<p>road mitigation strategy. The independent expert panel has completed its work and a produced a report which was made available for IESC to review during the audit.</p> <p>The Panel's report concluded OT-GS road on its own does not pose a material risk to the viability of populations of khulan and gazelle in the South Gobi Desert.</p> <p>Monitoring for avoidance and barrier effects on migratory (gazelle) and nomadic (Asiatic wild ass) animals along the approximate 100 km of road has not yielded conclusive results. On the basis of data from collared animals, the consultants and Road Mitigation Strategy Review Panel asserted, there is stronger evidence that they avoid livestock than the road per se. Variation in behavior between individuals affects significance of barrier effects when interpreted against overall movement patterns of wild ungulates and the mitigation strategy needs to address this. The Panel also acknowledged that detecting effects from a small area within a wide-ranging population is challenging and OT is investigating how to adapt its current data collection methodology to address this issue. The RMS Panel recommended that the greatest contribution by OT, and the best way to achieve a net gain/net positive impact for these species will be to successfully implement biodiversity offsets that reduce cumulative effects over the long term across the south Gobi by targeting the greatest sources of pressure, which currently is not the OT-GS road, and supporting those efforts with the scientific</p>

Mission/ Issue No.	Site Visit	Closing Date	Description	Non- Conformance	Reference	Status	Comments / Report Reference
							<p>knowledge that OT can generate from this program. The Panel suggested greater emphasis on studying black-tailed (goitered) gazelle since they are more threatened and less well understood. Deploying GPS collars on goitered gazelles is one of the objectives of the 2018 CBM plan.</p> <p>The Panel recommended consulting the organizations directly involved in wildlife monitoring, to seek their input into report conclusions and recommendations before implementing proposed changes. OT met with individuals from Sustainability East Asia and Wildlife Conservation on October 31st 2017 to review the final recommendations. OT subsequently met with Lender representatives to review recommendations and implications with a view to updating the Road Mitigation Strategy before end of Q4 2017.</p> <p>This non-conformance will remain until OT/lenders have agreed the planned Mitigation Strategy regarding actions (per the BAP) and next steps following review of the panel report recommendations.</p> <p>However the non-conformance Class has been reduced from II to I to acknowledge progress made in addressing this issue.</p>
M8.3	Aug. 16 May 2017	Oct. 17	Monitoring vegetation plots for potential effects of dust on pastureland	I	BMP B15	Closed	Section 5.9.2.6. OT undertook to monitor 32 vegetation plots for potential effects of dust pollution, as livestock production from pasture is a critical ecosystem service for the project and some complaints were made during the construction phase about elevated dust levels suppressing

Mission/ Issue No.	Site Visit	Closing Date	Description	Non- Conformance	Reference	Status	Comments / Report Reference
							<p>vegetation growth.</p> <p>It is unlikely that dust from OT currently has significant impacts on pastureland growth, but there are no data to back this up or provide a basis for responding to any future complaints. During the past audit OT was recommended to undertake an assessment to clarify overall significance of this issue and the necessity for dust monitoring. This has not undertaken since the past audit.</p> <p>OT has progressed dust monitoring since the last audit. In August OT contracted Prof. Boldgiv and team to carry out dust monitoring on 32 permanent vegetation plots. A research methodology to study impacts of dust on rangeland was developed and research sites were selected along two routes. A field survey was completed in mid September 2017. More details and results regarding this survey will be included in the contractors report to be submitted end of Q4 2017.</p> <p>This non-conformance is now closed since the work is now underway.</p>
M9.1	May 2017	Oct. 17	Propagation of priority plant species	I	<p>BMP (Appendix 1) (OT-10-E14-PLN0003)</p> <p>OMP (OT-10-E14-PLN-0007) Table 9</p>	Closed	<p>Section 5.9.2.4; 5.9.2.8. Measures to protect priority plant species and avoid and minimize project-related impacts are described in the Land Disturbance and Priority Plant Procedures and are implemented through application of the mitigation hierarchy. The Priority Plant Protection Procedure describes the necessity for OT to develop techniques to grow priority plant species and specifically research how to propagate them, where species have been or may be impacted.</p>

Mission/ Issue No.	Site Visit	Closing Date	Description	Non- Conformance	Reference	Status	Comments / Report Reference
					<p>Land Disturbance Procedure (OT-10-E14-PRC-0003-E)</p> <p>Priority Plant Protection Procedure (OT-10-E14-PRC-0007-E)</p>		<p>While OT has implemented mechanisms to protect priority plant species, the previous IESC Audit (May 2017) identified a non-conformance related to priority plants, in particular <i>Spongiocarpella grubovii</i>. OT was required to “demonstrate that it had a comprehensive programme of research on propagation techniques for all priority species under way.”</p> <p>To address Lender concerns regarding priority plant species and this non-conformance, OT has now developed short- and long-term objectives and a program of specific actions to improve the ability of the NPPC to propagate priority plant species so they can be included in the rehabilitation planting. In addition IESC were informed the CBM studies had identified populations of <i>S. grubovii</i> elsewhere in KB soums, including large numbers outside the MLA boundary, and in adjacent soums. Additional priority plant surveys and detailed habitat assessments are planned for the MLA in 2018 to improve the priority plant mapping and understanding of the microhabitat requirements of the plants.</p> <p>IESC acknowledges the considerable progress made on addressing this issue. There is now a focused research program that will help develop propagation methods over the 2018-2020 timeframe, and OT continues to build the knowledge of the habitat requirements of the priority plant species, so that they can successfully be integrated into rehabilitation.</p> <p>This non-conformance is now closed.</p>

Mission/ Issue No.	Site Visit	Closing Date	Description	Non- Conformance	Reference	Status	Comments / Report Reference
Social –Resettlement, Compensation and Livelihoods Improvement							
M1.23	Oct.13 April 14 Desktop Audit Aug. 14 Nov. 14 Desktop Audit April 15 Sept 15 Desktop Audit April 2016 August 16 May 17 Oct. 17		An Outcome Evaluation of affected herders is a specific commitment in the Resettlement Action Plan and is due to be conducted for economically displaced and other affected herders in Khanbogd <i>soum</i> .	I	Resettlement Action Plan (Sections 10.1, 10.2 and 10.4)	Open	Section 6.3.2.2. The Multi-disciplinary Team (MDT) study commenced in early 2016 with team selection, methodology and timeframe discussions, including engagement on the research. Fieldwork was undertaken in May 2016, during which 110 households were interviewed (10 more than design). The work was completed in Q1/2017. While it was positive to see tangible progress made, the report was not able to address this outstanding action. The process of evaluating outcomes for herders in Khanbogd has been significantly delayed and it is important that this study reaches a timely conclusion. In August 2016 the IESC advised the importance of all parties agreeing to success criteria or 'outcomes' that once achieved, will enable the economic displacement program to be eventually considered closed. The MDT study is now closed and this item remains open. In May 2017, the Communities Team has announced an EOI for an Outcome Evaluation and has engaged with Lenders and the IESC to provide additional, detailed technical advice on the work. As at November 2017, the consultant has been appointed, fieldwork scheduled for November-December and the final report due by 31 December 2017. This non-conformance remains open until the successful completion of the Outcome Evaluation.