



**IESC Compliance Monitoring Report**  
***Oyu Tolgoi Mine***  
**September 2022**

**Prepared for:**

**Project Lenders**

Report Date: November 28, 2022

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## KEY ABBREVIATIONS AND ACRONYMS

<b>AIFR</b>	All-In Frequency Rate
<b>AEMP</b>	Atmospheric Emissions Management Plan
<b>AESR</b>	Annual Environmental & Social Report
<b>AQMP</b>	Air Quality Monitoring Plan
<b>BAP</b>	Biodiversity Action Plan
<b>BMEP</b>	Biodiversity Monitoring and Evaluation Program
<b>BMP</b>	Biodiversity Management Plan
<b>BRMP</b>	Business Resilience Management Plan
<b>CA</b>	Cooperation Agreement
<b>CAP</b>	Priority Plant Corrective Action Plan
<b>CAO</b>	Compliance Advisor Ombudsman
<b>CBM</b>	Core Biodiversity Monitoring
<b>CCC</b>	Compensation Claim Committee
<b>CEMS</b>	Continuous Emissions Monitoring System
<b>CH</b>	Cultural Heritage
<b>CHMP</b>	Cultural Heritage Management Plan
<b>CHMS</b>	Cultural Heritage Management System
<b>CHP</b>	Central Heating Plant
<b>CHSSMP</b>	Community Health, Safety & Security Management Plan
<b>CIC</b>	Community Interaction Centre
<b>COS</b>	Coarse Ore Stockpile
<b>CSP</b>	Communities and Social Performance
<b>CSP MS</b>	Communities and Social Performance Management System
<b>DSF</b>	Development Support Fund
<b>EBRD</b>	European Bank for Reconstruction and Development
<b>ECAs</b>	Export Credit Agencies
<b>EDC</b>	Export Development Canada
<b>EFIC</b>	Export Finance and Insurance Corporation
<b>EPRP</b>	Emergency Preparedness and Response Plan
<b>ERP</b>	Emergency Response Plan
<b>ERPr</b>	Emergency Response Procedure
<b>ERT</b>	Emergency Response Team
<b>ESAP</b>	Environment and Social Action Plan
<b>ESIA</b>	Environmental and Social Impact Assessment
<b>ESMEP</b>	Ecosystem Services Monitoring and Evaluation Plan
<b>ESMP</b>	Environmental and Social Management Plan
<b>PSFA - AA</b>	Power Source Framework Agreement
<b>GH</b>	Gunii Hooloi
<b>GHGs</b>	Greenhouse Gas Emissions
<b>GIIP</b>	Good International Industry Practice
<b>HCRA</b>	Herder Complaints Resolution Agreements
<b>HLIP</b>	Household Livelihood Improvement Plan
<b>HR</b>	Human Resources
<b>HSE</b>	Health, Safety and Environment

<b>HSEC</b>	Health, Safety, Environment and Community
<b>HSEC MS</b>	Health, Safety, Environment and Community Management System
<b>HSESC</b>	Health, Safety, Environment, Security and Communities
<b>IA</b>	Investment Agreement
<b>ICMM</b>	International Council on Mining and Metals
<b>IESC</b>	Independent Environmental and Social Consultant
<b>IFC</b>	International Finance Corporation
<b>IMP</b>	In-migration Management Plan
<b>IWRC</b>	Interim Waste Recycling Center
<b>IMPC</b>	Inner Mongolian Power Corporation
<b>KBWMC</b>	Khanbogd Waste Management Center
<b>KPI</b>	Key Performance Indicator
<b>LDCRMP</b>	Land Disturbance Control and Rehabilitation Management Plan
<b>LDP</b>	Land Disturbance Permit
<b>LMP</b>	Labor Management Plan
<b>MET</b>	Ministry of Environment and Tourism
<b>MIGA</b>	Multi-lateral Guarantee Agency
<b>MLA</b>	Mine License Area
<b>MoC</b>	Management of Change
<b>MUST</b>	Mongolian University of Science and Technology
<b>MWMP</b>	Mineral Waste Management Plan
<b>NNL</b>	No Net Loss
<b>NoC</b>	Notice of Change
<b>NPI</b>	Net Positive Impact
<b>NPPC</b>	Native Plant Propagation Centre
<b>NVMP</b>	Noise and Vibration Management Plan
<b>OMP</b>	Operations Management Plans
<b>OT</b>	Oyu Tolgoi
<b>OT-GS</b>	Oyu Tolgoi – Gashuun-Sukhait
<b>OT-KB</b>	Oyu Tolgoi – Khanbogd
<b>PAF</b>	Potentially acid forming
<b>PEM</b>	Participatory Environmental Monitoring
<b>PLIMP</b>	Pastureland and Livelihoods Improvement Management Plan
<b>PR</b>	Performance Requirement
<b>PS</b>	Performance Standard
<b>PSFA</b>	Power Source Framework Agreement
<b>RAP</b>	Resettlement Action Plan
<b>RT</b>	Rio Tinto
<b>SCP</b>	Sustainable Cashmere Project
<b>SEP</b>	Stakeholder Engagement Plan
<b>SOPP</b>	State-Owned Power Plant
<b>STRENGTH GEC</b>	Strength Geologic and Environmental Consulting, LLC
<b>SLPs</b>	Sustainable Livelihood Projects
<b>TDS</b>	Total Dissolved Solids
<b>TMP</b>	Transport Management Plan
<b>TPC</b>	Tripartite Council
<b>TPD</b>	Tons per day
<b>TSF</b>	Tailings Storage Facility

<b>UB</b>	Ulaanbaatar
<b>US EXIM</b>	Export-Import Bank of the United States
<b>VCP</b>	Voluntary Code of Practice

# 1 Executive Summary

The scope of this site audit is to undertake a risk-based review of the environmental, social, health and safety performance of Oyu Tolgoi (“OT”) project operations. This includes providing an update on non-conformances identified in the last Independent Environmental and Social Consultant (IESC) Audit Report (*IESC Compliance Monitoring Report Virtual/Desktop Audit, May 2022*), as well as providing a current assessment as to whether agreed mitigation and monitoring measures are being implemented as required by commitments made in Operational-phase Environmental and Social Management Plans. The risk-based approach reflects the history of the IESC in auditing of the Project, a constructive working relationship with OT and Lenders established for now over a decade, and a corresponding decrease over time in the number of identified non-conformances with the ESIA and underlying Environmental and Social Management Plan commitments.

This report presents a review of the Project’s status as of late September, 2022. A site visit was performed for this audit, the first since Q3 of 2019. Since that time COVID-19 travel restrictions had prevented travel to the site and IESC audits were performed using available written information, remote interviews with site personnel, and numerous ‘virtual tours’ and video conferences intended to make the remote audits as similar to a site-based audit as possible.

For this update on-site meetings held with OT during the week of September 19<sup>th</sup> – 23<sup>rd</sup>, 2022. These meetings included presentations from OT and iterative in-person discussions regarding specific topics of interest. Thematic discussions regarding specific EHS considerations were held at site, as well as numerous site tours as described in this report. In addition written information and data were provided by OT in response to specific Information Requests submitted by the IESC.

To consolidate this report, in some instances references are provided to previous IESC Audit Reports for background on operational management plans and project history. The reader is referred to those prior Audit Reports for a full history of Project development and non-conformances, for instance in the construction and early evaluation of performance of the Undai River Diversion, and in the history of stack emission monitoring at the Central Heating Plant.

There were two Level III, one Level II and three Level I non-conformances identified with the ESIA and underlying management plans. The following summarize key findings and recommendations from this review:

- OT maintains a well-staffed and competent Environment Team and Community Social Performance Team. The Project is subject to a number of domestic and international audits/inspections and in general performs well when evaluated against best practice environmental and social guidance
- OT has long evaluated alternative routes for concentrate export other than truck transport through the GSK/GMD border crossing. An option of convoy truck surface transportation first to Ulaanbaatar (UB), then rail transport from UB to the border crossing at Erlain, was used in 2021. This option includes 750 km of truck convoy surface transport from OT to UB, 84 km of which is dirt track and 660 km of paved road ending at the Amagalan Rail Terminal in UB. At the terminal concentrate is transferred for export on the trans-Mongolian railway. In 2021 OT exported approximately 20,000 tons of accumulated concentrate at the OT site using this option, which was approved by Lenders with NoC 2021-004
- Beginning in 2022 OT piloted a third concentrate export option, this time using surface roads to truck to a spur railway line which then joins the trans-Mongolian railway at Zuunbayan, from where the concentrate then crosses the boarder at Erlain. In March 2022 a trial shipment of 6,400 tons of

copper concentrate (10 lots) was exported using this route. The trial shipment was approved by various Local and State agencies. In Q1 2022 OT submitted NoC 2022-001 for the future use of this export route

- In January 2022 OT formalized an Electricity Supply Agreement with the Ministry of Energy (MoE) that is valid through 2030. In a follow-on April 2022 letter to the MoE it is acknowledged that tie-in with the Mongolian power grid will be the long-term power sources for OT. The actual achievement of a local power supply to OT depends on the Government of Mongolia's implementation of the Tavantolgoi power plant along with other generation and transmission projects. Until that occurs OT will be supplied by imported power from China.
- Calendar year total precipitation at the OT weather station for Year 2022, through the end of Q3, is 51.1 mm. This is approximately half of the mean value at the site of 100.1mm/year<sup>1</sup>. Total calendar year 2021 precipitation was 95.3 mm. Precipitation patterns at the site have varied greatly over the last several years leading to direct impacts on pasture quality.
- In calendar year 2021 a total of 14.2 million m<sup>3</sup> of water was withdrawn from the deep GH aquifer, which is of brackish water quality. This annual rate is equivalent to 450 L/s. The overall 2021 water usage was 49% of the permitted amount approved by the Ministry of Environment and Tourism (MET) under the Long-Term Water Contract.
- In year 2021, and thus far in 2022, OT has not received any community complaints regarding impacts to herder wells from OT water abstraction. Also over several years of monitoring no direct or indirect OT Project impacts to herder wells or natural springs have been identified in OT Environment Team analysis, although the department is continuously monitoring water level data to identify any possible correlation. A recent detailed water use review was completed in 2021, as a requirement of the Investment Agreement. This review did not identify any discernible impacts in shallow alluvial units.
- In November 2021 an Environmental Incident occurred at the TSF related to seepage collection. The last May 2022 Audit Report the IESC described that "...It is likely that this high TDS water has migrated off the site (i.e., the Mine License Area) as the boundary is very close to the OTMB 16 – 79 monitoring bore location". OT has since installed monitoring points just beyond the Mine License Area, and elevated TDS concentrations were observed in July 2022 monitoring. OT has implemented a series of corrective actions, as detailed in this report.
- OT has agreed with the IESC that further groundwater quality investigation regarding the Environmental Incident is warranted. In this Audit Report IESC has recommended a Detailed Water Review, as described in the Water Resources Management Plan, be undertaken as soon as possible to comprehensively review available water data and guide mitigation/remediation efforts.
- The IESC continues to report that hazardous wastes has been stored on the site for an extended period of time, and not being disposed of as envisioned in the ESIA with final disposal in the Hazardous Waste Cell. Recently external hazardous waste management companies have been permitted by the Government of Mongolia, and OT has near-term plans to use these entities for disposal of hazardous waste that has accumulated at site. The IESC states that such disposal options were not considered in the ESIA, and that a NoC should be submitted if this disposal strategy is to be pursued.
- The IESC reports one monthly exceedence of CHP stack emissions relative to the Project Standard (in January 2022). The non-conformance was attributed to a blockage in the limestone feeding pipeline to the CHP, specifically to Boilers #5 and #6. At OT limestone is mixed with the coal feed

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<sup>1</sup> Oyu Tolgoi Mine Site General Conditions report. 2020. OT-10-E12-COM- 0001-D-Communication



to lower SO<sub>2</sub> emissions. This blockage in the limestone supply system was recognized quickly and immediately repaired, also in January. Since then measured SO<sub>2</sub> stack emission quality conforms with the Project Standard on a monthly and annual basis. The IESC is recognizing the non-conformance in monthly mean performance of the CHP in January 2022; however the situation has since been mitigated and it is expected that data from the next IESC audit will allow closure of this item.

- With respect to biodiversity If rail line openings can be maintained (if not expanded) permanently along the rail line from Ulaanbaatar to China, and khulan and gazelle utilization increases and is sustained, it is the IESC's opinion that this project could fulfill OT's Net Gain obligation related to habitat fragmentation for these mammals. Additionally, if OT can influence the implementation of a national standard for new rail construction *and* other alternatives to railway fencing, it will prevent additional fragmentation of habitat in the Gobi and could also fulfill OT's commitment to achieving a Net Gain for habitat fragmentation. In this case, OT could revise/simplify its current metric for habitat fragmentation and instead focus on the functioning of rail line openings or crossing structures and the habitat that is accessed through them. The IESC recommends that OT consider this when next updating its BMP and Net Gain forecast.
- The South Gobi Cashmere Project has faced challenges in implementation, raising concerns that it may not be viable. A new entity, The combination of the uncertainty about the project's viability, and the lag time to see effects, suggests that a "Plan B" is needed to hedge the risk of failure. In the previous audit (May 2022), the IESC recommended that OT begin developing such complementary/alternative plans to achieve its rangeland offset requirements. OT should develop implementation-ready plans to achieve its offset requirements for rangeland via complementary /alternative projects, to be agreed at the next IESC audit (proposed for May 2023).
- The OT ESAP includes a commitment on worker housing development. At the time of ESIA and ESAP preparation, the serviced apartment model was not envisaged nor available in Mongolia. The IESC finds a non-conformance, in that a NOC should have been prepared to account for this new model of offsite accommodation, including describing how OT intends to manage risks associated with providing family accommodation in the serviced apartment complex, in line with Lender E&S Standards and Project commitments.
- OT's commitment is to conduct a Completion Audit of the 2011 economically displaced households, based on the Outcome Evaluation, in 2020. While recognizing delays due to the challenges of Covid-19, the TORs for the Completion Audit had been completed at the previous audit following an extensive period of consultation with external stakeholders (including the new EHT/TPC). The international tendering process takes a number of months and is ongoing. The IESC finds a non-conformance with the RAP, and that that Completion Audit should be completed as a cross-departmental priority.
- With respect to the aforementioned November 2021 Environmental Incident - the IESC acknowledges that the Joint Working Group established has an agreed work plan and meets regularly. However, understanding of how the TSF is performing and being able to clearly articulate this is the responsibility of the Operator, OT. A topic-specific SEP cannot now be developed in advance of offsite seepage detection. However, the IESC finds that to demonstrate that project-affected peoples, including downstream in Javkhlant bagh, are meaningfully engaged in decisions that may have a bearing on public safety and the integrity of the tailings facility, a topic-specific SEP regarding TSF performance should be prepared.

## 2 Project Background and Introduction

### 2.1 General Environmental and Social Setting

The Oyu Tolgoi copper/gold mining Project (“the Project” or “OT Project”) is located in the *aimag* (province) of Ömnögovi, in the South Gobi region of Mongolia, approximately 600 km south of the capital city, Ulaanbaatar (“UB”), 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. OT currently operates open pit mining at the Southern Oyu deposit. This is planned to be supplemented in the future by production from block cave underground mining operations in the higher-grade Hugo North deposit. First production from the underground phase is expected in 2023. Construction of the underground mine involves developing more than 200 kilometers of underground tunnels at a depth of approximately 1.3 kilometers. Underground tunneling is progressing consistently at a rate of approximately 1,250 m per month. A total of 7,763 m were tunneled in the first half of 2022. The underground operation is expected to be fully ramped up by 2027. At that point in time the Oyu Tolgoi Project is expected to produce more than 500,000 tons of copper concentrate a year, compared with the current annual production of 175,000-200,000 tons. OT is 66% owned by Turquoise Hill Resources (itself majority owned by Rio Tinto) and 34% owned by the Government of Mongolia.

Strength GEC’s role as the IESC is to support the Lenders<sup>2</sup> by providing an external/independent Health, Safety and Environment and Communities (HSEC) monitoring evaluation of on-going operations of the OT Project. The Operational Phase of the Project began in 2013. The IESC periodically reports to the Lenders group on conformance with environmental and social planning and commitments contained within the Environment and Social Impact Assessment (ESIA) and underlying Operational Phase Environmental and Social Management Plans (OESMPs). Commitments and Key Performance Indicators (KPIs) in in these and other relevant documents define how OT will implement the mitigation strategies set out in the 2012 Environmental and Social Impact Assessment (ESIA). Commitments are also contained in an Environment and Social Action Plan (ESAP) which contains time-bound future commitments developed at the time of finalization of the ESIA. These documents, along with internal Rio Tinto and OT procedures, represent the reference documents used by the IESC to monitor Project environment, social, health and safety performance.

This report presents a review of the Project’s status as of late September, 2022. A site visit was performed for this audit, the first since Q3 of 2019. Since that time COVID-19 travel restrictions prevented travel to the site and IESC audits were performed using available written information, remote interviews with site personnel, and numerous ‘virtual tours” and video conferences intended to make the remote audits as similar to a site-based audit as possible. To consolidate this report, in some instances references are provided to previous IESC Audit Reports for background on operational management plans and project history. The reader is referred to those prior Audit Reports for a full history of Project development and non-conformances, for instance in the construction and early evaluation of performance of the Undai River Diversion, and in the history of stack emission monitoring at the Central Heating Plant.

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<sup>2</sup> 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.

Specific activities conducted in this Site-based Audit include the following:

- Review of written information and data provided by OT in response to specific information Requests submitted by the IESC;
- On-site meetings and site tours held with OT during the week of September 19<sup>rd</sup> – 23<sup>rd</sup>, 2022. The meetings included presentations from OT and iterative in-person discussions regarding specific topics of interest. In addition to a kick-off presentation the following were undertaken
  - Discussion of possible railroad export option for concentrate (pre-feasibility level discussion);
  - Discussion on improvement of the Notice of Change process;
  - Labor relations updates/presentation;
  - Meeting with OT Trade Union;
  - Meeting with Project Lead for “Everyday Respect” Program;
  - Water Resources management presentation (water usage, monitoring, stewardship);
  - Field visit to Undai River system, including downgradient herder wells and springs;
  - Field visit to Open Pit, TSF, and location of November 2021 Environmental Incident;
  - Presentation and discussion with Communities Team;
  - Social-themed site visit to Khanbogd;
  - Presentation and discussion of expansion of the Mine License Area in response to underground development surface subsidence;
  - Air Quality presentation (stack emissions and ambient air quality);
  - Site visit to Central Heating Plant, air quality monitoring stations, and Coarse Ore Storage facility;
  - Presentation and discussion regarding non-mineral waste management, including hazardous waste,
  - Site visit to Waste Management Centre and sit compositing facilities;
  - Mineral waste management presentation and discussion;
  - Concentrate shipment export options presentation and discussion;
  - Emergency response capability (surface operations) site visit, presentation and discussion;
  - Biodiversity review and update;
  - Biodiversity-themed site visit to vegetation rehab areas, TSF and saxual plantation;
  - Biodiversity offset planning discussion; and
  - Ecosystem services discussion;

In addition specific discussions were held on evaluation on implementation of key commitments/KPIs contained within the Operational Phase ESMPs and the ESAP, as well as follow-up of findings and observations from the IESC May 2022 Desktop Audit Report<sup>3</sup>. The information, observations, and opinions presented in this report are those of Strength GEC, LLC 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.

## 2.2 Oyu Tolgoi Operating Status

OT currently operates open pit mining at the Southern Oyu deposit. The open pit mine is a conventional truck and shovel operation that operates 24 hours per day based on two 12-hour working shifts. In the future this production will be supplemented by underground production, using block cave mining techniques, at the higher-grade Hugo North deposit. Ore from the underground will be delivered to the surface via the production hoist in Shaft 2 and then via conveyor to surface. First production from the underground phase is expected in 2023. Shafts 3 and 4 will provide mine access haulage and ventilation, respectively. These infrastructure components are both scheduled for completion in Q2 of 2024.

Construction of the underground mine involves developing more than 200 kilometres of underground tunnels at a depth of approximately 1.3 kilometres. When the underground operation is fully ramped up in 2027, Oyu Tolgoi is expecting to annually produce more than 500,000 tons of copper concentrate compared with current annual production of approximately 175,000-200,000 tons of copper concentrate. The filtered concentrate is bagged for transport and trucked to the Chinese border.

The current concentrator design is based on processing ore at a rate of 35 million tons per year (nominally 100,000 tpd). The process design is based on concentration by conventional milling and flotation/technology and proven equipment. Waste sludge (tailings) are filtered to approximately 60% solids in two thickeners to recycle water back into the process circuit. Non-recycled sludge is pumped to the Tailings Storage Facility (TSF) for final disposal. Water from the tailings thickeners and TSF is recycled back to the concentrator, with 88.3% of water ultimately recycled in 2021 metrics.

The final copper concentrate is thickened and filtered before storage in sealed bags for ultimate transport, generally via trucks to the Gashuun Sukhait/Ganqimaodao (GSK/GMD) border crossing with China. For calendar year 2021 OT reports a total of 704,250 tons of copper concentrate were shipped to China. It is expected that a total of 755,200 tons will be shipped in Year 2022. OT has made significant progress in moving the backlog of concentrate formally stored on site, decreasing this material from approximately 120,000 tons at the beginning of Year 2022 to a current 20,000 tons as of Q3 2022.

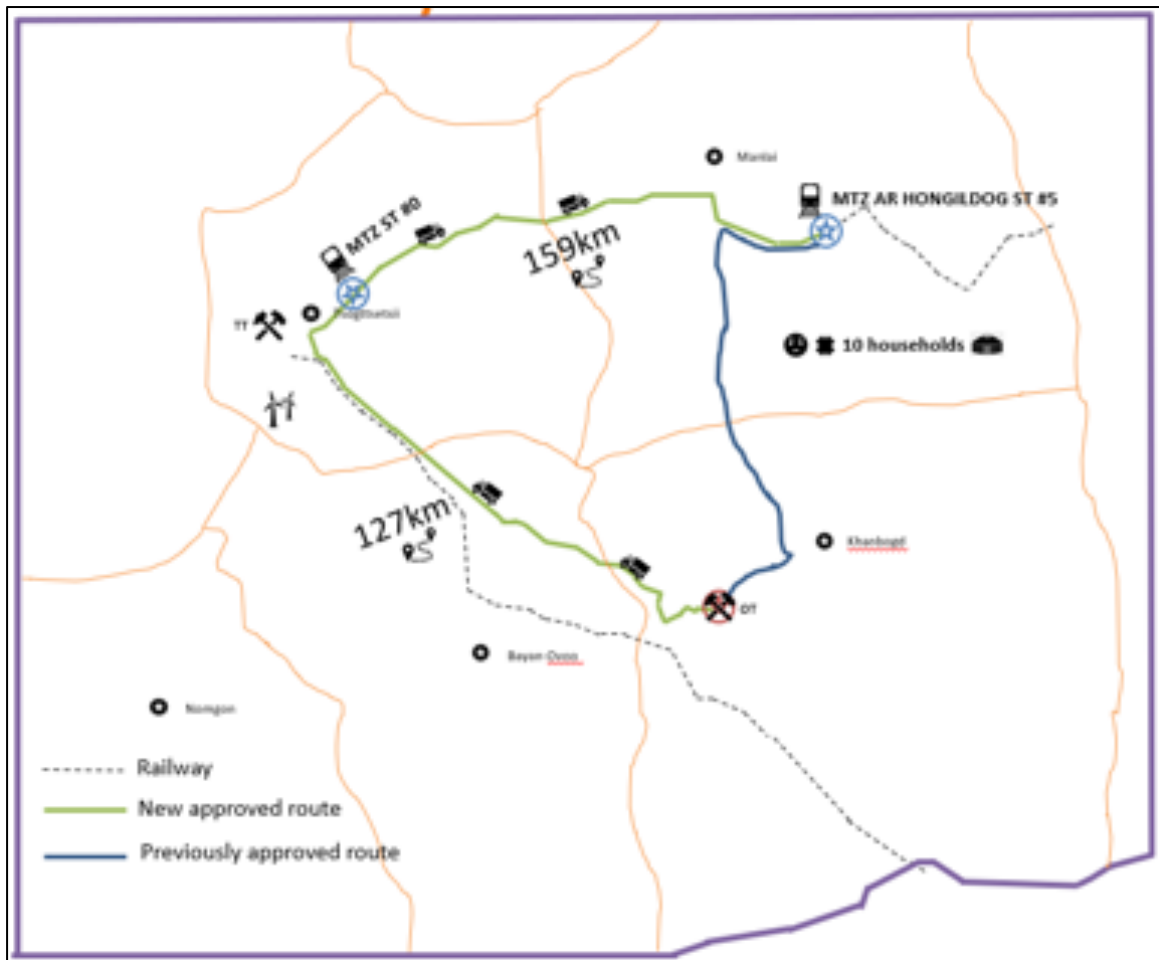
OT LLC has long evaluated alternative routes for concentrate export other than truck transport through the GSK/GMD border crossing. An option of convoy truck surface transportation first to Ulaanbataar, then rail transport from UB to the border crossing at Erlain, was first used in 2021 (the "OT-UB-EN Route"). This option includes 750 km of truck convoy surface transport from OT to UB, 84 km of which is dirt track and 660 km of paved road ending at the Amagalan Rail Terminal in UB. At the terminal concentrate is transferred for export on the trans-Mongolian railway. In 2021 OT exported approximately 20,000 tons of accumulated concentrate at the OT site using this option. This activity was reviewed by the IESC and Lenders and approved in Notice of Change 2021 – 004.

Beginning in 2022 OT utilized a third concentrate export option, this time using surface roads to truck to a spur railway line which then joins the trans-Mongolian railway at Zuunbayan, from where the concentrate then crosses the boarder at Erlain (the "OT-ZB-EN Route"). In March 2022 a trial shipment of 6,400 tons of copper concentrate (10 lots) was exported using this route. There is 286 km of surface truck transport to the railway handling station, of which 175 km is unpaved dirt road and the remaining 111 km is paved. Prior

<sup>3</sup> Strength GEC LLC, IESC Compliance Monitoring Report, Virtual/Desktop Audit, May 2022

to using this route OT had originally trucked to the railway station using a more direct “OT-Malai Country Road” until the longer more established route from OT to Tsogtsetsii and then on to the road to Zuunbayan was established by the Aimag governor (regional governmental authority). The trial shipment was approved by various Local and State agencies prior to commencement. A map of this third export option is provided as Figure 2 - 1.

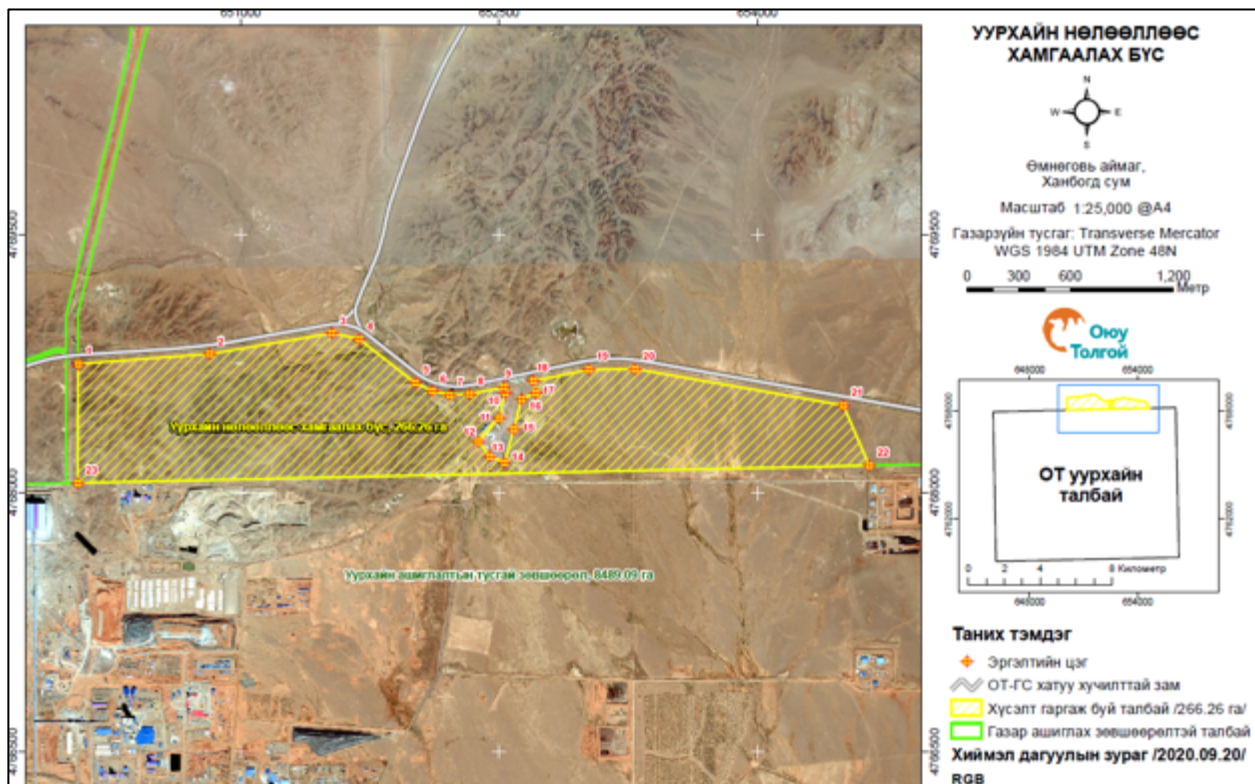
Figure 2-1 OT - ZB - EN Concentrate Export Route



OT will soon be looking to expand the area of the current Mine License Area (MLA), to accommodate expected subsidence associated with development of underground works. The current MLA encompasses a total of 8,489 hectares. Predicted fracture limits by the end of mining at Hugo North Life #1 are expected to create some subsidence that extends beyond the current northern boundary of the MLA. Expansion of the MLA would also require movement of the current Dugart River Diversion, which routes surface flow of the Dugart River around the TSF for eventual discharge into the Budaa River system. A fence will be constructed 100 m beyond the extent of the subsidence zone to restrict access. The extent of the additional land required to accommodate this subsidence zone, which totals 266 hectares, is shown in Figure 2 – 2.



Figure 2-2 Predicted Subsidence Expansion to North of Current MLA



OT is currently working with regional Khanbogd soum regulators to accommodate this additional land requirement, including preparation of a domestic EIA to be submitted to the Mongolian Ministry of Environment and Tourism (MET). The project modification will also require incorporation into the KB Land Management Plan of 2022, as well as KB Governor resolution. In addition to this OT is currently preparing documentation for a Supplemental ESIA, to correspond with the existing 2012 OT Project ESIA. The Terms of Reference for this study have been established with the Lenders and IESC, and include evaluation relative to IFC and EBRD Performance Standards and Performance Requirements, respectively, as well as additional international best practice documentation. OT plans to submit this Supplemental ESIA to the Lenders and IESC, for review, by the end of Q1 2023.

Ancillary facilities that allow operation of existing OT mine operation include a regional airport, main power supply currently via a dedicated 220 kilovolt (kV) overhead power line from the Inner Mongolian Power Corporation (IMPC) electricity grid in northern China, coal-fired Central Heating Plant (CHP), water supply and wastewater treatment systems, maintenance facilities, warehouses, administration buildings, waste disposal facilities, waste rock dumps, fuel storage depots, administration facilities, accommodations camps, and roads. The Central Heating Plant expansion was completed in 2020 bringing total capacity to 130MW.

In June 2020 the Government of Mongolia and OT formalized an Amended Agreement to the Power Source Framework Agreement (PSFA – AA). This PSFA-AA prioritized the construction of a state-owned power plant (SOPP) that would provide electricity to the OT site under a Power Purchase Agreement (PPA). In February 2021 the Ministry of Energy determined that a SOPP alone cannot reliably supply power to OT LLC and that the power supply should be sourced from the Mongolian national grid. The assessment also

highlighted supplementary generation and transmission capacity are required before the Mongolian national grid can reliably supply power to OT.

In January 2022 OT formalized an Electricity Supply Agreement (ESA) with the MoE that is valid through 2030. In a follow-on April 2022 letter to the MoE it is acknowledged that tie-in with the Mongolian power grid will be the long-term power sources for OT to align with the PSFA – AA. The actual achievement of a local power supply to OT depends on the Government of Mongolia's implementation of the Tavantolgoi power plant along with other generation and transmission projects. Until that occurs OT will be supplied by imported power from China.

## 2.3 Report Organization

Subsequent sections of this report are organized as follows:

- Section 3 – Health, Safety, Environment and Social Performance Management Systems
- Section 4 – Environment
- Section 5 – Social
- Section 6 – Worker Health and Safety and COVID-19 Response
- Section 7 – Cultural Heritage
- Section 8 – Non-Conformance Table

The findings of this IESC review are presented in the form of observations, comments and recommendations. Two types of findings are included:

- non-conformances, included in the Non-Conformances Table (Section 8), which refer to issues related to Project commitments included in the ESIA or Operational Management Plans; and
- recommendations, included at the end of each section (3 – 7) which are based on the collective experience of GIIP and expertise of the IESC team members.

The IESC's recommendations are not considered mandatory and therefore their implementation is not required. 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 Environmental and Social Management System and Planning

Environmental and social management for the OT Project is defined through a series of interlinked documents. The first tier of these is the framework document – Environmental and Social Management Plan<sup>4</sup> (ESMP). Underlying this ESMP are other OESMPs and procedures including the Biodiversity Management Plan (BMP). These and other supporting documents have been described in previous IESC reports. The Health, Safety, Environment and Community Management System (HSEC MS) framework for the OT Project is governed by the Rio Tinto HSEC MS, which is a mature system aligned with ISO 9001, ISO 14001, and OSHAS 18001 requirement and which is applied across the Rio Tinto group.

Overall the HSEC MS is intended to manage the Project in compliance with Rio Tinto, Mongolian and Lender requirements of performance. Within the HSEC there are the OT Environment Team and the Communities and Social Performance (CSP) Team. The OT Project is subject to a variety of internal Rio Tinto and other external audits and reviews. For year 2021 these internal and external ESHS audits are shown in Table 3 - 1.

**Table 3-1 2021 Internal and External ESHS Audits**

<b>Audit Type</b>	<b>Origin</b>	<b>Description</b>
Internal	Rio Tinto	First party assurance audit
External	Rio Tinto	Safety maturity model
External	SGS Aviation	Audit on Khanbumbat airport
Internal	Oyu Tolgoi	Safety Maturity Model (internal)
External	Rio Tinto	D6 Process Safety Management Health Check
External	Rio Tinto	D1.5 Explosive and Hazardous Atmosphere Review
External	Government	National intelligence agency, Police, DZGASI and National Human Rights Commission
External	Government	Water Audit
External	Rio Tinto	Use of armed privacy security
External	PWC	Sustainability review

<sup>4</sup> Environmental and Social Management Plan – Doc. No. OT-10-PLN-0003 updated 2021

### **3.1 Status of Operational Environmental and Social Management Plans**

The current ESMP reflects the identification and assessment of impacts and risks detailed in the integrated OT ESIA, and is described in previous IESC reports along with the OESMPs and supporting procedures/other implementation documents. The ESMP goes through a formal review cycle every two years. In 2021 the ESMP was updated via a formal Notice of Change (*NoC 2021- 002: Update and Revisions to the OT Environmental and Social Management Plan OT-10-PLN-0003*). This updated ESMP was reviewed by the IESC and includes changes such as the updating of management plans and procedures, revised organizational structure, as well as operational and business updates.

A summary of current OT Operational Management Plans and underlying Key Implementation Documents is provided in Table 3 – 2. These plans have remained consistent in Year 2022 as with the year prior, with the exception of an update to the Community, Health, Safety and Security Management Plan. Overall the IESC has not noted significant impacts to environmental and social planning of the overall OT project with incorporation of the underground development. No additional land has been required, and processing circuit requirements have remained the same. The biggest potential consideration thus far with Underground development are health and safety aspects, which are discussed separately in an Independent Engineer (IE) report. During the Q3 2022 site visit to the OT no incremental environmental and/or social impacts of Underground project development were apparent, with the exception of minor stockpiling of waste rock material near shaft developments. This activity is managed in the context of the Project's Mineral Waste Management Plan.

**Table 3-2 2022 Operational Management Plans and Key Implementation Documents**

<b>Operational Management Plan</b>	<b>Document Reference</b>	<b>Key Implementation Documents</b>
Atmospheric Emissions Management Plan	OT-10-E12-PLN-0001	<ul style="list-style-type: none"> <li>• Air Quality Monitoring Plan (OT-10-E12-PLN-0002)</li> <li>• Rio Tinto Air Quality Protection Standard (E12)</li> </ul>
Biodiversity Action Plan	OT-10-E16-PLN-0001	
Biodiversity Management Plan	OT-10-E16-PLN-0002	<ul style="list-style-type: none"> <li>• Illegal Wildlife, Wildlife Products, and Plant Procedure ( OT-10-E14-PRC-0005)</li> <li>• Dead animal and nest inspection procedure along roads and power lines (OT-10-E14-PRC-0004)</li> <li>• OT Site Wide Traffic Management Plan (OT-10-C3-PRC-0005)</li> <li>• OT-GSK Road Mitigation Strategy</li> </ul>
Biodiversity Offset Management Plan	OT-10-E14-PLN-0007	
Biodiversity Monitoring and Evaluation Plan	OT-10-E16-PLN-004	
Community Health, Safety and Security Management Plan	OT-10-PLN-0001	<ul style="list-style-type: none"> <li>• Community Outrage Plan (OT-12-PLN-0016-M)</li> </ul>
Contractor Management Framework	OT-07-PLN-0001	<ul style="list-style-type: none"> <li>• OT General Conditions for Goods and Services</li> <li>• OT Procurement Principles (PR-00)</li> <li>• Supplier Qualification Policy (PR-02)</li> <li>• International Strategic Supplier Collaboration Policy (PR-05)</li> <li>• South Gobi Supplier Development Policy (PR-06)</li> <li>• National Supplier Development Policy (PR-07)</li> <li>• OT Procurement Personnel Code of Conduct (PR-08)</li> <li>• Contractor Engagement Handbook for Designated Managers (OT-07-GDL-9007)</li> <li>• Contractor Engagement Handbook for Suppliers (OT-07-GDL-9006)</li> </ul>
Cultural Heritage Management Plan	OT-10-PLN-0002	<ul style="list-style-type: none"> <li>• Land Disturbance Permit Procedure (OT-10-E14-PRC-0003)</li> <li>• Cultural Heritage Management System Procedures</li> <li>• Cultural heritage chance find procedure</li> </ul>
Ecosystem Service Monitoring and Evaluation Plan		

Operational Management Plan	Document Reference	Key Implementation Documents
Emergency Preparedness and Response Plan	OT-12-PLN-0011	<ul style="list-style-type: none"> <li>• Spill Response Procedure (OT-10-E15-PRC-0002)</li> <li>• Incident Management Flow Chart (OT-14-MAP-0002)</li> <li>• OT Emergency Response Plan (ERP)</li> <li>• Hazard Identification and Risk Management Procedure (OT-03-PRC-0001)</li> </ul>
Hazardous Materials and Non-Mineral Waste Management Plan	OT-10-E15-PLN-0001	<ul style="list-style-type: none"> <li>• Hazardous Material Management Procedure (OT-10-E15-PRC-0001)</li> <li>• How to use ChemAlert Guideline (OT-10-E15-GDL-0001)</li> <li>• Incident Management Procedure (OT-14-PRC-0009)</li> <li>• Spill Response Procedure (OT-10-E15-PRC-0002)</li> <li>• Non-Mineral Waste Classification Procedure (OT-10-E15-PRC-0004)</li> <li>• Non-Mineral Waste Collection and Transfer Procedure (OT-10-E15-PRC-0006)</li> </ul>
In-migration Management Plan	OT-10-PLN-0004	None
Labor Management Plan	OT-10-PLN-0005	<ul style="list-style-type: none"> <li>• HR-A1: Employment Policy</li> <li>• HR-A2.1: Recruitment and Selection Procedure</li> <li>• HR-C3: Language Training Procedure</li> <li>• HR-C4: Trades Training Procedure</li> <li>• HR-D5.1: Service Recognition Procedure</li> <li>• HR-D3: Working Conditions Procedure</li> <li>• HR-D1.1 Allowance Procedure</li> <li>• HR-G2: Equal Employment Opportunity Policy</li> <li>• HR-G6.1: Hours of Work Procedure</li> <li>• HR-G1.1: Human Rights Guidance</li> <li>• HR-G1: Human Rights Policy</li> <li>• HR-G5.2: State Awards and Nomination Procedure</li> <li>• HR-H7.1: Camp Standard and Code of Behaviour</li> <li>• HR-ST-02: Drug and Alcohol Management Standard</li> <li>• HR-H4: Expatriate Code of Conduct</li> <li>• HR-H2.1: Grievance and Fair Treatment Procedure</li> <li>• HR-H.3.1: Leave Procedure</li> </ul>
Land Disturbance Control and Rehabilitation Management Plan	OT-10-E14-PLN-0005	<ul style="list-style-type: none"> <li>• Topsoil Handling Procedure (OT-10-E14-PRC-0001)</li> <li>• Technical Rehabilitation Procedure (OT-10-E14-PRC-0002)</li> <li>• Land Disturbance Permit Procedure (OT-10-E14-PRC-0003)</li> <li>• Priority Plant Protection Procedure (OT-10-E14-PRC-0007)</li> <li>• Biological Rehabilitation Procedure (OT-10-E14-PRC-0010)</li> </ul>

<b>Operational Management Plan</b>	<b>Document Reference</b>	<b>Key Implementation Documents</b>
Mine Closure Plan	None	<ul style="list-style-type: none"> <li>• Mine Closure Plan</li> </ul>
Mineral Waste Management Plan	OT-10-E13-PLN-0001	<ul style="list-style-type: none"> <li>• Integrated Mineral Waste, Acid Rock Drainage and Dump Management Plan OT-10-E13-PLN-0002</li> <li>• Oyu Tolgoi Material Segregation Procedure (OT-10-E13-PRC-0001-E)</li> <li>• Rio Tinto Chemically Reactive Mineral Waste Control Standard (OT-10-E13-STD-0001)</li> <li>• Rio Tinto Chemically Reactive Mineral Waste Control Standard (OT-10-E13-STD-0001)</li> </ul>
Noise and Vibration Management Plan	OT-10-E00-PLN-0001	<ul style="list-style-type: none"> <li>• Noise Monitoring and Control Procedure (OT-00-PRC-0001)</li> <li>• Blasting Standard Work Procedures</li> </ul>
Pastureland and Livelihood Improvement Management Plan	OT-10-PLN-0013	<ul style="list-style-type: none"> <li>• Local Agribusiness Support Strategy</li> </ul>
Resettlement Action Plan	OT-10-PLN-0006	<ul style="list-style-type: none"> <li>• Grievance and Fair Treatment Procedure (HR-10)</li> <li>• Pastureland Management Strategy</li> </ul>
Stakeholder Engagement Plan	OT-05-PLN-0001	
Transport Management Plan	OT-10-C3-PLN-0001	<ul style="list-style-type: none"> <li>• Road Construction and Maintenance Procedure (OT-10-C3-PRC-0001)</li> <li>• Heavy Vehicle Operating Procedure (OT-10-C3-PRC-0002)</li> <li>• Light Vehicle Operating Procedure (OT-10-C3-PRC-0003)</li> <li>• Tire and Rim Procedure (OT-10-C3-PRC-0004)</li> <li>• OT Site Wide Traffic Management Plan (OT-10-C3-PRC-0005)</li> </ul>
Water Resources Management Plan	OT-10-E11-PLN-0001	<ul style="list-style-type: none"> <li>• Water Monitoring Procedure (OT-10-E11-PLN-0002)</li> <li>• Water Quality Assurance and Quality Control Plan (OT-10-E11-PLN-0003)</li> <li>• Rio Tinto Water Quality Protection Standard (E11)</li> </ul>

### **3.2 Notice of Changes to Operational Environmental and Social Management Plans**

An internal OT Notice of Change (NoC) process is described in the ESMP, and is intended to allow evolution of the Project either due to Project modifications or updated environmental and social procedures. The implementation of the NoC process is described in previous IESC reports. In summary there are three categories of NoCs with Category 1 being significant changes to the Project Description or Project Standards and Category 3 being temporary modifications within the Mine License area that have no or limited environmental or social impact.

There were no Category 1 NOC's submitted in 2020 or in 2021. There have been a number of Category 2 or 3 Notice of Change requests submitted to Lenders over Years 2020 - 2022. Their titles, date of submission, and approval status are listed in Table 3 – 3. Due to the large volume of IESC activity with debt restructuring obligations and auditing, there are currently four NoCs submitted in Year 2022 that are pending review. These will be reviewed by the IESC in Q4 /2022 and Q1/2023.

**Table 3-3 Category 1 Notice of Changes for Year 2020 - 2022**

<b>Notice of Change Number</b>	<b>Notice of Change Title</b>	<b>Date of Submission to Lenders</b>	<b>Status</b>
2020-001	Update and Revisions to OT Contractor Management Framework	Jan 10, 2020	Approved
2020-002	Ecosystem Service Monitoring and Evaluation Plan Update	Feb 17, 2020	Approved
2020-003	Update and Revisions to the OT Biodiversity Offset Management Plan	March 6, 2020	Approved
2020-004	Update and Revisions to the OT In-migration Management Plan	March 10, 2020	Approved
2020-005	Update and Revisions to the Transportation Management Plan	May 13, 2020	Approved
2020-006	OT Biodiversity Monitoring and Evaluation Program	June 25, 2020	Approved
2020-007	Priority Plant Protection Procedure revision	July 10, 2020	Approved
2020-008	Biodiversity Management Plan	October 1, 2020	Approved
2020-009	Hazardous Materials and Non-Mineral Waste Management Plan	October 16, 2020	Approved
2020-010	Atmospheric Emissions Management Plan	October 21, 2020	Approved
2020-011	Noise and Vibration Management Plan	October 21, 2020	Approved
2021-001	Update and Revisions to the OT Cultural Heritage Management Plan	April 1, 2021	Approved
2021-002	Environmental and Social Management Plan Update	September 10, 2021	Approved
2021-003	Continuous Emission Monitoring System Data	September 30, 2021	Approved
2021-004	Copper Concentrate Supplemental Shipment through OT-UB-Erlain	October 19, 2021	Approved
2022-001	Copper Concentrate Supplemental Shipment Through OT-TT-ZB Railroad	March 24, 2022	Open



Notice of Change Number	Notice of Change Title	Date of Submission to Lenders	Status
2022-002	Revisions to the OT Community, Health, Safety and Security Management Plan	April 12, 2022	Open
2022-03	Update and Revisions to the Pastureland and Livelihood Improvement Management Plan	June 9, 2022	Open
2022-04	NOC -2022-004 OT Concentrator Conversion Project	July 24, 2022	Open

### 3.3 Environmental and Social Action Plan

Table 3-4 contains the Project Environmental and Social Action Plan (ESAP) and implementation status. The ESAP was developed at the time of ESIA finalization and Lender financing commitment (2012).

**Table 3-4 Environmental and Social Action Plan**

ESAP Item Number	Action Plan Item	Implementation Status
1	Biodiversity Action Plan (BAP)	Implemented and generally in progress as planned. One Level III non-conformance identified in this report regarding offset to rangeland impacts. Ongoing monitoring detail provided in this Audit Report
2	Power Plant Environmental and Social Impact Assessment (ESIA)	An ESIA for a power plant at Tavan Tolgoi, to be owned and operated by OT, was reviewed by the IESC in December 2018. The Government of Mongolia has since announced that the power plant will be state-owned, but that it may take some time for this project to develop. As such in 2022 an Electricity Supply Agreement (ESA) was established by OT with the Government of Mongolia, concluding that power to the project will continue to be provided by the Inner Mongolian Power Corporation until a domestic source becomes available.
3	Operations Phase Environmental and Social Management Plans (OESMPs)	Completed as detailed in Table 3 – 2 of this report
4	Mine Closure Plan	The current version of the Oyu Tolgoi Closure Plan was last updated in 2014. A revision is required to ensure the Closure Plan aligns with the <i>Mongolia National Regulation on Mine Closure and Rehabilitation</i> and Rio Tinto Closure Standard updates from 2015 and 2021, respectively. OT has prepared a Gap Assessment of the current Closure Plan with these requirements. It is planned that the Closure Plan will be updated in Q4 of 2022/Q1 of 2023. Tendering of bids to update the Closure Plan are in progress. Overall OT's closure liability lies within Rio Tinto's over-arching closure provisioning.
5	Worker Housing Development	OT currently has no plans to develop new infrastructure for working housing outside of the site. However there plans to house workers in existing apartment stock, as described in this report. OT should submit an NoC for this activity.
6	Industrial Estate	OT currently has no plans to develop an industrial estate outside of the site.
7	Pastureland Livelihood and Improvement Management Plan (PLIMP)	The PLIMP was revised in 2022 and current performance is described in Section 5.2.2
8	Concentrator Expansion Reports	No update as this expansion of ore throughput is not planned at this time. There will be some conversions at the concentrator to incorporate higher-grade underground ore, but the concentrator will not be expanded beyond current capacity.
9	Independent Environmental and Social Monitoring Program	Ongoing with role of IESC
10	Environmental and Social Reports	Most recent Annual Environmental and Social Report prepared by OT in Q1 of 2022, encompassing 2021 reporting period.
11	Transmission Line from OT to Khanbogd soum center	Completed
12	OT – GSK Road Diversion	Completed
13	Update of Resettlement Action Plan	Completed

## 4 Environmental Performance

### 4.1 Water Management

Calendar year total precipitation at the OT weather station for Year 2022, through the end of Q3, is 51.1 mm. This is approximately half of the mean value at the site of 100.1 mm/year<sup>5</sup>. Total calendar year 2021 precipitation was 95.3 mm. The current very dry conditions were apparent during the site visit, with limited forage (i.e., green vegetation) apparent. Although scant rainfall was received at the OT site there were four small flood events on the Undai River in July of 2022. Precipitation patterns at the site have varied greatly over the last several years, leading to direct impacts on pasture quality.

In 2021 Oyu Tolgoi issued a paper examining long-term climate trends in the South Gobi region (*Observed Climate Change at Local Scale – Southeastern Gobi in Mongolia, 2021*). This paper was co-authored by OT Environmental Team staff and climate professionals at the National University of Mongolia. In the study climate data from 1976 – 2019 and collected from four different soums in the southeastern Gobi region were critically evaluated to determine long-term trends. This was the first study of its kind for the region. In summary the climate has become hotter and drier over the studied time period. Figure 4 – 1 summarizes the resultant drought index trends determined in the study, with Year 2020 and Year 2021 data added. The IESC has previously recommended that results of this study be shared with herders and local stakeholders. OT received this recommendation and presented results of the study to the following:

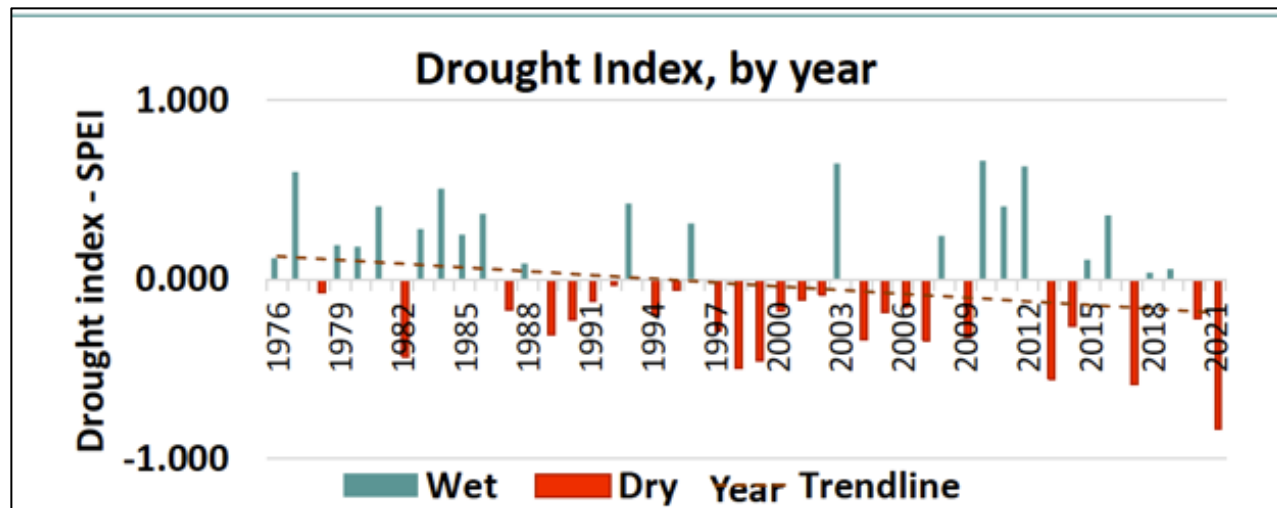
- Dalanzagdad Environmental Protection Agency (DZ EPA, in October 2021);
- Poster presentation at a UB Climate Change and Youth International Forum (in August, 2022); and
- Khanbogd meeting of the Tri-Partite Council (TPC, in September 2022)

Results of the study have also been emailed to Khanbogd environmental specialists and provided to the Munkh Nagoon Galba NGO, which coordinates Participatory Environmental Monitoring with local herders.

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<sup>5</sup> Oyu Tolgoi Mine Site General Condition Report. 2020. Document Number: OT-10-E12-COM-0001-D-Communication.

Figure 4-1 Drought Index Over Time in Southeastern Gobi Region

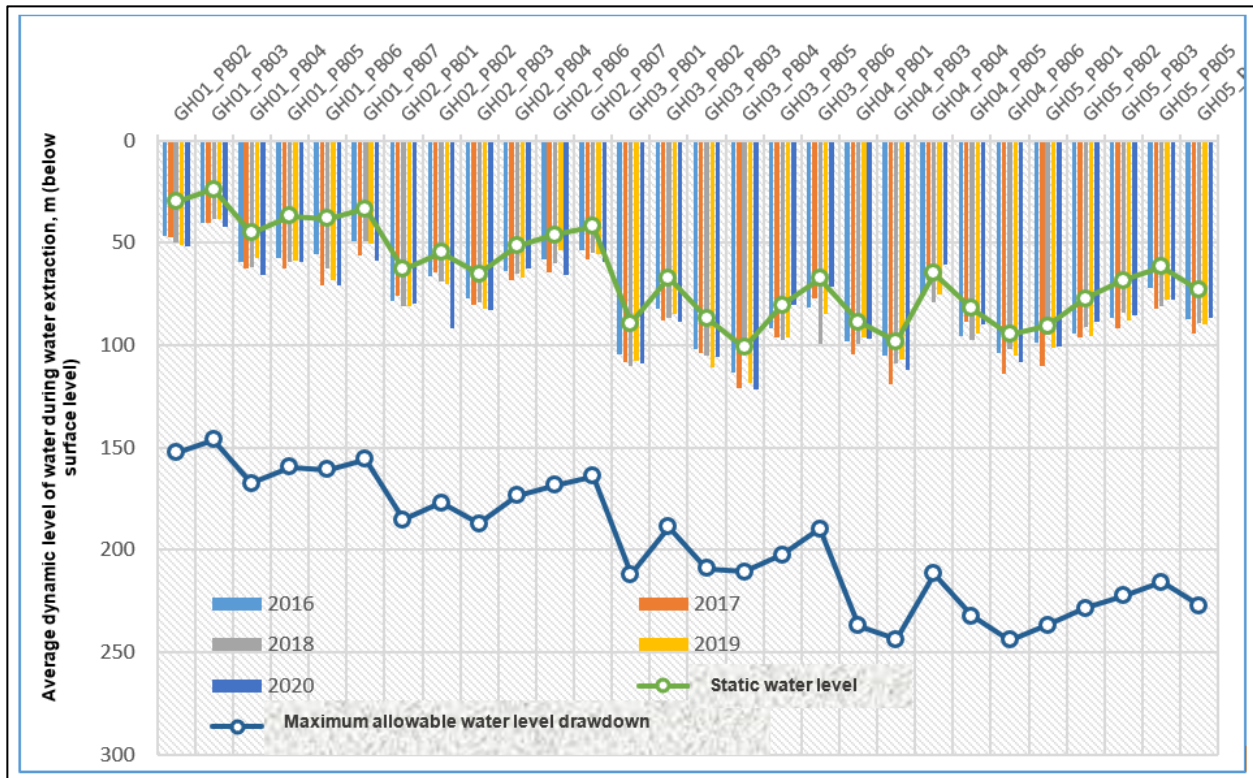


#### 4.1.1 Water Use and Efficiency

The OT Project is permitted to withdraw groundwater from 28 production wells installed in the regional Gunii Hooloi (GH) aquifer, which contains brackish and non-potable water, at a rate of 918 L/s (approximately 79,315 m<sup>3</sup>/day). Permitting for this water abstraction is contained in a Long-Term Water Contract with the Government of Mongolia, issued in 2016. The Long-Term Water Contract is valid through Year 2040.

In calendar year 2021 a total of 14.2 million m<sup>3</sup> of water was withdrawn from the GH aquifer. This is equivalent to 450 L/s in Year. The overall 2021 water usage was 49% of the permitted amount approved by the Ministry of Environment and Tourism (MET) under the Long-Term Water Contract. Water consumption from the GH aquifer in calendar Year 2022, through August 31, is a total of 10.2 million m<sup>3</sup>, or a rate of 475 L/s. Thus far in 2022 approximately 88% of the water sourced from the GH basin was from Clusters 1, 2 and 3, located in the northeast of the aquifer basin, with Clusters 4 and 5 to the southwest making up the additional 12% of supply. Maximum drawdowns in the GH aquifer are located at the centers of the NE and SW bore field, and range from 14.5 – 17.1 m. These values are in-line with 2015 long-term modeling predictions. Water levels in the GH are responsive to pumping cycles, and as a result water levels can fluctuate between 3 – 8 meters due to variation in the chosen abstraction regime. Figure 4 -2 shows the Year 2016 – 2020 static water levels across the GH borefield, in green, with maximum permitted drawdowns shown in blue. As shown generally water levels are significantly above authorized drawdown limits.

Figure 4-2 Water Level Drawdown in GH Aquifer Relative to Maximum Allowable Drawdown



OT target raw water usage rate is 700 L/s (60,480 m<sup>3</sup>/day). The project has been below this target pumping rate since the beginning of open pit operations. The average consumption rate in Year 2022, through the end of August, is 385 L/s. This rate will likely increase by the end of 2022 as water freezes in the TSF and becomes less available for recycling into the process circuit. In Year 2021 the total annual consumption rate of 455 L/s was 65% of the target usage rate (WR-KPI-02). Maximum monthly water raw water usage is highest in winter when much of available water at the TSF is locked up as ice. The concentrator circuit is by far the biggest use of water at the site, using almost 90% of all make-up supply, and as such is the focus of water recycling efforts.

In calendar Year 2022, through the end of August, OT has achieved an overall 87.27% water recycling efficiency rate. In 2021 OT achieved an overall 88.7% water recycling efficiency rate, reflecting an average of 3,241 L/s recycled from the concentrator plant. Year 2020 and 2019 overall water recycling rates were 87.7% and 87.1%, respectively. In all instances water recycling efficiencies have been above the 80% threshold minimum criteria recycling rate included as a key performance indicator in the ESIA (WR-KPI-03).

In Year 2022, through August, OT has realized an overall water usage rate of 385 L of water consumed/ton of ore produced. In 2021 and 2020 OT realized an overall water usage rate of 380 L and 371 L of water consumed/ton of ore produced, respectively. These rates are well below the ESIA Key Performance Indicator target of 547 L/ton-ore (WR-KPI-04). These water consumption rates relate to ton of ore produced and are less than one-third of a benchmarked global statistic used by OT demonstrating an industry average usage rate of 1,220 L/ton-ore. The IESC notes that this benchmarking study (*Sustainability Reporting and Water Resources: a Preliminary Assessment of Embodied Water and Sustainable Mining*, Mine Water Environ, 2008) is now almost 15 years old and it is suggested that a more current analysis be performed if this statistic is continued to be used as a demonstration of efficient

water use. That said the IESC reports that OT has historically performed well in water consumption assessment criteria relative to ESIA commitments.

#### **4.1.2 Sustainable Water Use in the South Gobi**

OT has committed to working with the Government of Mongolia, non-governmental organizations, and other public and private water users in the South Gobi region to assist in a sustainable model for water use in the region, and for the maintenance of existing water resources. Since its inception in 2014, OT has been a key participant in the South Gobi Water and Mining Industry Roundtable meetings arranged by the International Finance Corporation (IFC).

In February of 2016 OT became a key signatory to the International Finance Corporation *Voluntary Code of Practice (VCP) on Water Management*. This VCP includes as signatories other major infrastructure projects in the South Gobi region and also includes government stakeholders from the Mongolian Ministry of Environment and Tourism. There are numerous goals of the VCP including effective water resource management and transparent use/accounting of limited water resources. Reporting outputs of the VCP are distributed to TPC members as well as KB residents.

For this audit OT provided minutes and outcomes from the Q2 2022 meeting of the VCP (the prior May 2022 Audit Report discusses outcomes of the Q4 2021 meeting of the VCP). There are many topics and issues of discussion included in these minutes that demonstrate attention by OT to improving environmental regulation and water resource management throughout the South Gobi region and Mongolia. Most recent meeting minutes reflect intention to improve the domestic environmental impact review process (i.e., improvement of “Detailed Environmental Impact Assessments”), including adequate regulatory oversight. VCP members discussed how the frequent changing of MET specialists and managers prevents continuity of regulators who are familiar with topics covered in DEIAs.

As first discussed in the prior May 2022 Audit Report, in accordance with Article 6.19 of the Investment Agreement, Oyu Tolgoi is obliged to conduct an independent audit of its water use every five years. In 2021 OT completed the requisite detailed Water Monitoring Review, as prepared by a third party (Erdene Drilling, LLC). The objective of this review was to compile all available water monitoring data relating to the GH aquifer withdrawal over the OT Operational Phase, including shallow streambed aquifers. Data were reviewed through the end of 2020 to assess:

- individual bore and overall borefield performance since commissioning;
- natural and abstraction-induced water level and water quality variations;
- groundwater flow direction and vertical and horizontal gradients within and between hydrogeological units;
- drawdown impacts and comparison to model predictions; and
- the potential to minimize drawdown through modification of the abstraction regime

There were a number of recommendations made in the report, mostly related to continuous improvement of the water level monitoring system, improvements in operating regime of the abstraction well clusters, establishment of a maintenance manual, etc. A summary of the recommendations is provided in the May 2022 Audit Report. There are no findings in this five-year external review that are of significant concern as it relates to ESIA implementation, or that contradict the findings of prior Audit Reports.

### 4.1.3 Undai River Diversion Performance

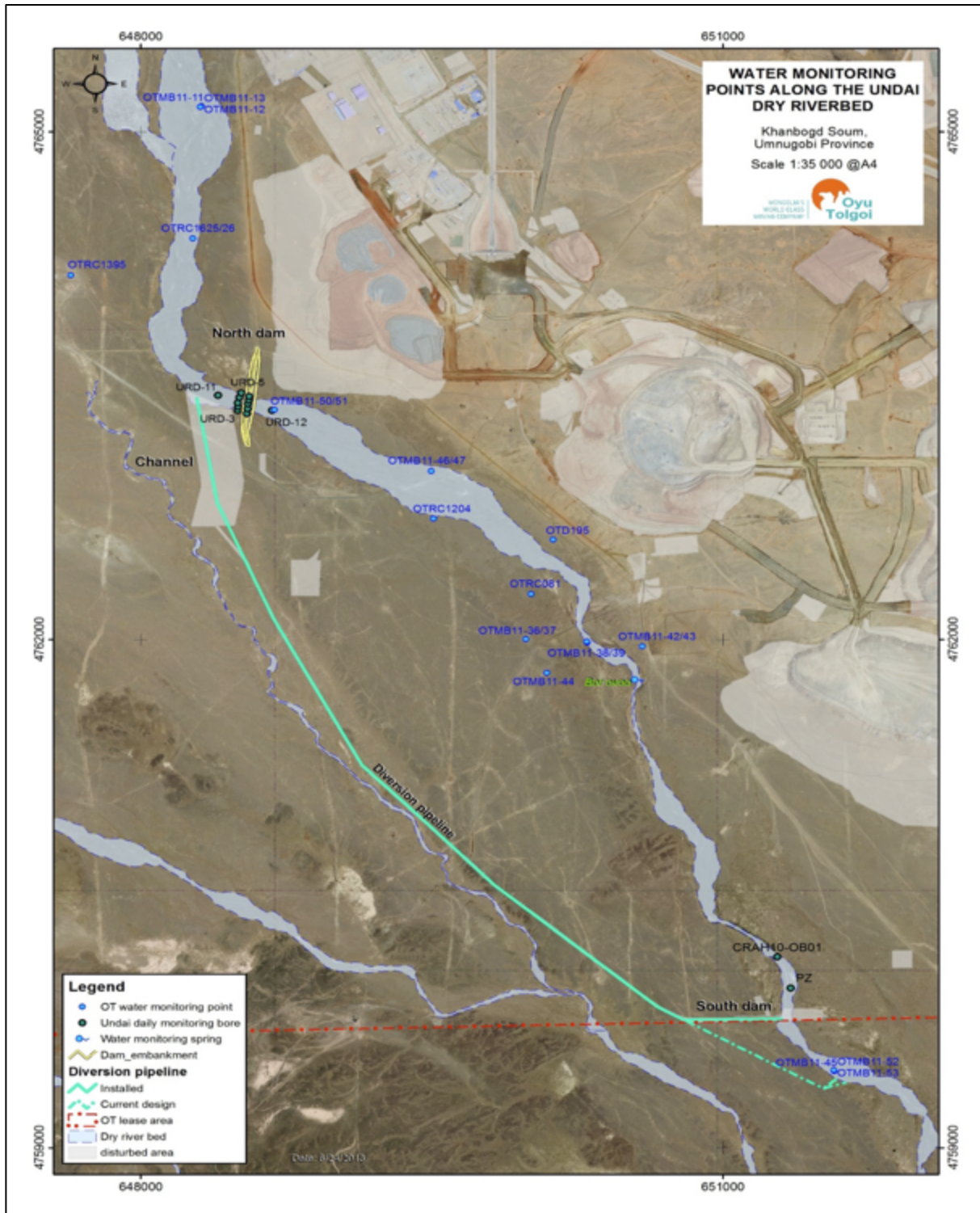
Findings regarding current performance of the Undai River Diversion are based on the most recent Undai River Biannual Report, issued in Q3 2022. This is the 55<sup>th</sup> iteration of Undai River Diversion system reporting. The Undai River status reports were originally developed on a fortnightly frequency, then quarterly, and, since May 2019, biannually. This reflects the gradual stabilization of the system following 2013 construction of the Undai River Diversion system, which bypasses the open pit. As discussed in previous reporting the Undai River Diversion system has the capacity of diverting up to ~ 700 m<sup>3</sup>/day of groundwater flow from the northern cut-off dam through a subterranean tunnel system to an ultimate discharge point just south of the MLA.

Diverted groundwater flow creates a large artificial spring that is heavily used by wildlife as well as herders and their livestock. This artificial spring is referred to as the “New Bor Ovoo spring” to reflect replacement of the historic Bor Ovoo spring, which was previously located along the Undai River in the vicinity of the open pit. The historic Bor Ovoo spring was a relatively small feature with average surface of area of approximately 40 m<sup>2</sup>. The morphology of the New Bor Ovoo Spring has been measured by OT since 2013 construction of the Undai River Diversion. The surface area of the new spring fluctuates as a function of freezing and gradual thawing from ambient air temperatures; however in all circumstances there is greater water availability in the New Bor Ovoo Spring.

The Undai River Diversion is a mature system with a now almost 10-year operating history. An established monitoring network of 14 nested boreholes allows monitoring of water levels in shallow alluvial sediments as well as deeper perched aquifers. The constructed Undai Diversion system, location of the old Bor Ovoo Spring, and location of the New Bor Ovoo Spring are shown in Figure 4-3.



Figure 4-3 Monitoring Points Along Undai River Diversion System

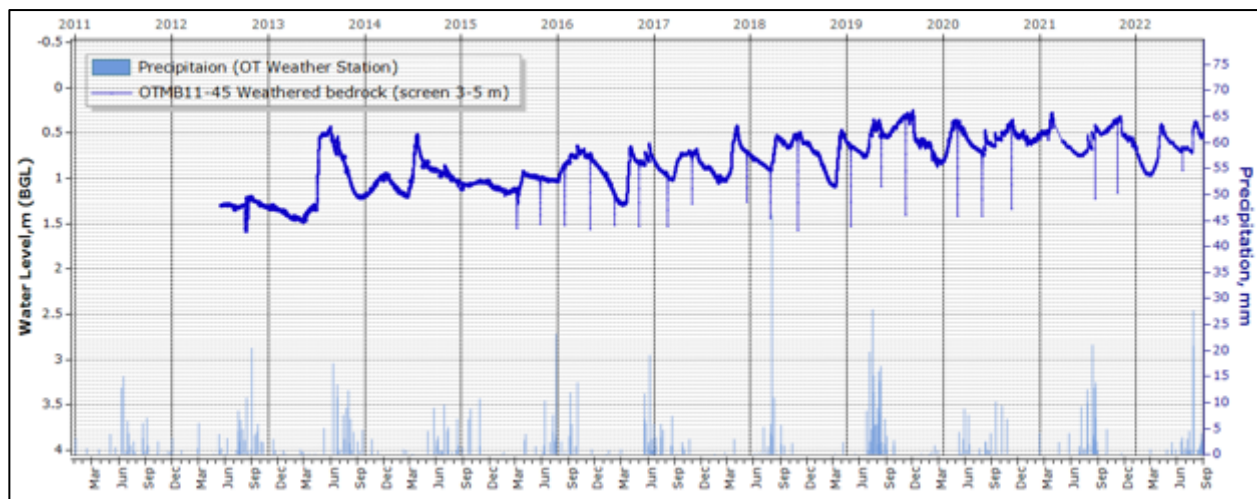


The New Bor Ovoo Spring has an established pattern of growing during the winter freezing season, then gradually decreasing in size through the summer months. For example in February 2021 the spring size

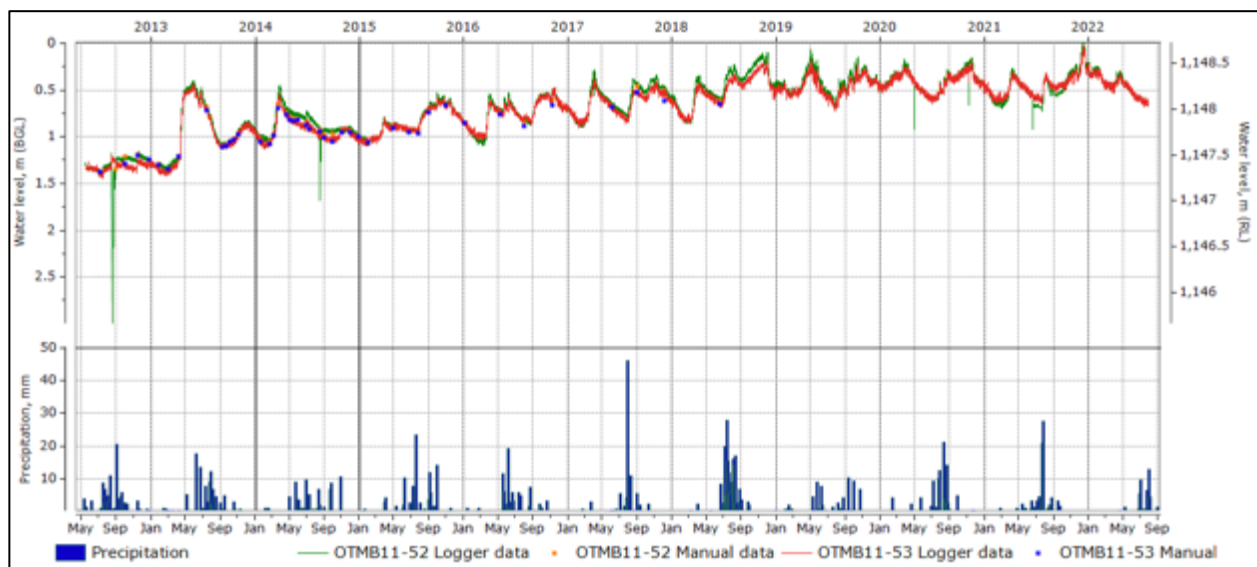
was measured at 51,500 m<sup>2</sup>; by August of 2021 the spring had shrunk in size to approximately 11,000 m<sup>2</sup>. The replacement spring has regularly had some water presence through the summer months, with the exception of the summer of 2015 which followed consecutive years of below-average precipitation.

In addition to tracking morphology of the replacement spring there are key monitoring points immediately down gradient of the New Bor Owoo spring in the shallow alluvial sediments of the Undai River. These monitoring points, OTMB11-45 and OTMB11-52/53, are located approximately 400 m to the south of the replacement spring discharge point. Data from post-construction monitoring reflect a general rising trend in depth to water level, with current values ranging from 0.0 – 1.0 m below ground surface (bgs), as a function of precipitation and the seasonal freezing and melting of the ice sheets (Figures 4-4 and 4-5). In general the values of depth to water are more shallow than the values from before construction of the Undai River Diversion.

**Figure 4-4 Groundwater Levels at OTMB 11- 45 through Q3 of 2022**

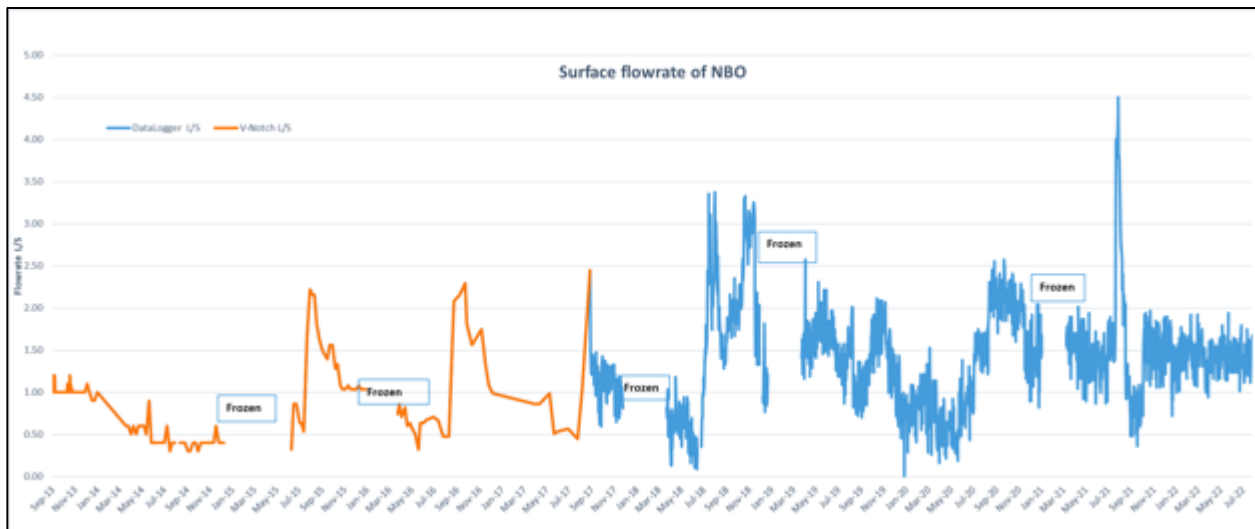


**Figure 4-5 Groundwater Levels at OTMB 11- 52/53 through Q3 of 2022**



The trend of higher water levels suggest greater volume of groundwater availability below the MLA than before construction of the Undai River Diversion. This is likely caused by the bypassing of the Diversion around faults that cross-cut the Undai River system in the vicinity of the open pit. These cross-cutting faults historically caused leakage from the system, decreasing water availability in the Undai River alluvial sediments downgradient of the faulting. Volumes of groundwater flow diverted by the Undai River Diversion system, as collected using a data logger, are shown in Figure 4 – 6. In calendar Year 2002, through Q3, the surface flow rate at the New Bor Ovoo has averaged 1.42 L/s. The New Bor Ovoo spring does have the potential to dry up if diverted rates of groundwater below fall below 50 m<sup>3</sup>/day; however in general this not occur even during dry years (for example the current drought of 2022).

**Figure 4-6 Surface flow rate at New Bor Ovoo Spring**



The IESC toured the site of the New Bor Ovoo spring as part of this audit. Pictures of the spring are shown in Figure 4-7 below. In the figure the location of the groundwater diversion outlet is shown (fenced to protect the discharge), along with the resultant downgradient surface water expression. Figure 4-7 also shows the usage of the surface water resource by Bactrian camels. The water quality of the New Bor Ovoo spring is typically very good with TDS values consistently below the 1,000 mg/L. Mongolian potable water standard. In fact some herders have occasionally accessed the fenced New Bor Ovoo spring outlet to obtain potable water supply.

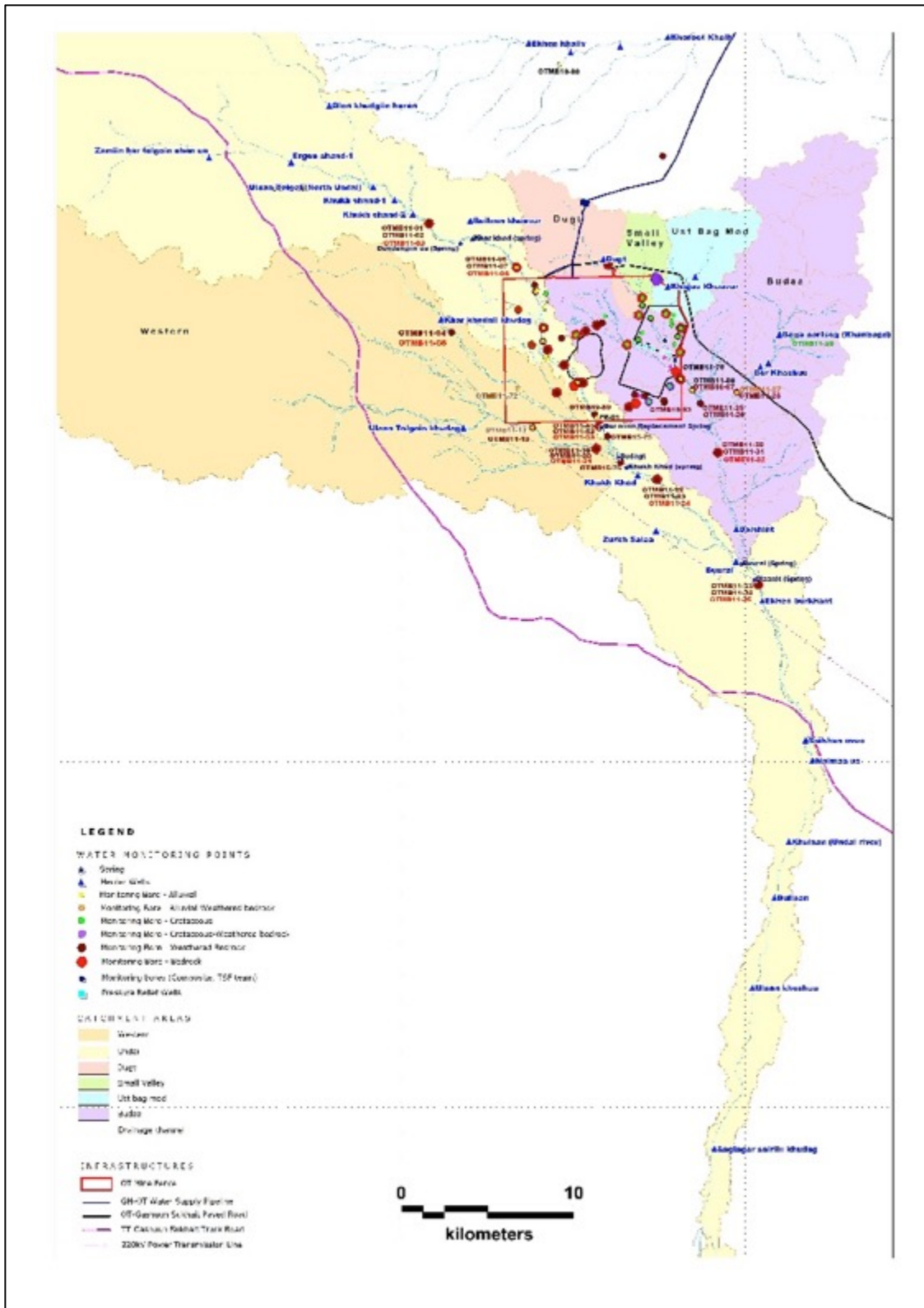


**Figure 4-7 Location of New Bor Ovoo Spring with Downgradient Surface Water and Livestock Use**



The ultimate success of the Undai River Diversion will be assessed based on long-term depth to groundwater data provided from Undai River monitoring points and the long-term viability of the closest springs located down gradient of the OT site. Figure 4-8 shows the water monitoring network in the vicinity of the MLA. Water monitoring points along the Undai River system are shown in the yellow shaded area, which represents the Undai River system watershed. The success of the Project must also be evaluated against the backdrop of climate variations - for example normal episodic drought years and flooding events.

Figure 4-8 OT Water Monitoring Network Along Undai River Watershed (in Yellow)



The springs closest to the OT Mine License Area include Khukh Khad, Budagt, Buural and Maanti. The most likely impacted receptor, Budagt spring, is located above the confluence of the Undai River Diversion with the Brown Hill River. This location receives limited recharge with the exception of direct precipitation and diverted groundwater flow (i.e., floods are diverted to just below this location). The prior Budagt Spring location became buried by sedimentation in 2018 as a result of flood events. Since then the spring location has naturally migrated upgradient within the river channel.

In 2021 monitoring of spring surface areas was suspended following COVID-19 staffing disruptions at site. Monthly monitoring resumed in 2022. The Budagt spring area varies widely in monitoring events, as does the morphology of other springs in the Gobi region. For example the August 2022 monthly Budagt spring measurement recorded 400 m<sup>2</sup> surface area and a maximum standing water depth of 60 cm. In the following month of September the spring was mostly dry. This reflects the 17.5 mm and 22.5 mm of precipitation received at the OT site in July and August, respectively, whereas the month of September was completely dry. During the site visit the IESC toured all of the key springs down gradient of the site and a picture of the Budagt spring is provided as Figure 4-9 (as of the end of September, 2022).

**Figure 4-9 Budagt Spring as of Late September 2022**



The down gradient and relatively minor Khukh Khad spring has historically been dry for much of the year, but in recent years has had increased water availability. This appears to indicate greater overall water availability in the Undai River system at this location. The Khukh Khad spring area was measured at over 600 m<sup>2</sup> in August 2022, and with standing water at a depth of 5 cm. In the following month (September) the spring measured 100 m<sup>2</sup> with a depth of 2 cm. The presence of standing water at springs below the MLA is heavily influenced by the shifting morphology of the Undai River channel from episodic flooding, as well as seasonal variation. Even when a spring is “dry” there is often evidence of livestock/endemic species use via digging of shallow surface sediments to access near-surface groundwater (Figure 4-10).



**Figure 4-10 Evidence of Shallow Groundwater Accessed by Wildlife in Otherwise "Dry" Location**



#### **4.1.4 Water Abstraction Impact and Well Rehabilitation**

The overall OT water monitoring network encompasses a total of 351 points including 271 groundwater monitoring wells/boreholes, 69 herder wells and 11 natural springs. This monitoring network includes locations in the Khanbogd, Manlai and Tsogtsetsii *soums* of the Ömnögovi *aimag*. In year 2021, and thus far in 2022, OT has not received any community complaints regarding perceived impact to herder wells as a result of OT water abstraction from the GH aquifer. Also over several years of monitoring no direct or indirect OT Project impacts to herder wells or natural springs have been identified in OT Environment Team analysis, although the department is continuously monitoring water level data to identify any possible correlation (WR-KPI-01). A 2021 detailed 5-year external review, discussed previously in Section 4.1.2, did not identify any discernible impacts in shallow alluvial units. Any prolonged water level decrease or change to water quality at a herder well triggers an OT Hydrogeological Assessment, including an investigation and organization of a meeting with the well owner. OT has been monitoring water levels in the region for 19

years now (since 2003). As a result of this extensive research it has been determined that in general the main factor influencing the performance of herder wells is not climate change or the water abstraction of OT, but rather the condition of the wells themselves and outdated operating modes.

Over years 2021-2022 OT has worked with a contractor company to implement a well rehabilitation program in its area of influence. The intent of this program is to ensure long-term sustainable yield of existing wells, thereby preserving the pastoral livestock breeding tradition that has been practiced in the region for centuries. Many of the existing wells are of inferior construction quality and have poor hygiene elements. By working with the contractor company Botgon Khuuvur a total of four wells in the Khanbogd soum have been redesigned to move their location outside of alluvial channels, to increase water reservoir capacity, and to power pumps using solar panels. An example of a rehabilitated well is shown as Figure 4 – 11. The location of the four herder wells rehabilitated under this program (Dund khaliv, Togoot shand, Bayan and Gashuun sukhait) is shown as Figure 4 – 12. In this figure the OT Mine License Area is shown in red and the GH aquifer network is also shown in dark blue outline.

**Figure 4-11 Historic Condition of Hand Wells and Improved Version**





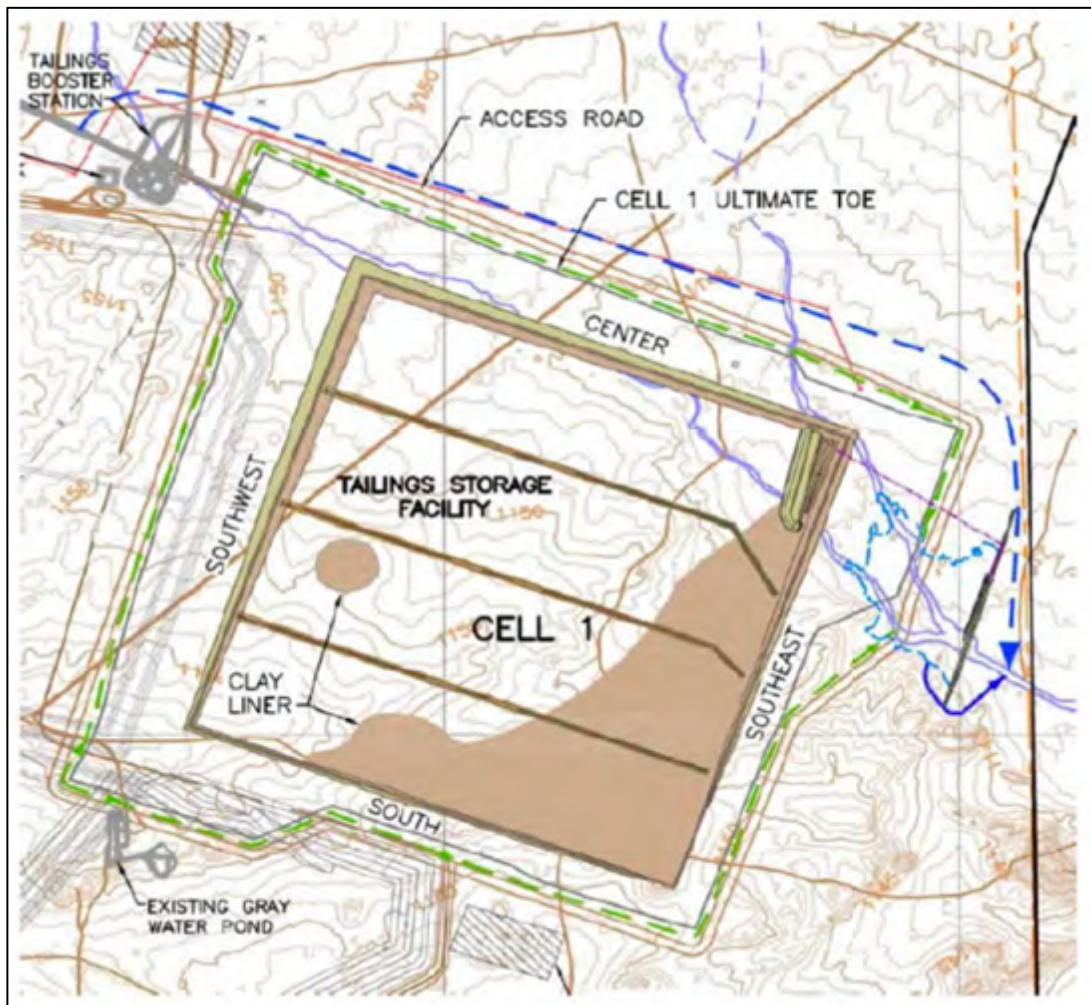
Figure 4-12 Location of the Four OT Herder Wells Rehabilitated in 2021 – 2022



#### 4.1.5 TSF Environmental Performance and November 2021 Environmental Incident

The Tailings Storage Facility (TSF) is 2 km east of the open pit and 5 km southeast of the concentrator plant site. The TSF was designed to contain a total of 720 M tons of tailings and consists of two adjacent rectangular 2 x 2 km size cells with 70-meter high dams built of waste rock. Cell # 1 has been in operation since March 2013 and as of Q2 2022 has received approximately 250 Mt of tailings. The height of Cell #1 embankment walls currently ranges from approximately 56 – 65 meters. Most of the TSF Cell # 1 foundation to the north and west overlies thick natural clays; however an engineered 1 m thick compacted clay liner was purportedly constructed in the southeast corner of Cell #1 at a location with little to no naturally occurring clays. The IESC is unclear on the historic work program undertaken at the TSF Cell # 1 location as the most recent OT TSF Seepage Monitoring Report #21 indicates “*No conditioning or reworking of the naturally occurring clay was undertaken during the construction of Cell #1*”. Figure 4 – 13 shows the extent of the engineered compacted clay liner.

Figure 4-13 Area of Engineered Compacted Clay Liner in Southeast Corner of Cell #1



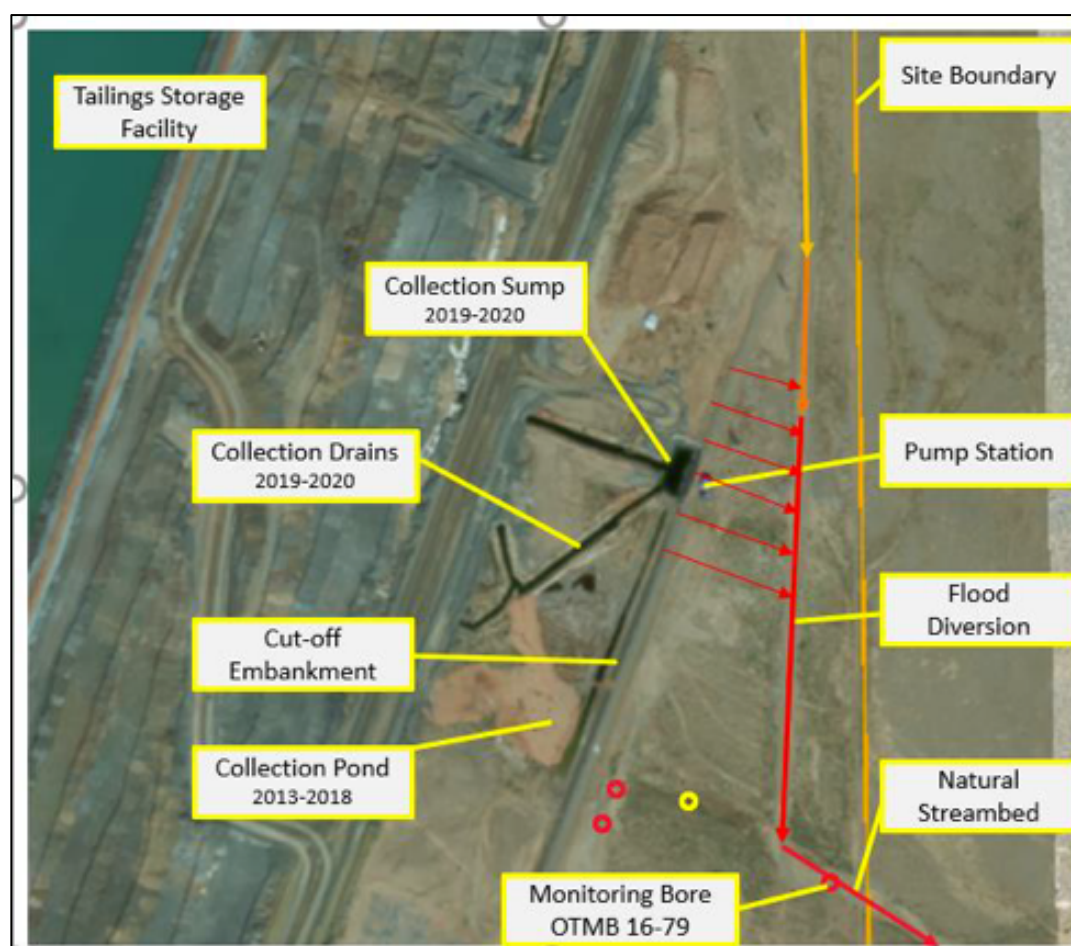
The northeast corner of Cell #1 is a topographic low where the ephemeral Khaliv River and its main tributary, the Dugat River, cross the TSF footprint. During episodic rain events surface flows in these channels report to an engineered trench that conveys non-contact runoff water around the TSF. Flows collected in this trench are then discharged back to the Khaliv River alluvial system just down gradient of the TSF. The flood diversion channel is shown with a dashed blue lines in Figure 4 -10, including discharge location just within the Mine License Area. This system has performed well during the flood events experienced at the OT site, including in July, 2022. The Khaliv drainage eventually joins the Bor Khoshuu riverbed for a short distance before joining the Budaa River. A map of the overall OT water monitoring network in the TSF region is shown in Figure 4 -14. The nearest environmental receptor downgradient of the TSF, and within the Budaa River channel, is the Baishint herder well, located approximately 10 km downgradient of the MLA.





A cut-off dam was constructed in 2013, just to the east of the TSF in the Khaliv River alluvial channel. This dam (the “East Toe Collection Dyke”) was installed specifically for the purpose of collecting any seepage from the TSF so that it can be contained on the site. The IESC has extensively discussed seepage at the TSF in prior Audit Reports. Seepage water from three locations, include waters collected from depressurizing bores, has historically been collected by OT in a Seepage Collection Pond and either used for dust suppression on surface roads or recycled for use in the concentrator. In 2018 an Independent Tailings Review Panel (ITRP) recommended that the seepage collection system be moved from a low point in the alluvial stream bed, behind the cutoff embankment, to a replacement geomembrane-lined sump adjacent to the already constructed seepage pump system. Both the cutoff embankment and relocated seepage collection pond (i.e., the “collection sump”) are shown on Figure 4 – 15.

**Figure 4-15 Cut-off Dam to the East of the TSF, and Seepage Collection Pond to the North**

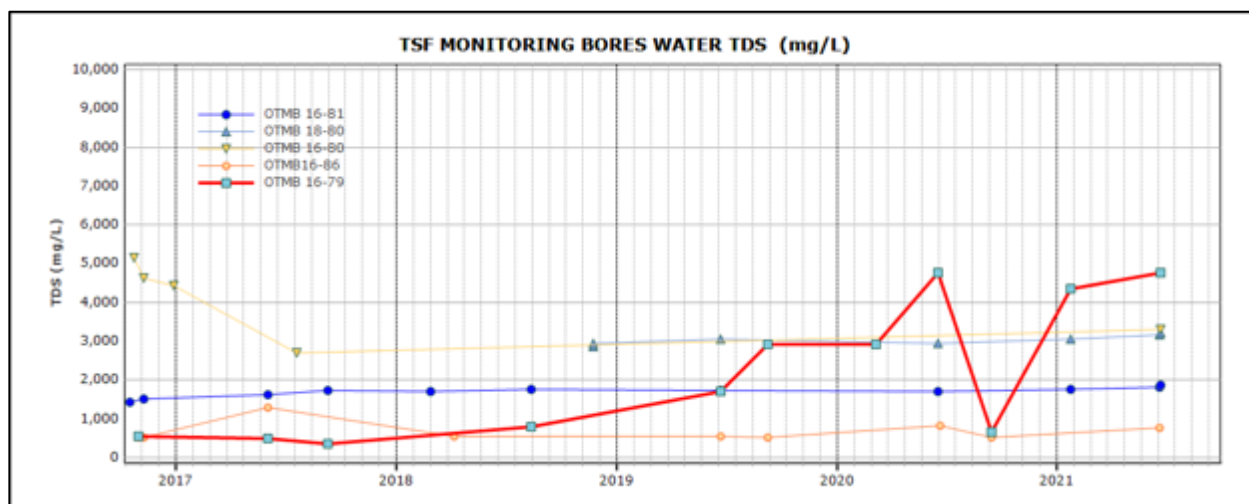


TSF seepage water quality parameters exceed Australian New Zealand Environment and Conservation Council (ANZECC) Guidelines for Livestock Water for total dissolved solids, sulfate, fluoride, molybdenum, boron and selenium. OT has constructed a fence around the seepage collection area as domestic livestock and native fauna had in the past accessed this available water source. The fencing, which is 2 m high, covers 100,000 m<sup>2</sup> of area and OT has verified that this fencing has been effective in preventing fauna access.

In November 2021 OT formally identified an Environmental Incident at the TSF related to seepage collection. In summary the seepage collection system has not sufficiently contained collected waters and a preferential pathway has developed that has allowed this water to migrate past the East Toe Collection Dyke and enter the Khaliv ephemeral drainage. This was detected through the monitoring of shallow alluvial bore OTMB 16 – 79, which identified high TDS concentrations. The preferential pathway by which these collected water are bypassing the East Toe Collection Dyke (cut-off embankment), was identified by OT in Figure 4 -15. In the figure the collection sump is shown, as well as preferential pathways in red by which seepage has purportedly entered the flood diversion trench and been detected in shallow alluvial Monitoring Bore OTMB 16 – 79.

TDS concentrations have steadily increased in this monitoring bore since 2018, when the seepage collection point was first moved to the north. TDS values have increased from a baseline of approximately 550 mg/L in 2018, to 5,992 mg/L in December 2021, to most recently 11,424 mg/L in early July 2022. Another sample was collected in late July 2022, following a flood event, with results of 4,312 mg/L. Results of monitoring at this location reflect not only likely seepage from the TSF, but also episodic dilution from periodic flood events (Figure 4 – 16).

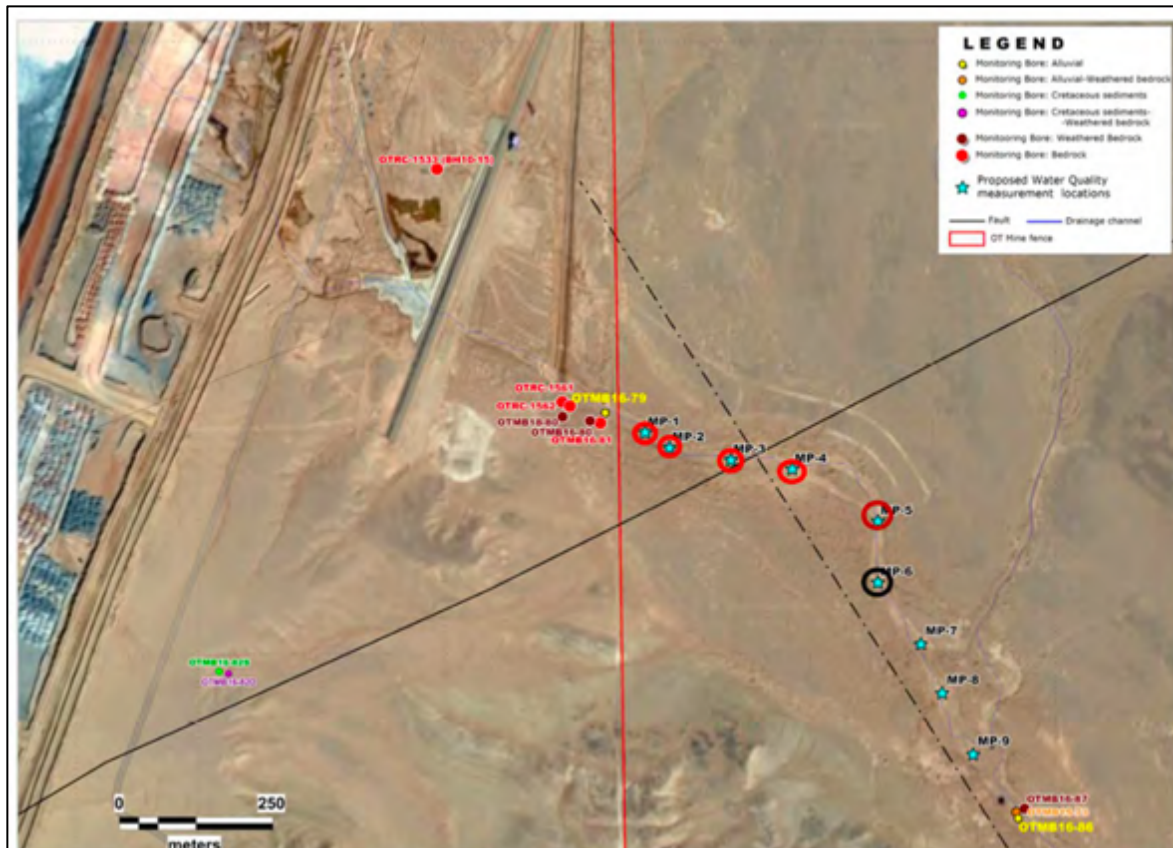
**Figure 4-16 TDS Concentrations at OTMB 16 – 79 through Q3 2021 (2022 Data Not Included)**



In the last May 2022 Audit Report the IESC described that “...It is likely that this high TDS water has migrated off the site (i.e., the Mine License Area) as the boundary is very close to the OTMB 16 – 79 monitoring bore location”. The first off-site downgradient monitoring bore is OTMB 16 – 86/OTMB 16-87, a nested complex approximately 1 km from the mine fence line. The IESC recommended installation of additional drive points just outside of the MLA to verify if seepage had migrated beyond this point. In response, in July 2022 additional monitoring points were installed at locations 50 meters, 100 m, 200 m, 300 m and 500 m beyond the fence line (MP-1 through MP-5). The locations of these additional monitoring points relative to the location of OTMB 16 – 79, the MLA boundary, the cutoff dam, and the TSF, is shown on Figure 4-17.

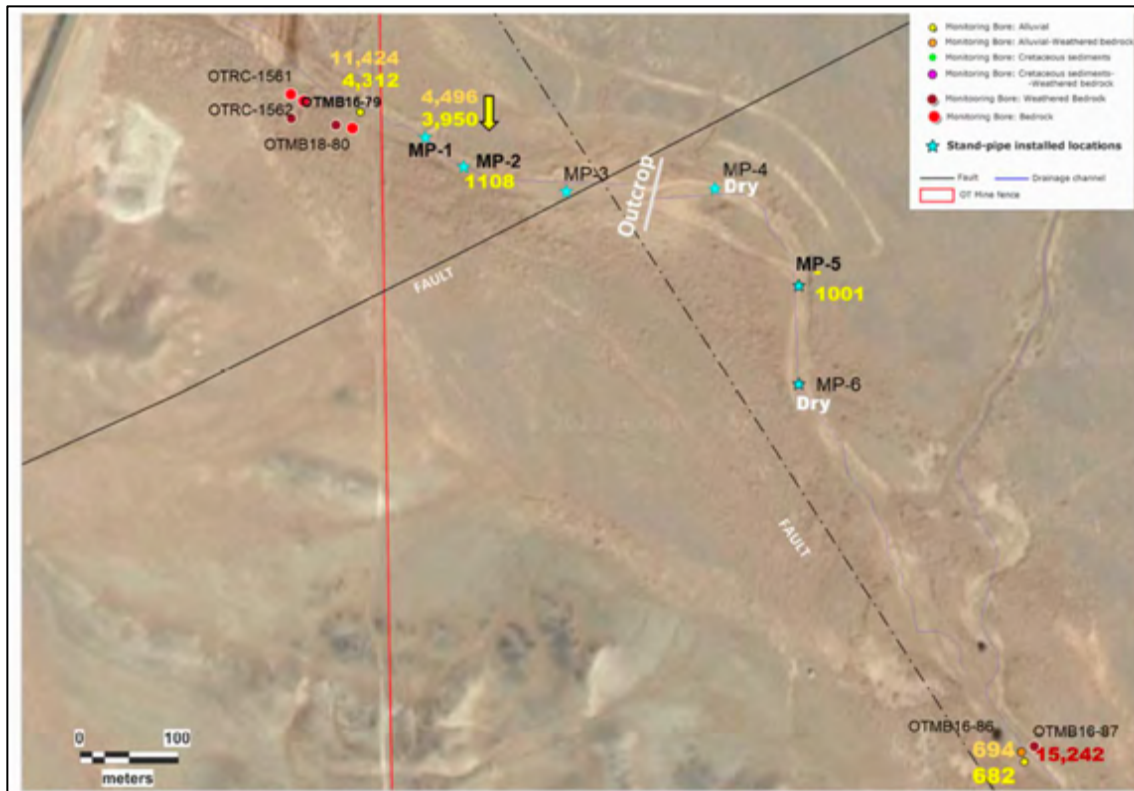


Figure 4-17 Additional Monitoring Points Installed in Q3 2022 (MLA Boundary in Solid Red)



Water quality data collected during installation of these shallow alluvial monitoring points is summarized in Figure 4 – 18. As can be seen in the data elevated TDS concentrations of TDS are noted in monitoring point MP-1, with overall TDS concentrations ranging from 4,496 in initial sampling of early July, 2022, to 3,950 mg/L at the end of the same month. Elevated TDS concentrations were not readily apparent in monitoring point MP-2, which is 100 m beyond the fence line. Monitoring points MP-3 and MP-4 were both dry, although in other data provided to the IESC values were reported for TDS between 860 – 1,400 mg/L. There is no discernable impact to the first fixed monitoring point down gradient of the site, OTMB 16 – 86, which is approximately 1 km from the fence line.

**Figure 4-18 TDS Concentrations in Monitoring Points Within and Outside of the MLA**



The full data set from water quality sampling at these offsite monitoring point locations is provided in Table 4-1. As shown at MP-1 the concentrations of TDS, hardness, SO<sub>4</sub>, Cl, Na, Ca, Mg and Sr all exceeded Mongolian Drinking Water Standards (MNS900:2018). The current data set is limited and does not include all contaminants of concerns from the TSF seepage.

Table 4-1 Water Quality in Downgradient Monitoring Points <sup>1,2</sup>

Distance from mine fence	Sample point	Date	pH	TDS	Hardness	SO <sub>4</sub>	Cl	F	Na	Ca	Mg	Sr
				mg/L	meq/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mongolian Drinking Water Standards MNS900:2018			6.5-8.5	1000	7	500	350	0.7-1.5	200	100.0	30	2
50m	MP-1	2022-07-03	7.17	4,496	39.05	1,035	1,790	0.44	786.9	627.3	94.3	6.80
		2022-07-25	7.28	3,950	21.35	1,030	1,423	0.29	975.7	330.9	58.8	3.47
100m	MP-2	2022-07-25	7.37	1,108	7.73	213	362	0.09	239.1	122.3	19.8	1.53
0.5km	MP-5	2022-07-25	7.29	1,001	5.93	278	306	0.72	237.4	94.8	14.6	1.35
1km	OTMB16-86	2016-10-31	9.16	526	1.6	211	51	7.49	137.1	24.7	4.0	0.19
		2016-11-09	8.83	534	1.4	179	46	3.22	164.0	23.3	3.1	0.15
		2017-06-03	8.14	1,284	2.6	568	82	2.42	375.2	41.1	7.1	0.43
		2018-04-08	8.37	548	0.9	166	70	2.85	180.2	14.2	2.2	0.17
		2019-06-24	8.61	538	2.1	131	58	1.15	156.1	35.9	3.8	0.36
		2019-09-09	8.21	518	1.8	139	70	1.05	150.0	30.9	3.1	0.31
		2020-06-20	7.84	832	3.7	254	174	1.04	225.4	61.4	7.4	0.55
		2020-09-14	8.55	520	2.0	118	95	1.35	157.6	33.8	3.8	0.29
		2021-06-19	8.28	766	2.5	222	95	1.20	222.7	41.4	4.7	0.41
		2021-12-29	8.08	620	2.9	141	123	1.70	166.0	47.9	6.0	0.47
		2022-05-25	7.58	699	2.7	172	138	1.02	199.6	44.9	5.6	0.42
2022-06-27	8.26	694	2.4	168	134	1.31	206.1	302.9	107.6	0.41		
2022-07-25	7.29	682	1.6	164	136	1.39	216.2	25.6	3.4	0.29		

<sup>1</sup> Values in red exceed Mongolian drinking water requirements

<sup>2</sup> Values in purple are less than Mongolian drinking water requirements

The higher TDS levels were first recognized by OT in 2019 monitoring of shallow alluvial monitoring bore OTMB 16 – 79; however levels decreased the following year following flood events. In 2021 the repetition of high TDS values in monitoring triggered the formal identification of an Environmental Incident. The follow-on Incident Investigation Report was prepared by OT in November 2021. The IESC reviewed this report as part of the May 2022 Audit, which summarized root causes of the Environmental Incident as follows:

- High TDS values in a critical monitoring point, OTMB 16 – 79, were not identified as material and no “owner” was assigned;
- There were no “trigger” action levels for high TDS values; and
- There was no formal plan for communicating environmental incidents of this nature with community members.

OT subsequently identified a series of corrective actions to avoid another repeat of the Environmental Incident, including the following:

- Preparation of a presentation and events to communicate findings with stakeholders;
- Preparation of a formal Trigger Action Response Plan (TARP); and
- Development of a publicly-available monitoring data platform to allow for stakeholder tracking.

During the September 2022 site visit by the IESC extensive discussions were had with environmental management regarding recent developments in water quality data. A visit to the location east of the TSF

was also performed. OT has excavated a seepage collection trench downgradient of the cut-off dam and is currently pumping water from this trench back to the TSF. This water likely includes a mix of both seepage from the TSF, as well as surface waters collected from the flood channel around TSF Cell #1. A picture of this collection trench is provided in Figure 4-19. In the figure monitoring bores OTRC-1561 and OTRC-1562 are visible to the south, with the MLA fence line to the east. This water is currently being pumped back westerly to the TSF (Figure 4-20).

**Figure 4-19 Collection of Seepage Water**





**Figure 4-20 Pumping of Collected Waters Back to the TSF**



Lastly a picture of critical monitoring point OTMB 16-79 is provided in Figure 4-21. The location is in close proximity to the mine fence line, which is visible, as well as the recently installed MP-1 just outside of the fence line.

**Figure 4-21 Location of OTMB 16 - 79 in Khaliv Alluvial Channel**



Water Resources Management Plan commitment WRm – 02 of the OT ESIA references a commitment to preserving groundwater quality in the mine area of influence. This commitment in turn references Section 6.3 of the Water Monitoring Plan, which sets out analysis protocol and trigger levels for remedial action. These remedial actions steps are detailed in Table 4-2, along with status of implementation:

**Table 4-2 Implementation of WRMP in Response to November, 2021 Environmental Incident**

Required Monitoring Plan Action	Status as it Relates to November, 2021 Environmental Incident at TSF
Review water quality in nearby monitoring bores that target the same hydrogeological unit and additionally features that could be the source of such anomalies (i.e. TSF outflow/seepage)	Completed as part of Incident Report. Additional offsite monitoring points were installed following the last May 2022 Audit. More monitoring points are planned for installation in Q3 2022.
Review water quality in nearby monitoring bores that target the same hydrogeological unit and additionally features that could be the source of such anomalies (i.e. TSF outflow/seepage)	Partially complete. Anomaly south of TSF indicates potential seepage of TSF as evidenced in elevated TDS levels in monitoring bores. Recently completed isotope tracing test work is inconclusive.
Assess findings against conceptual understanding (i.e. was a change in water quality anticipated)	A change was not expected and seepage from the collection pond has bypassed the cut-off dam embankment intended to capture any seepage before it migrates off site
Conclude reasons for water quality variance – where uncertain develop a work plan to collect more data to resolve uncertainty	Acknowledgement that the water quality variance is likely caused by inadequate containment of seepage from the TSF
Identify sensitive receptors (water users, groundwater dependent vegetation, etc.) and assess magnitude of any impact	Nearest herder well is 10 km down gradient of MLA; however there should be no off-site migration of groundwater quality contamination
Review of assessment and confirm if mitigation is required and, where required, select mitigation method and implement.	In the IESC’s opinion additional mitigation is required including installation of additional monitoring bores across the width of the Khaliv alluvial channel just outside the MLA, increased frequency of water quality sampling, modification of the sampling suite to include other analytes (e.g., arsenic), and perhaps installation of a pump and treat system to prevent additional offsite contamination of alluvial water resources.

The IESC is of the opinion that the geochemical trend at OTMB 16 – 79 could have been internally registered by OT as a serious consideration as early late 2019 or early 2020. It is especially pertinent that no “trigger” response levels had been established for TDS concentrations in monitoring bores located near the seepage collection point, and also a short distance away from the boundary of the MLA. The follow-on Q3 2021 Incident Investigation Report is forthright in its assessment in causes of the Environmental Incident not being detected earlier.

OT has implemented an Action Plan to address the Environmental Incident which is summarized in Table 4 -3.



**Table 4-3 2021 Environmental Incident Action Plan**

<b>OT Infrastructure</b>	<b>Essential Contributing Factor</b>	<b>Recommendation</b>	<b>Action Description</b>	<b>Status as of Q4 2022</b>
Seepage Collection Sump	Seepage collection sump water level is higher than water level of alluvial sediments, creating a hydraulic gradient	Reduce seepage collection sump water level to below height of adjacent alluvial sediments (1,355.5 m above sea level)	Design a new sump and revised seepage collection system at this new location	OT has established a temporary seepage collection trench below the height of adjacent alluvial sediments. A new seepage collection sump and pump station was observed under construction immediately east of the TSF (upgradient of the cutoff embankment)
	Location of current seepage collection sump is adjacent to pump station	Establish new location of seepage collection sump	Construct the new sump and updated seepage collection system	
	Location of current seepage collection pump is not upgradient of cutoff embankment	Establish new seepage collection sump upgradient of cutoff embankment	Establish a temporary pumping system to maintain seepage water levels below 1,355.5 m	
Seepage Collection Pump Station	Location of current seepage collection pump station is not upgradient of cutoff embankment	Establish new seepage collection pump station upgradient of cutoff embankment	Design seepage pump station at location of new collection sump	As above this work is in progress, to be completed by Q3 of 2023
			Relocate seepage pump station	
Seepage Cutoff Embankment	Seepage migration pathway through cutoff embankment	The cutoff embankment should be reconstructed in the vicinity of the replacement seepage collection sump/pump station	Reconstruct cutoff embankment in the vicinity of the seepage pump station	This work to be completed by Q3 2023
Environmental Monitoring	Absence of formal quantitative water quality triggers to guide further investigation. Limited monitoring network in immediate downgradient vicinity of cutoff embankment	A Trigger Action Response Plan (TARP) should be developed	Establish a TARP for TSF environmental monitoring bores	A draft TARP has been completed in Q3 of 2022. Additional monitoring bores have been installed with more scheduled for installation by Q4 2022
		Upgrade offsite environmental monitoring	Establish shallow streambed alluvial monitoring bores outside of the MLA boundary	

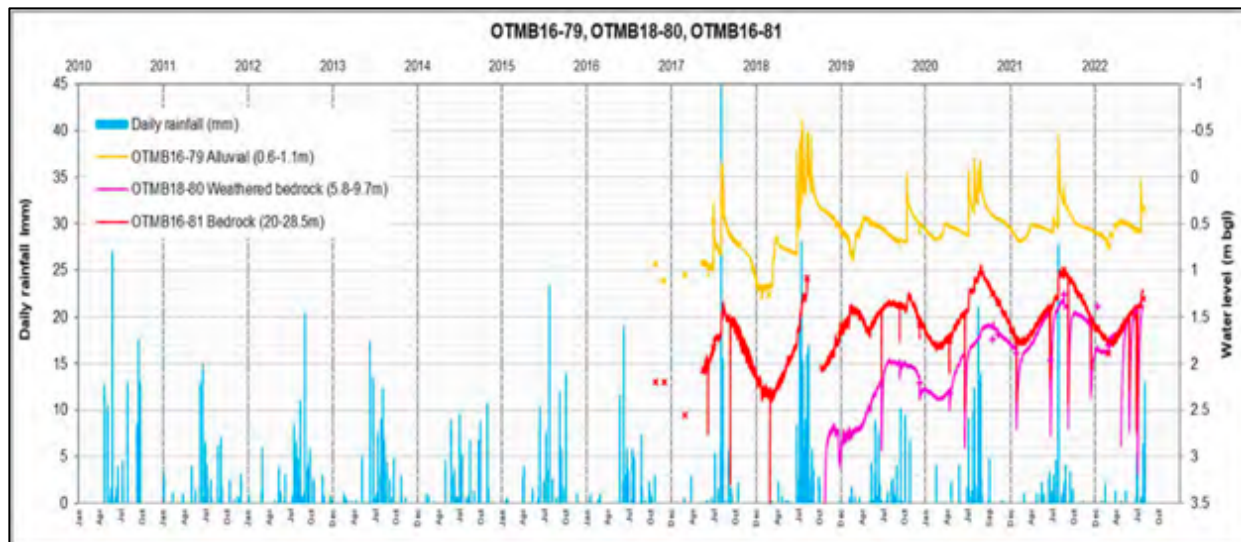
OT prepares a periodic *TSF Seepage Monitoring Report* that details performance of groundwater monitoring bores and piezometers placed within and adjacent to TSF dam walls. The most recent report of July 2022 was reviewed for this audit. For this Audit Report the IESC has focused on the tracking of groundwater levels to the east and southeast of the TSF (i.e., downgradient). The location of available bores is shown on Figure 4-22.

**Figure 4-22 Monitoring Locations Downgradient of TSF**



For this Audit Report the performance of water levels in screened in bedrock, weathered bedrock and alluvial sediments is reviewed. These wells include OTMB 16-81, OTMB 18-80 (in weathered bedrock), and OTBM 16-79 (in alluvial sediments). The TSF Seepage Monitoring Report acknowledges a continuous rising water level trend since installation, but describes no evidence of water levels rising as a factor of TSF loading (Figure 4-23).

**Figure 4-23 Rising Water Levels at Monitoring Bores South of TSF**



The IESC has recommended in prior Audit Reports that further groundwater quality study be undertaken at TSF monitoring locations. It has been identified that seepage from the TSF, particularly to the south, is potentially influencing water levels and groundwater quality and it would be helpful if a clear linkage could be established. OT had previously undertaken an isotope analysis study to confirm the origin of groundwater levels rising to the south of the TSF Cell # 1. The completed study at 39 locations determined "inconclusive results" for the origin of high TDS waters. OT has agreed with the IESC that further groundwater quality investigation is warranted. The IESC is proposing an urgent Detailed Water Review, as described in the Water Resources Management Plan Section 8.2, to comprehensively review available water data. Relevant factors in this proposal include the following:

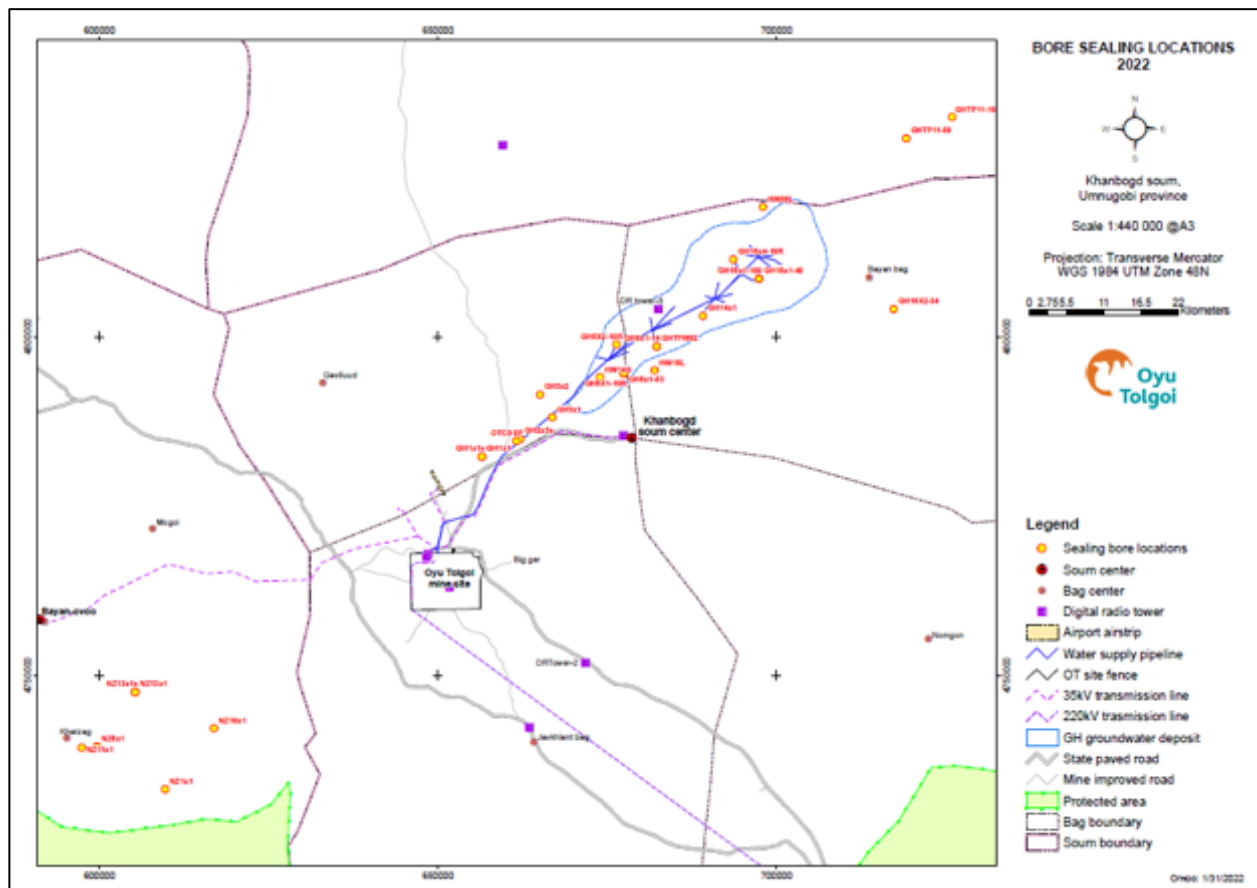
- The last Detailed Water Review was conducted in December, 2017 (five years ago);
- It is not clear to the IESC if the source of offsite shallow alluvial groundwater impact is caused by leakage from the seepage collection pond, which is lined, or perhaps from the TSF itself;
- TSF Cell #2 is now being constructed immediately adjacent the MLA boundary using a similar engineered clay layer as used in TSF Cell # 1;
- From the December 2017 Detailed Water Review an isotope study was discussed to positively identify the source of high TDS in monitoring bores. After much delay the results of the study proved "inconclusive". More attention is needed to define the source of high TDS in monitoring mores
- Oyu Tolgoi has long maintained that high TDS in shallow monitoring bores is the result of deep groundwater migrating vertically in response to the weight of the TSF. A detailed review of supporting information to this theory would prove or disprove this hypothesis, or identify if additional data is required to make a determination.
- Oyu Tolgoi is developing a "Trigger Action Response Plan" to quantitatively establish what water quality monitoring data results require action. It would helpful for Lenders to opine on this significant and necessary modification to the Water Monitoring Plan.

The IESC will continue to monitor the situation associated with this Environmental Incident, as well as the high TDS findings south and east of the TSF. This includes potential appropriate corrective action procedures, as can be discussed in a Detailed Water Review.

#### 4.1.6 Sealing of Historic Water Exploration Bores

A total of 149 old water exploration bores from 2003 – 2011 water exploration in the Gunii Hooloi and Galbyn Gobi regions have over the last few years been sealed, then handed over to the Khanbogd governor’s office and the Galba-Uush Dolood Gobi Water Basin Administration, in accordance with the Water Law of Mongolia. This effort has been described extensively in prior Operational Phase IESC monitoring reports. There are 29 bores left to be sealed in the Gunii Hooloi region and Nariin zag. This work was scheduled for the 2020 field season but disrupted by COVID-19 impacts. The campaign to seal remaining bores was then rescheduled for 2021, but the COVID-19 country-wide lockdown during the field season prevented implementation of this workplan. OT has represented that these remaining exploration bores will be sealed in Year 2022, beginning with an October 2022 work effort. The locations of boreholes remaining to be sealed is shown on Figure 4 -24. The remaining 29 boreholes to be sealed do not represent an environmental risk as they are not located in a zone of perched water; rather the intent is for good housekeeping to ensure not leaving an open borehole that will not eventually be put into productive use.

Figure 4-24 Boreholes to be Sealed in 2022



#### 4.1.7 Erosion and Sedimentation Studies

OT prepares an annual *Erosion and Sedimentation Annual Monitoring Report* which is intended to address WRMP erosion and sedimentation monitoring requirements. The last available *Erosion and Sedimentation Annual Monitoring Report* was finalized in April 2021. Due to COVID-19 travel restrictions in 2020 and 2021 there were limited erosional and sedimentation field investigations undertaken. Normally photographs are taken at 500 m intervals along the Undai River channel, beginning at the point at which the Undai River channel enters the OT site, and ending at the confluence of the Western channel with the Undai riverbed. There are also five monitoring points along the OT - KB road, three on the OT - GH road, and six on the OT - GS road. Because of the COVID-19 restrictions satellite imagery has instead been utilized to assess erosional impacts.

In 2021 there was 95.0 mm of precipitation at the OT site which resulted in four flood events of the Undai River system. None of these were major flood events with corresponding significant erosional impacts to the Undai River. By far the biggest erosional/sedimentation impacts at the site were caused by the 2018 flooding of the Undai River system, which lasted for 41 days. The climate has been exceptionally dry in 2022 and the three flood events of this year were of short duration (none longer than one day), of limited magnitude and with no adverse erosional/sedimentation effects. The next OT *Erosion and Sedimentation Annual Monitoring Report* will be prepared by the end of Q1 2023 and will be critically reviewed in the next IESC Audit Report.

#### 4.1.9 Recommendations

1. The IESC continues to recommend a detailed analysis be performed of monitoring bore performance south of the TSF. In particular rising TDS concentrations and water levels should be further investigated. The emergence of seepages to the south of the TSF suggest potential leakage of the TSF in this area, and the IESC notes this is the area of the TSF at which engineered clay liner was installed underlying Cell #1 of the TSF. The IESC had been expecting results of a study commissioned by OT using isotope analysis to better understand the source of the geochemical behavior at southern monitoring bores. However this study, which is only available in Mongolian language, produced inconclusive results. The IESC has discussed this consideration with OT and both parties agree further water quality investigation is warranted at this location.
2. The IESC notes that this benchmarking study (Sustainability Reporting and Water Resources: a Preliminary Assessment of Embodied Water and Sustainable Mining, Mine Water Environ, 2008) is now almost 15 years old and it is suggested that a more current analysis be performed if this global statistic is continued to be reported upon.

## 4.2 Mineral Waste Management

Mineral waste is managed in conformance with Mineral Waste Management Plan commitments (OT Document OT-10-E13-PLN-0001-E). Thus far in 2022, through the end of August, a total of 41.3 million tons (Mt) of waste rock has been mined from the open pit and underground development. This compares with a total of 47.8 Mt and 48.5 Mt of waste rock mined in 2021 and 2020, respectively.

The OT Mine Geology team logs every blast hole, and for waste zones one in every five blast holes is selected for sampling. These samples are delivered to a site lab for chemical analyses including sulphur

content and acid neutralizing capacity. All chemical assay results are archived in databases reflecting a 3-dimensional block model of the deposit.

Waste rock is hauled to dedicated waste rock dumps in close proximity to the open pit, or used for Tailings Storage Facility (TSF) construction. Mineral waste is segregated and managed in conformance with MW04, MW05, MW06 and MW13 of the Mineral Waste Management Plan. Non-acid forming and potentially-acid forming (NAF/PAF) segregation criteria are based on total sulfur, total carbon and acid neutralization potential. Environmental monitoring has not identified any adverse effect (i.e., acid mine drainage or metal leaching) from OT waste rock features includes Waste Rock Dumps and the TSF. Waste rock from underground construction is being placed in the integrated waste rock dump just east of the concentrator clay stockpile. This area has been designed to accommodate PAF materials. Five stockpiles have been established with a total capacity 7.5 Mt.

Of the 41.3 Mt of waste rock thus far mined in 2022 a total of 8.7 Mt has been classified as PAF. Approximately 23 Mt of mined waste rock has been used for construction of TSF Cell #1 embankments and TSF Cell #2 preparatory earthworks, with ~17.7 Mt placed in segregated areas of the waste rock dumps based on NAF/PAF material segregation criteria. Table 4-4 presents the overall accounting of mined waste materials at the OT site thus far in 2022, including management of PAF and NAF materials.



**Table 4-4 Distribution of Mined Waste Thus Far in 2022**

	A	B	C	D	E	F	G	H	I
1	Operation's dump name	NAF	NAF	NAF	NAF	PAF	PAF	Grand Total	Dump Category
2	Row Labels	CLY	SOM	T1	T2	T3	T4		
3	<b>Dump (Total)</b>	-	498,690	3,387,593	8,423,303	185,841	5,163,601	17,659,028	
4	CLY			11,524				11,524	NAF
5	NORTH				324			324	NAF
6	PH42				9,933			9,933	NAF
7	QCRS				7,616		31,623	39,239	PAF
8	SOUTH			879,307	2,510,593	110,787	2,146,616	5,647,304	NAF
9	WEST			2,496,762	5,894,837	75,054	2,985,362	11,452,015	NAF
10	SP510-SOM stockpile		498,690					498,690	NAF
11	<b>Placement (total)</b>	-	-	39,759	251,496	3,868	26,219	321,341	
12	OL					1,477	4,191	5,668	PAF
13	PH51					295	309	604	PAF
14	F197			334	117,398		20,022	137,754	NAF
15	NORTH			28,445	11,788	2,096		42,329	NAF
16	NUUTS2			8,102	2,188			10,290	NAF
17	ROAD			2,877	120,121	-	1,698	124,696	NAF
18	<b>TC1 (total)</b>	-	-	2,479,071	11,469,593	108,872	2,434,870	16,492,407	
19	FL (filter)				2,064				NAF
20	RF (rockfill)			2,445,955	10,205,009	108,872	2,291,461		NAF
21	SP (stockpile)			33,117	1,262,519		143,409		NAF
22	<b>TC2 (Total)</b>	-	-	1,182,352	4,593,545	-	793,677	6,569,574	
23	RF (rockfill)			957,294	4,286,838		792,426		NAF
24	RR (Ring Road)			128,609	108,976		305		NAF
25	SP (Stockpile)			96,449	197,731		946		NAF
26	Ore Dilution							304,694	
27	<b>Grand total</b>	-	498,690	7,088,775	24,737,936	298,582	8,418,366	41,347,043	

The Mineral Waste Management Plan (OT Document OT-10-E13-PLN-0001-E) establishes KPI's that address reporting of any mineral waste management incidents, tracking of mineral waste erosion events and any complaints associated with OT management practices (MWM KPI-01 through MWM KPI-03). There have been no registered complaints with respect to mineral waste management. There has been an Environmental Incident recently recorded to the east of the TSF, as discussed in the Water Resources Section 4.1.5.

Cell #2 has been categorized as a High Consequence facility under the ICMM (2020) Global Industry Standard on Tailings Management. The Feasibility Study prepared for this Cell #2 (*Oyu Tolgoi Copper Mine TC2 Tailings Storage Facility Feasibility Study, ATC Williams, 2021*) contains a Dam Break Assessment. For this worst-case scenario modeling outcomes indicated the underground access area would be impacted by a western breach and approximately 20 herder winter shelters and 23 herder wells inundated within 24 hours. However, it should be noted that the worst-case scenario is considered unlikely to occur due to the method of TSF construction and the low seismicity risk. This scenario was only presented to illustrate the maximum theoretical inundation area. In line with the TSF Emergency Response Plan, the Communities Social Performance team conducts quarterly monitoring of the potentially affected downstream households with KB Emergency Management Agency and Police Department representatives, to identify household members and contact information to ensure that should an incident occur, potentially affected households can be reached in a timely manner and supported to evacuate, should this be necessary.



### 4.3 Non-Mineral Waste and Hazardous Materials Management

The overall Project strategy for the management and disposal of non-mineral waste is outlined in the Non-Mineral Waste Management Plan<sup>6</sup> and in the Non-Mineral Waste Collection and Transfer Procedure<sup>7</sup> that sit under the overarching ESMP framework. The general Project strategy for the management of hazardous material throughout the Project is outlined in the Hazardous Materials Management Plan<sup>8</sup> which also sits under the overarching ESMP framework. The plan provides general instructions to OT personnel and contractors on the management of hazardous materials to prevent/contain spillages and environmental contamination. The plan is supported by a number of procedures which provide specific details regarding hazardous materials management activities. These include a Spill Response Procedure<sup>9</sup> to address any uncontrolled releases to the environment.

With the exception of hazardous materials the project continues to be self-sufficient in the management of waste produced during operations. The permanent Waste Management Center (WMC), located on the east side of the MLA, continues to be operated by the contractor company Khanbogd Waste Management Center LLC. This company relies on other smaller recycling/reuse local sub-contractors to manage the final disposal of recyclables including industrial waste oils, waste kitchen oil, scrap metal, cardboard, plastics, electronic wastes, and containers for industrial chemicals.

OT implements a waste management hierarchy system that targets minimized generation of non-recyclable waste, re-use of materials when possible, and recycling of non-reusable items in lieu of landfill disposal. Reusable items such as wood are distributed to the local community or delivered to the Khanbogd primary Red Cross association under a MoU signed with OT. The OT Environment Team works closely with OT procurement teams to implement an environmentally-considerate procurement strategy. The following are components of the procurement strategy:

- Hazardous materials can only be sourced after approval in a ChemAlert system;
- OT contracting with suppliers that provide goods/ services and that generate hazardous waste to include a waste management plan in underlying contracts; and
- OT requires waste management plans in new contracts from bidders as part of the proposal process, and these plans are included in the overall evaluation from bidders.

Significant recycling practices are undertaken for a variety of materials including plastics, cardboard, wood and cooking oils. In 2021 OT recycled a total of 22% of waste generated, by weight in tons, at the site. This is a slight improvement over the 20% of total mass of material recycled in Year 2020. Total non-hazardous waste generated at site in Year 2022, through Q3, is 37,599 tons. Of this total 21,243 tons of material were landfilled or disposed of in an off-site incinerator, 7,266 tons were recycled (non-hazardous), 1,161 tons of hazardous/controlled materials were recycled by third party contractors, and the remaining 4,863 tons are stored on site. For this latter category 476 tons of stored materials are classified as hazardous/controlled, with the balance of 4,387 tons being non-hazardous and consisting of old tires. Previously OT had distributed these old tires to the local community for their beneficial use; however it quickly became

<sup>6</sup> *Non-Mineral Waste Management Plan - Doc. No. OT-10-E15-PLN-0001-E.*

<sup>7</sup> *Non-Mineral Waste Collection and Transfer Procedure Doc. No. OT-10-E15-PRC-0002-E.*

<sup>8</sup> *Hazardous Material Management Procedure - Doc. No. OT-10-E5-PRC-0001-E.*

<sup>9</sup> *Spill Response Procedure – Doc. No. OT-10-E15-PRC-0002-E*

apparent that these old tires were creating a visual blight to the Gobi landscape. The substantial accumulation of old tires on site is shown on Figure 4-25.

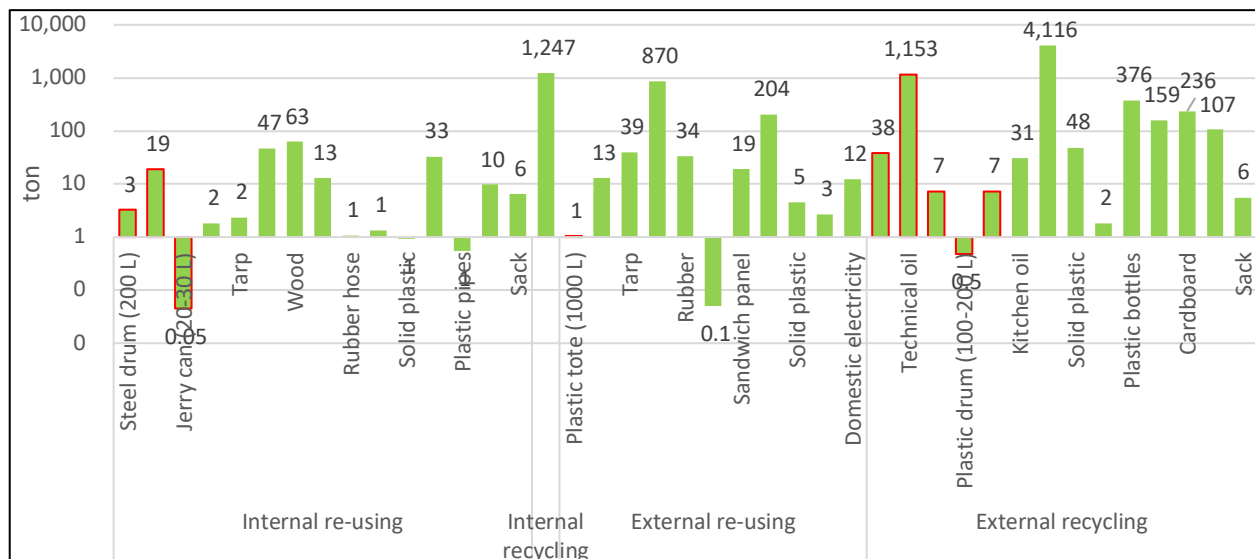
**Figure 4-25 Accumulation of Old Tires at OT Site as of Q3 2022**



Of the 21,243 tons of material landfilled only approximately 17% was sent to the Waste Management Centre, with the remaining 83% of waste buried at the Inert Waste Pit. General non-recyclable or reusable waste is collected daily and buried at the WMC, which was designed to international standards (US EPA). The Inert Waste Pit is used primarily for the disposal of ash generated at the Central Heating Plant, with waste concrete comprising a small proportion. The Inert Waste Dump is 7.86 hectares in size, located near the Waste Rock Dumps, and about 70% of the capacity has been used to date. Because of the recent expansion of capacity at the Central Heating Plant ash waste generated from this facility has increased significantly relative to prior disposal rates.

Recycled materials are tracked under WM-KPI 05. Actual recycling rates vary from year to year with some produced materials not recycled until the following calendar year. In calendar year OT has recycled non-hazardous waste amounts as shown in Figure 4-26.

Figure 4-26 Tons of Materials Recycled Thus Far in 2022 (Red Outline for Hazardous Materials)



The OT Environmental team had established a composting facility for organic kitchen food waste with resultant compost used for vegetative rehabilitation efforts. The composting facility is administered by the OT infrastructure team. OT has purchased a Composter Unit that expedite the breakdown of compostable materials. Within 24 hours the volume of composted material can be reduced by 80 – 90%. OT has recently focused on decreasing overall food waste generate on site by the Manzaalai kitchen, which currently on a daily basis generates approximately 2.1 tons of organic food waste. By limiting kitchen production to only that which is needed over the last four years OT has decreased the annual mass of organic food waste generated from 0.6 tons/resident to a current 0.3 tons/resident. No organic waste is delivered to the WMC. Composted organic material is used in revegetation projects. A photograph of composted organic material, ready for use in revegetation projects, is shown as Figure 4-27.

**Figure 4-27 Final Compost Material To Be Used in Revegetation Projects**



OT has a hazardous waste cell at the WMC which has been designed to international best practice containment standards, as well as Mongolian requirements for the storing of hazardous materials (Government Resolution No. 118 of 2018). This facility is the first permitted hazardous waste landfill in Mongolia, including Ulaanbaatar. This is a significant achievement as an appropriate hazardous waste storage cell is required to dispose of industrial materials used at the site. Unfortunately the hazardous waste cell is not currently in use pending a long-delayed permitting authorization by the Mongolian Ministry of Environment and Tourism (MET).

In June 2020 a Mongolian domestic Detailed Environmental Impact Assessment (DEIA) for the hazardous waste facility was approved by the MET. Since that time OT has been working with the MET to obtain a requisite Hazardous Landfill Operation Permit. Until this is obtained no hazardous materials can be deposited into the hazardous waste cell at the OT site, as originally envisioned in the ESIA. OT had anticipated receiving the Operational Permit in 2021 but there have been substantial delays in receiving authorization. This was attributed to ongoing political dispute between Rio Tinto and the Government of Mongolia, and also partly due to COVID-19 impacts which halted many government official functions (such as permit issuance). OT has had multiple meetings with the MET Waste Management Committee with no clear path identified for issuance of the requisite permit.

Because of this delay the OT Project has accumulated a large volume of hazardous waste which is stored in containers and in dedicated yards. As of Q3 2022 a total of 468.3 tons of hazardous waste has accumulated at the OT site (Table 4-5). This is an increase from the 396 tons reported in the prior May 2022 Audit Report. OT reports that this increase in tonnage of hazardous waste at site is attributed to outdated data that was registered using weight approximations, whereas current (Q3 2022) data reflects actual weights determined using scales (from June 2022).



**Table 4-5 Hazardous Waste Accumulated, in Tons, at OT Site as of Q3 2021**

#	Material Name	Proposed Disposal method	Nov 2021 Audit Amount	May 2022 Audit Amount	September 2022 Audit Amount
1	Potassium hydroxide	Landfill	9	11	30.18
2	Magnesium sulfate	Landfill	14	14	14
3	Tigle ceramic (19.1)	Landfill	63	66	125.2
4	Laboratory ash	Landfill	12	12	21.6
5	Laboratory sludge	Landfill	43	46	89.8
6	Sulphuric acid	Neutralize	3	3	2.66
7	Hydrochloric acid	Neutralize	0.02	0.02	0.02
8	Ammonia	Neutralize	0.2	0.2	0.18
9	Fire foam	Landfill	0.1	0.1	0.12
10	Oily rag <sup>1</sup>	Landfill or incinerate	21	24	3.11
11	Toluene	Incinerate			0.02
12	Bromine	Incinerate	0.4	0.4	0.4
13	Xylene	Reuse or incinerate	0.04	0.04	0.04
14	Ethanol	Reuse or incinerate	0.02	0.02	0.02
<b>Sub total</b>			<b>165.78</b>	<b>176.78</b>	<b>287.35</b>
1	Manganese acid salt	Disposal method is not ready	0.4	0.4	0.4
2	Sodium silicate		6	6	6
3	Mix of Iron (II) chloride and Sodium bicarbonate		5	5	5.2
4	Potassium carbonate		1	1	1
5	Acetic acid		0.02	0.02	0.02
6	Formic acid		1	1	0.8
7	Sodium formate		7	7	6.57
8	Alkaline water		2	2	2
9	Polymer glue		0.2	0.2	0.16
10	Oxygene candle		1	1	0.48
11	Neoblue gel		0.2	0.2	0.175
12	dust suppression substance		3	3	2.6
13	Acetoacetate		2	2	1.6
14	Aluminum sulfate		12	12	12
<b>Sub total</b>			<b>40.82</b>	<b>40.82</b>	<b>39.005</b>
1	№16	Unidentified	0	0	0.12
2	№2		1	1	1.32
3	№13		0	0	0.02
4	№15		1	1	0.58
<b>Sub total</b>			<b>2</b>	<b>2</b>	<b>2.04</b>
1	Rubber	Reusable	1	1	1.08
2	Emulsion 1		0.3	0.3	0.24
3	Emulsion 2				0.054
4	Foam (A+B compound), glue		6	5	5.48
5	Solvent		12	12	11.68
6	Paint 1		22	12	11.34
7	Paint 2				1.126
8	Paint 3				0.59
<b>Sub total</b>			<b>41.3</b>	<b>30.3</b>	<b>31.59</b>
1	Vehicle & domestic batteries <sup>1</sup>	Recyclable	130	71	56.69
2	Printer toner		32	32	17.1
3	Chemical containers <sup>1</sup>		51	43	21.19
4	Technical oil <sup>1</sup>		35	3	15.38
<b>Sub total</b>			<b>248</b>	<b>149</b>	<b>110.36</b>
<b>Grand total</b>			<b>495.9</b>	<b>396.9</b>	<b>468.31</b>

<sup>1</sup> These materials are sent to offsite recyclers and/or disposal facilities with volumes changing dramatically on a month to month basis



Of the current 468.31 tons of hazardous waste currently onsite a total of 287.35 tons of this material is classified by OT as being appropriate for hazardous landfill disposal, using a method identified by the Mongolian Academy of Chemistry and Technology (MUST), with more minor amounts requiring incineration or neutralization. A total of 141.95 tons of material are either reusable or recyclable. A total of 39 tons of material have a “disposal method that is not ready”. A total of 31.99 tons are classified as being reusable (solvents and paints), and 2.04 tons are material are “unidentified”.

Hazardous materials including liquid chemicals are currently stored in a dedicated hazardous material storage area as shown on Figures 4–28. This storage area complies with all Mongolian requirements for the storage of hazardous materials, is permitted by the Mongolian General Agency of Special Inspection, and audited by the regional *aimag* Environmental Inspection Agency. The hazardous material storage area has a concrete base, walls to separate materials, roof to protect against solar radiation, and a spill containment system. A photo from the site visit is presented as Figure 4-28.

**Figure 4-28 Hazardous Waste Storage Area**



Key Management Control HWM-03 requires contained storage of all liquid hazardous waste. The IESC was able to inspect the hazardous waste storage area during the site visit and verify adequate bunding and spill control systems, as well as fire response capability. as pollution and fire control. OT has also installed a 40-ton waste oil collection tank at the WMC, which is bunded and receiving input (Figure 4-29).

**Figure 4-29 Waste Oil Collection Tank with Oily Rag Containment in Background**



The IESC continues to report that hazardous wastes has been stored on the site for an extended period of time, and not being disposed of as envisioned in the ESIA with final disposal in the Hazardous Waste Cell. Although the IESC recognizes that OT has been waiting for an Operational Permit the fact remains that this prolonged storage of hazardous materials presents an environmental and safety risk. Recently OT invited the MET Waste Committee to conduct a field investigation at the site; however no response was received. Instead there are newly established companies in Mongolia (near UB) who have received licensing from MET for hazardous waste disposal. The OT Procurement Team is actively working to engage these companies to dispose of some of the accumulated hazardous waste at the OT site.

In March 2022 OT performed inspections of nine companies that are engaged with for recycling and/or hazardous disposal. One of these companies in Q3 2022 received authorization to incinerate hazardous waste. Since then the contractor company for management of the Waste Management Centre (Khanbogd Waste Management Center LLC) has signed an agreement for this third party for shipment, handover and disposal of hazardous waste currently stored at the OT site. OT has provide a copy of the Government of Mongolia certificate that authorizes this disposal, using an incinerator at the contractor site outside of UB.

### 4.3.1 Recommendations

3. The IESC recommends that full details of the newly established hazardous waste disposal companies near UB be provided to the Lenders prior to the delivery of these materials off of the OT site. There is a “Duty of Care” obligation to ensure that these facilities are in fact able to suitably manage all of the materials which they may receive.

## 4.4 Air Quality

The general strategy for management of particulate and gaseous emissions is described in the Operations Phase Atmospheric Emissions Management Plan<sup>10</sup> (AEMP). This management plan cross-links with other management plans that have air quality implications such as the Community Health Safety and Security Management Plan, the Transport Management Plan and the Land Disturbance Control and Rehabilitation Management Plan.

The intent of the AEMP is to outline applicable Project Standards, define commitments, define monitoring and reporting procedures, and establish key performance indicators (KPIs). The principal implementation procedure of the AEMP is the OT Air Quality Monitoring Plan<sup>11</sup> (AQMP). The AQMP provide procedures for emission and ambient monitoring, including monitoring locations both within and outside of the Mine License Area. Reporting requirements are also described. The AQMP was updated in July 2020 with the AEMP.

### 4.4.1 Ambient Air Quality

Over a 12-month rolling period (August 2021 – August 2022), the Project reports a total of nine non-compliances with applicable ambient air quality Project Standards, as listed in Appendix 1 of the AQMP. All of these non-compliances were related to particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>) and associated with the frequent spring dust storms that tend to occur. There are no immediate concerns regarding ambient air quality, recognizing background concentrations of particulates in the occasionally very dusty South Gobi region. Figure 4 – 30 shows one of the frequent dust storms that occur in the region, during which times background concentrations can reach 12 – 20 times the Project Standard for ambient air quality. In general, ambient air quality meets the Project Standard at the site for 98 – 99% of the continuous monitoring cycle.

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10 Atmospheric Emissions Management Plan- Doc. No. OT-10-E12-PLN-0001

11 Air Quality Monitoring Plan – Doc. No. OT-10-E12-PLN-0002



**Figure 4-30 Spring 2021 Dust Storm at OT Site**



In accordance with AQ-KPI 01 there have been no ambient air quality non-conformances at the OT site with respect to national or regional legislation. To date in 2022 there have been no community complaints related to air quality. In 2021 there were two air-quality related complaints (AQ-KPI 03). These were related to dust generation as a result of driving on unimproved roads in Bayan-Ovoo soum; these complaints were addressed and resolved.

Dust generation was historically excessive at the Coarse Ore Storage (COS) facility. This facility receives ore via conveyor from the crusher circuit (Figure 4-31). The conveyor delivers coarse ore to a drop point at the COS facility, and the dropping of substantial masses of material led to substantial dust generation that was visible for several miles outside of the MLA, and which led to accumulation of dust in the immediate vicinity of the COS facility. This topic has been extensively discussed in prior Audit Reports. Dust curtains were installed in 2019 and continue to effectively manage dust at this location. These curtains are made of HDPE, contain an anti-UV agent, are fire retardant, and widely used in various industrial fields to prevent dust emissions. The dust curtains are installed on three sides of the COS facility (east, south, and west), with the north side of the building left open to allow equipment access. Winds primarily come from the north, so this does not negatively impact dust generation from the building.

**Figure 4-31 Conveyor Delivering Coarse Ore to a Drop Point at COS Facility**



OT also uses a foam dust suppressant system added to the Primary Crusher feed. The product F13S has historically been used as the dust suppressant, and applied at an average rate of 3.0 g/ton of ore processed. OT is actively considering alternative dust suppressants that are less costly and that do not negatively impact recovery rates in the concentrator circuit. Additional dust mitigations at the COS facility include keeping the COS stockpile at 70% capacity (~ 550 kt of material) and minimization of drop down distances, thereby decreasing dust generation. An operational change has been implemented to maintain the COS stockpile at this base rate of 550 kt of material, although occasional disruptions do occur if the primary crusher is off-line. In general, the dust curtains are performing well and work areas are regularly cleaned and watered to decrease dust. Continuous ambient air quality monitoring for particulate matter near the COS building is carried out at the AQMNS #5-COS station. Installation and commissioning of this station was completed in July 2020.

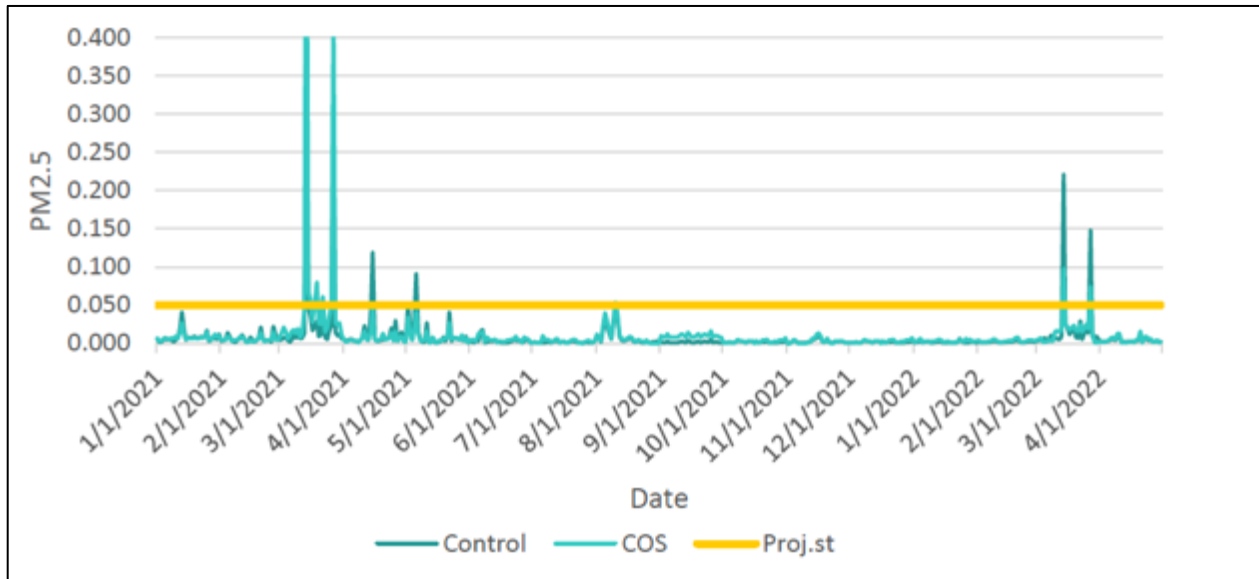
Results of monitoring at the COS Building, and since Q1 of 2019, have demonstrated a significant decrease in particulate matter monitoring at the COS Building since installation of the dust curtains and use of foam dust suppression. As reported in previous Audit Reports, overall dust (both PM<sub>2.5</sub> and PM<sub>10</sub>) has been reduced by between 68 – 88% relative to historic data collected from hand-held monitoring at COS-01 and COS-02. The data set demonstrate the substantial positive impact the installation of dust curtains, and other mitigations, have achieved.

Data returned from PM<sub>2.5</sub> monitoring at AQMNS #5-COS from Q1 2021, through Q2 2022 is summarized in Figure 4 – 32. These data encompass the last two spring seasons. As can be seen episodic exceedances of particulate matter concentrations tend to occur in the spring months as a function of sustained high wind velocities. When these data are analyzed after normalizing for the ambient conditions the dust curtains and



foam dust suppressant have proved effective in controlling dust at the COS Building. This was visually observed during the current field Audit, with much less surface ambulation of dust than had been reported on in prior Audit Report.

**Figure 4-32 PM<sub>2.5</sub> Monitoring at COS Building from Q1 2021 – Q2 2022**



The successful mitigations at the COS Building were the subject of an academic paper issued in 2022 entitled: “*Dust Controls at the Coarse Ore Storage Facility, Oyu Tolgoi, Mongolia, 2022*”<sup>12</sup>. The paper, issued by OT, was co-authored by OT Environment team staff, and professionals from National University of Mongolia and the German-Mongolian Institute of Technology. The paper summarizes dust monitoring data and implemented mitigations around the COS Building from Years 2013 – 2021. (2013 – 2021) and implemented mitigation actions were summarized and analyzed to determine effectiveness of the mitigations. Results of the study were presented at the 15<sup>th</sup> International Mine Closure conference in Australia, with the corresponding paper concluding:

“Operational and engineering improvements such as using dust suppressant foam and installing dust curtains at OT since 2013 has resulted in a reduction of fugitive dust concentration around the COS facility. Since those initiatives in 2019, particulate matter concentrations have been complying with the Project Standard, which meets the MNS 4585:2016 Mongolian National Standard and EU Directive 2008/50 EC on Ambient Air Quality standard. Moreover, some additional works, such as regular cleaning of COS surrounding areas and keeping the COS stockpile to at least 70% capacity to minimise drop-down distances to prevent dust generation, has helped”.

#### 4.4.3 CHP Stack Emission Quality

In late 2019 the Central Heating Plant (CHP) capacity was expanded from 72 MW to 130 MW. Two new 29 MW boilers were added during the expansion. Full commissioning of the new boilers was completed over the winters of 2019 - 2020 and 2020 – 2021. Historically, as discussed in previous Audit Reports, stack emission quality was historically monitored on an episodic basis and not continuously as described in the Air Quality

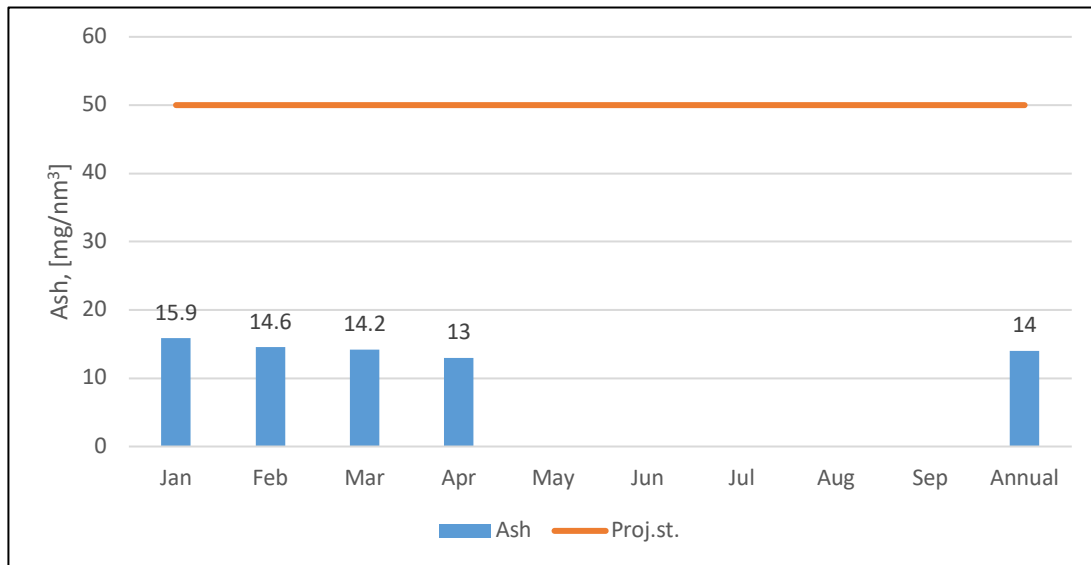
<sup>12</sup> Dandarmaa et al. 2022. “*Dust Controls at the Coarse Ore Storage Facility, Oyu Tolgoi, Mongolia*”. Proceeding of the Mine Closure 2022 - M Tibbett, AB Fourie & G Boggs (eds). Volume One. Pages 389-396. [https://doi:10.36487/ACG\\_repo/2215\\_26](https://doi:10.36487/ACG_repo/2215_26)

Monitoring Plan. To address these concerns in Q3 of 2019 the project installed a Continuous Emissions Monitoring System (CEMS) at a height of 30 m on the chimney stack from which all emissions of the CHP discharge. This work was completed as part of the overall expansion. Installation of the CEMS is consistent with international best practice and Project Standards, as required for thermal installations of greater than 100 MW capacity.

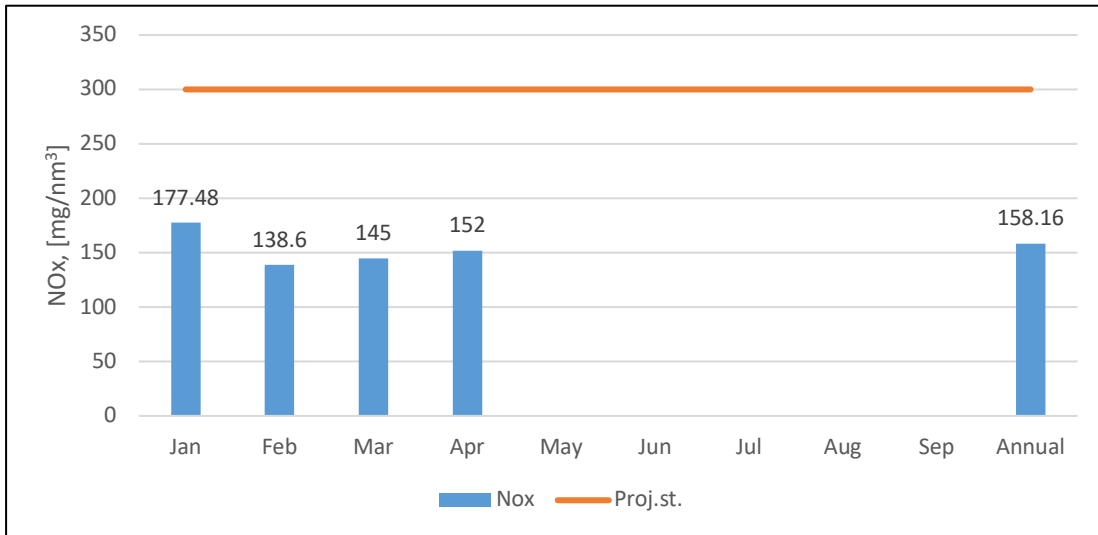
The CEMS continuously monitors ash/particulates, NO<sub>x</sub>, and SO<sub>2</sub>. For this Audit summary data has been provided for calendar Year 2022 (i.e., from January 1 through September 30). Under approved NoC 2016-015 monitoring of stack emission quality from boilers at the CHP should only occur when the boiler loads are over 70% of nominal capacity. This is also a stipulation of Mongolian National Standard MNS 6298:2011 pertaining to the evaluation of stack emission data. Accordingly, in its review of monitoring results OT excludes some data from analysis. Over this current nine months reporting period, which constitutes 238 days, only 71 of these contained “usable” data as the boiler loads were below 70% for 163 of the total 238 days (i.e., approximately 72% of the time). In addition, four days were removed from analysis for boiler start-ups and shut-downs. These leaves 71 days, or 26% of the total 238 days available, remaining for analysis.

Graphs of the usable data set over these approximate eight months are shown on Figures 4 – 33 through 4 - 35. The applicable Project Standard is 50 mg/m<sup>3</sup> for total particulates, 300 mg/m<sup>3</sup> for NO<sub>x</sub> and 400 mg/m<sup>3</sup> for SO<sub>2</sub>. For reference the Project Standard are shown in the figures as a red line.

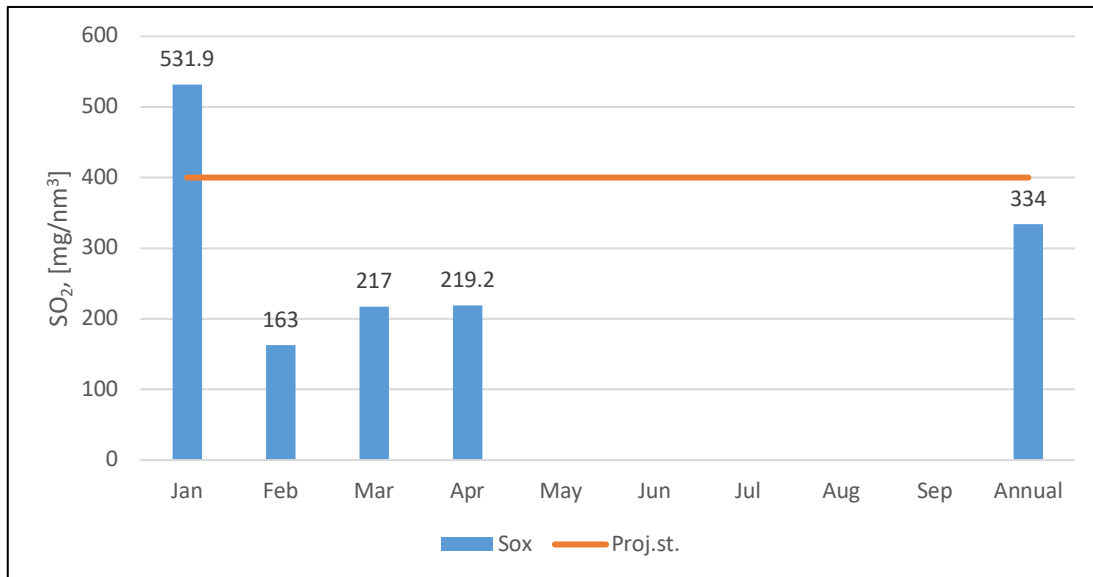
**Figure 4-33 CEMS Monthly and Annual (to Date) Averages of Particulates Relative Project Standard**



**Figure 4-34 CEMS Monthly and Annual (to Date) Averages of NO<sub>x</sub> Relative Project Standard**



**Figure 4-35 CEMS Monthly and Annual (to Date) Monitoring of SO<sub>2</sub> Relative to Project Standard**



Non-conformance regarding CHP emission quality has been a long-standing issue, dating from the time operations commenced in 2013. The NoC 2016-015 attempted to provide a pathway for better evaluation of emission quality, acknowledging that monitoring results are compromised when boiler loads are below 70%. However, the Air Quality Monitoring Plan stipulates emissions should be monitored on a continuous basis, and this has only recently become possible with the 2019 installation of the CEMS.

In late 2021 OT submitted a new Notice of Change related to the evaluation of CHP stack emissions (NoC 2021-003). The submitted Category NoC proposed omission of significant data from analysis relative to the Central Heating Plant emission standard (the Project Standard), due primarily to low seasonal operational loads. OT has provided overall total CHP emission quality data for most of calendar year 2021 (340 out of 365 days), as well as data to date in 2022. The full data set contains data which is omitted from formal analysis, as operational loads are often below 70%. Data for 2021, which includes 340 days of the 365 days annual cycle, are shown in Figures 4-36 through 4-38.

Figure 4-36 Particulate Emissions Data for CHP for 2021 (Loads < and > 70%)

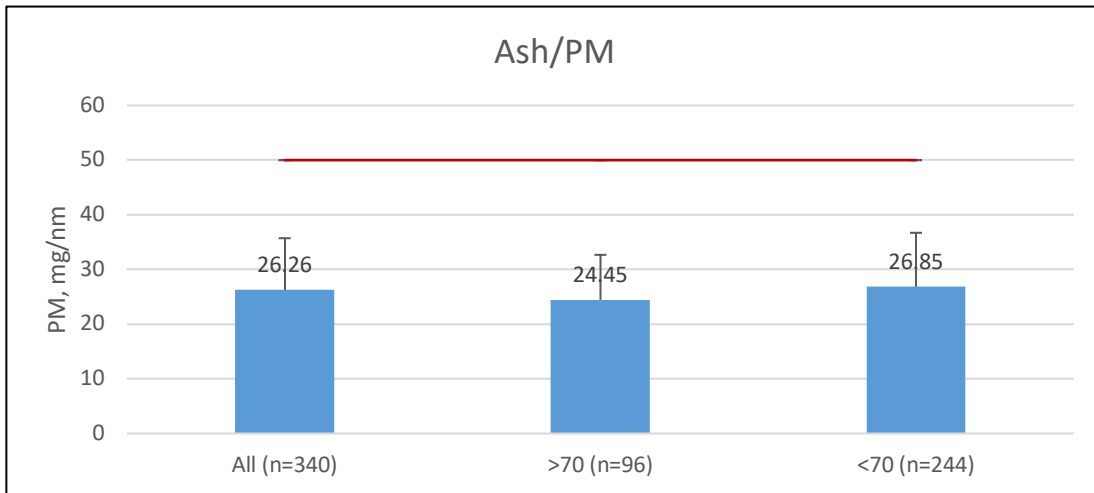


Figure 4-37 NOx Emissions Data for CHP for 2021 (Loads < and > 70%)

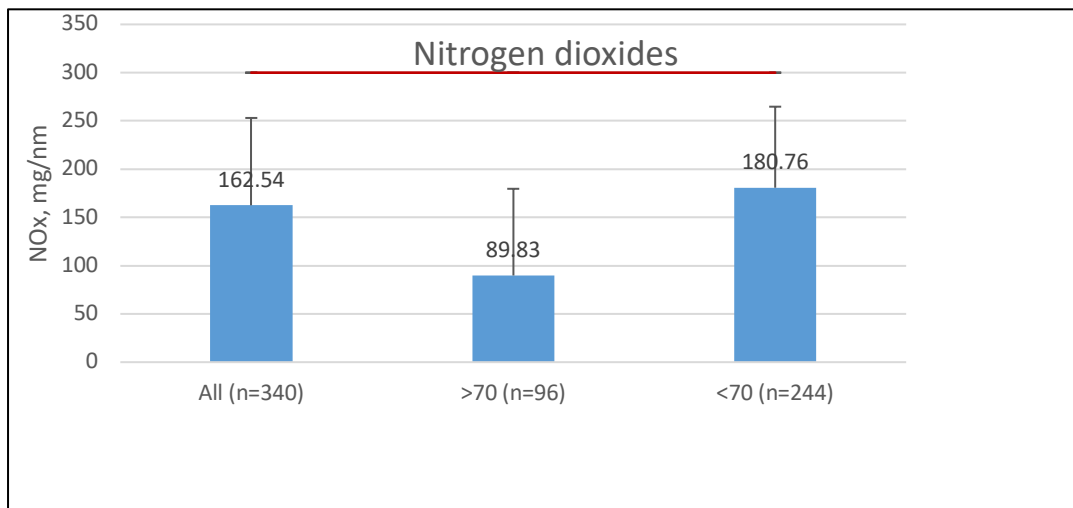
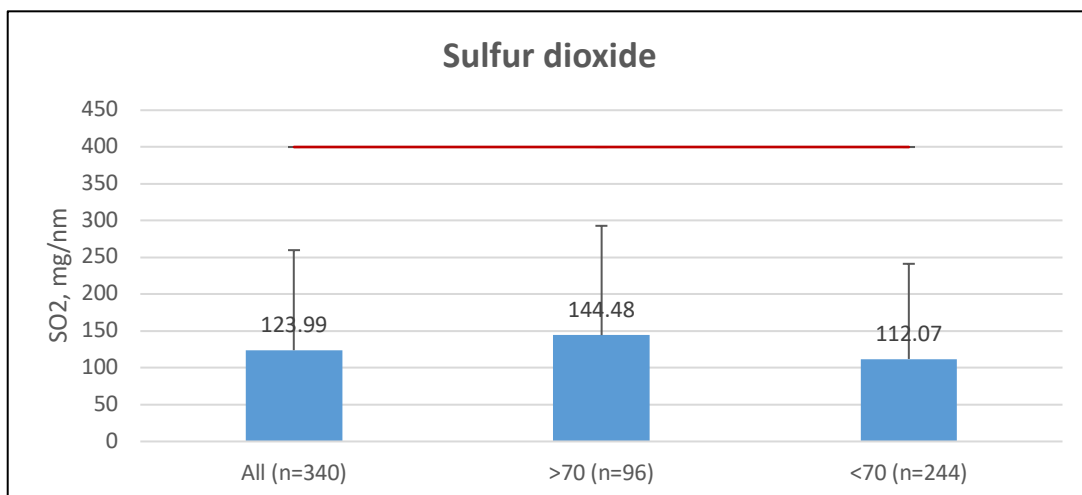
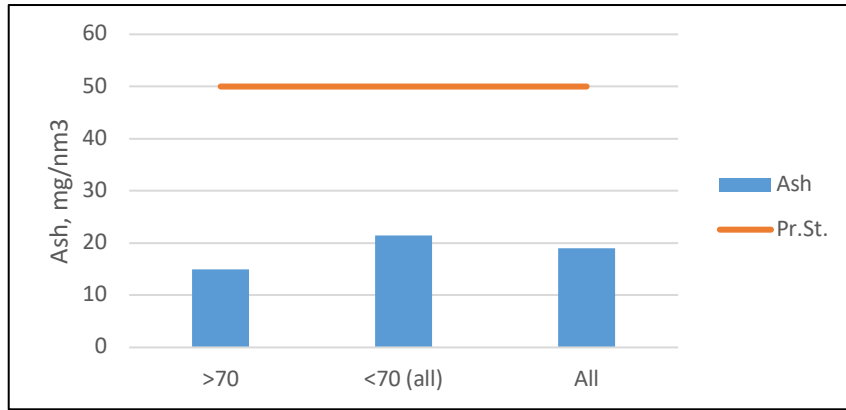


Figure 4-38 SOx Emissions Data for CHP for 2021 (Loads < and > 70%)

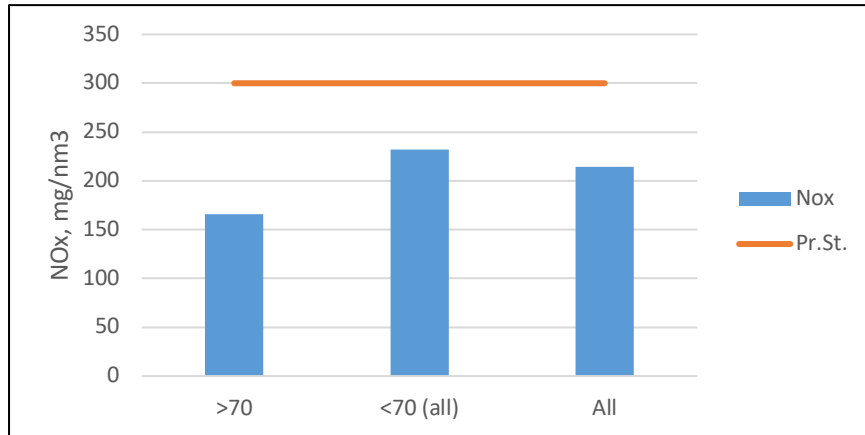


Further, data through the end of September for Year 2022, is shown in Figures 4-39 through 4-41.

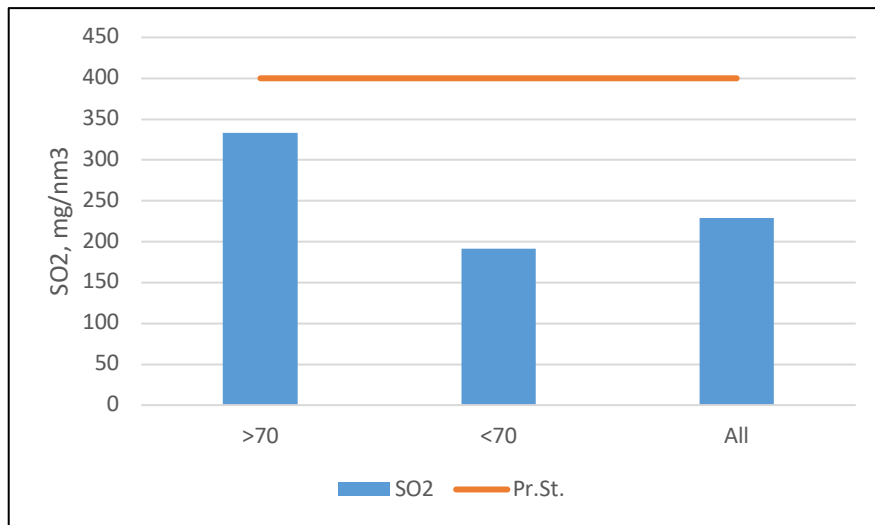
**Figure 4-39 Particulate Emissions Data for CHP through Q3 2022 (Loads < and > 70%)**



**Figure 4-40 NOx Emissions Data for CHP through Q3 2022 (Loads < and > 70%)**



**Figure 4-41 SO2 Emissions Data for CHP through Q3 2022 (Loads < and > 70%)**





The project has demonstrated the application of Best Available Technology (BAT) at the Central Heating Plant as discussed in the document *OyuTolgoi -Central Heating Plant Expansion BAT Assessment, Jacobs Engineering, 2017*. With regards to risk assessment the BAT Assessment provides the following summary:

*“It is concluded that meeting the Project Emission Standards constitutes the application of BAT under the circumstances faced in Mongolia. The existing abatement technology is appropriate to the local conditions and the fuel and limestone available. In addition to the extremely small ground level concentrations compared to EU standards the high impact areas are small and within the mine complex, there are no local settlements to be affected. In addition the local environment does experience every high levels of dust and so the small particulate emissions from the plant have no additional impact”*

The current Atmospheric Emissions Plan (OT Document OT-10-E12-PLN-0001-E, November 15, 2020) describes the Project Standard and its development in the ESIA. The ESIA, and the underlying Environmental and Social Management Plans, anticipate development of the Underground project, including the required expansion of the Central Heating Plant to 130 MW. The Project Standard was set acknowledging the remote operating environment, application of Best Available Technology, and with detailed Ground Level Concentration modeling to anticipate any potential negative impacts to ambient air quality. The Project Standard is anticipated in the ESIA to remain fixed, even with the 130 MW expansion, and should be recognize as the monitoring benchmark.

That said the CHP currently meets EU Directive emission limits for 100 – 300 MW facilities as a mean annual value. This appears true even if data is included for a less < 70% load. This is positive as an absolute indicator of annual greenhouse gas emissions. Due to the very low environmental risk identified in the BAT Assessment, and the clear application of BAT for the region, the IESC reports on mean monthly and annual values for purposes of conformance with the Project Standard. From the data set presented in Table 4-35 the IESC reports one monthly exceedence of CHP stack emissions relative to the Project Standard (in January 2022). The non-conformance was attributed to a blockage in the limestone feeding pipeline to the CHP, specifically to Boilers #5 and #6. AT OT limestone is mixed with the coal feed to lower SO<sub>2</sub> emissions. This blockage in the limestone supply system was recognized quickly and immediately repaired, also in January. Since then measured SO<sub>2</sub> stack emission quality conforms with the Project Standard on a monthly and annual basis. The IESC is recognizing the non-conformance in monthly mean performance of the CHP in January 2022; however the situation has since been mitigated and it is expected that data from the next IESC audit will allow closure of this item.

#### **4.4.4 Greenhouse Gas Accounting and Energy Efficiency**

In 2021, total GHG emissions were 1,738,425 tCO<sub>2</sub> (eq). Scope 1 emissions were 308,050 tCO<sub>2</sub> (eq) and Scope 2 emissions were 1,425,580 tCO<sub>2</sub> (eq). Scope 3 emissions are much smaller and of negligible contribution at approximately ~4,795 tCO<sub>2</sub> (eq).

Full-year 2021 total GHG emissions for the Project are reported separately for the underground development construction and the current operating open pit. Total overall GHG emissions were 1,509,364 tCO<sub>2</sub> (eq). from existing open pit operations and 229,062 tCO<sub>2</sub> (eq) from the underground development. Scope 1 and Scope 2 emissions were approximately 17.7% and 82.0%, respectively, of the total emissions generated in 2021. Typically, roughly 80% of GHG emissions generated at OT are related to the purchase of electricity (Scope 2 emissions). Scope 1 direct emissions are mainly associated with the direct consumption of fuel and operation of the Central Heating Plant. A breakdown of total GHG emissions for the open pit and underground development is shown in Figure 4 – 42.

Figure 4-42 Total GHG Emissions Over Operational Phase



Thus far in 2022 (through the end of August), total GHG emissions are approximately 1,252,813 tCO<sub>2</sub> (eq), and it is forecasted that full year 2022 emissions will total 1,800,000 to 1,900,000 tCO<sub>2</sub> (eq). The Project also tracks greenhouse gas emissions relative to concentrate production. In full year 2021 emission efficiencies were 2.31 tons CO<sub>2</sub>/ton of concentrate produced against an estimated forecast of 2.45 tons CO<sub>2</sub>/unit product. Estimated emission intensity values vary widely based on the Mining Plan. For example: 2022 values are expected to be 3.05 tons CO<sub>2</sub>/ton of concentrate produced, then by Year 2025 dropping to 1.56 tons CO<sub>2</sub>/ton of concentrate produced as higher-grade ore is accessed in underground works. Actual 2022 emission efficiencies to date (through the end of August) are 3.07 tons CO<sub>2</sub>/ton of concentrate produced.

OT has, since 2015, implemented approximately 20 projects at the site to improve energy efficiency. These are detailed in prior Audit Reports. A brief summary on some of these initiatives is described below:

- A 12 kW solar power energy system has been installed at the guard house at the Ikh Ger area, replacing the current diesel generator. This will reduce CO<sub>2</sub> emissions by approximately 60 tons/year;
- For 2022 a 24 kW solar power energy system is planned for the explosive magazine security post. Tendering is underway for this project;
- OT has installed over 5,800 LED lights in administration and accommodation buildings at site. These were observed in use on site as well, as well as the use of solar power lights for walkways in high traffic areas;
- The Native Plant Propagation Center (NPPC) was connected to the KB town grid in Q2 of 2022. It is now possible to use renewable energy as the main power source to this facility while maintaining KB grid power as backup supply; and

- the Environment team has recently put forward a proposal to use renewable energy to supply 5 MW of power to the Camp and Service areas of the site.

OT completed an “OT GHG Emission Reduction Pathway” in Q2 of 2022, after some delays due to the COVID-19 pandemic. In summary more than 80% of OT’s carbon emissions are derived from electricity consumption. Scope 2 emissions are derived from the Inner Mongolian power grid in China. Of the total 118GW capacity from this source, 77 GW are from coal-fired power plants. OT is planning to shift to power sourced from the Mongolian power grid by 2030, provided that the required generation capacity is added by that time.

In Mongolia the use of wind and solar energy is the most suitable zero-emission energy generation solution, but to be effective this would require significant policy support from the Mongolian Government. OT reports that the major challenge for any renewable energy plant development in Mongolia is finding a solution for stability of power, as the intermittency of wind and/or solar energy affects operational stability.

## 4.5 Noise and Vibration

In 2020 the Noise and Vibration Management Plan and Monitoring Program were both updated. Noise monitoring is conducted at four continuous ambient air and noise quality monitoring network stations, with one of these being a control station. In 2021 noise monitoring at these stations, which include the location of the TSF, the Waste Management Centre, and at the Manlai camp residential area, returned monitoring results ranging from 22.5 – 48.1 dB, below the residential standard of 55 dB. There have been no noise-related incidents or complaints at the OT mine site.

In Q2 of 2022 a ground vibration survey was completed by the Institute of Astronomy and Geophysics, Mongolian Academy of Science. This study is completed every three years. Results of the most recent study were not yet available for this Audit Report. However, in the 2019 survey field measurements were done at 8 locations over 7 days that captured the blast events at the open pit. Peak particle velocity associated with the blasts were 0.006 - 0.166 mm/sec which is at least an order of magnitude lower than the permissible level of 10 mm/sec. There have been no non-conformances with KPIs NV-KPI 01 through 03. There have been no incidents or complaints related to vibration.

## 4.6 Emergency Preparedness and Response

The general Project strategy to face and manage emergency situations during project operations is defined in the Operations-Phase Emergency Preparedness and Response Plan (EPRP)<sup>13</sup> which provides a high-level overview of the procedures and commitments to emergency response and preparedness. The EPRP is supported by response plans and procedures which define specific actions to be undertaken in the event of an emergency situation. These include Spill Response Procedures and Hazard Identification and Risk Management Procedures. Underground health and safety considerations, including emergency preparedness and response, are evaluated in a separate independent assessment conducted by the IE.

Rescue drills and simulations were delayed during the COVID-19 pandemic, but have recently resumed with catch-up sessions held to make up for missed events earlier in 2021. The Emergency Response Team (ERT) has assisted in COVID-19 Risk Assessment and participated in updating of the COVID-19 Response Plan. Emergency response procedures have been developed for specific facilities at the site, including firefighting and emergency rescue quick response planning.

In addition to the above in 2021 the following aspects of emergency response planning were completed:

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<sup>13</sup> Emergency Preparedness and Response Plan- Doc. No. OT-12-PLN-0011 Version 1.2.

- Establishment and commissioning of a Surface Mine Rescue Operations Centre;
- Establishment and commissioning of the Underground Mine Rescue Operations Centre;
- Upgrading of an Early Integrated Early Warning System for underground operations;
- The OT Airport Emergency Team was inspected by the Mongolian Civil Aviation Authority and re-certified audit. A requisite audit did not reveal any significant safety breaches; and
- The OT Airport Emergency Team conducted routine aircraft fire drills

## 4.7 Transport Management

The Transport Management Plan<sup>14</sup> (TMP) addresses safety conditions associated with OT operations including contractors. Aviation safety is addressed in a separate document outside the scope of the plan. The TMP identifies management controls covering road design and safety including measures in support of wildlife protection. The TMP was updated in May 2019 to reflect applicable Mongolian Law and to clarify management controls and monitoring measures. The OT Infrastructure and Services Department has responsibility for exercising management control, with the involvement of the Communities department in public area road safety programs.

In addition to safe vehicle operation, the management controls are intended to address roadway dust and animal impact hazards (to both livestock and wildlife). Along the OT to Gashuun Sukhait, OT to Khanbogd, and OT to airport roads, herder crossings to allow safe livestock crossing have been installed.

In 2021 a total of 1,096 convoys delivered 705,105 tons of concentrate to China. This is a slight decrease from the 752,881 tons of concentrate shipped to China in year 2020. Transport has been a challenging issue throughout the COVID-19 pandemic with strict border controls at these Chinese Borders. The frequent strict lockdowns at the border have often resulted in concentrate being stockpiled on site. OT has made significant changes to its Outbound Logistics including the use of double-trailers to decrease the number of drivers crossing the border, and prohibiting the drivers staying overnight in China. OT plans to ship 755,200 tons of concentrate in Year 2022, of which 565,623 tons have already been exported through the end of August, 2022. Over 71% of transport convoys have used double-trailers.

OT LLC has long evaluated alternative routes for concentrate export other than truck transport through the GSK/GMD border crossing. An option of convoy truck surface transportation first to UB, then rail transport from UB to the border crossing at Erlain, has been considered throughout the life of the Project. This option includes 750 km of truck convoy surface transport from OT to UB, 84 km of which is dirt track and 660 km of paved road ending at the Amagalan Rail Terminal in UB. In 2021 approximately 20,000 tons of accumulated concentrate at the OT site were exported using this option (just under 3% of the total volume). This export option was reviewed by the Lenders and the IESC and approved in 2021 under NoC 2021-004.

Beginning in 2022 OT utilized a third concentrate export option, this time using surface roads to truck to a spur railway line which then joins the trans-Mongolian railway at Zuunbayan, from where the concentrate then crosses the border at Erlain. In March 2022 a trial shipment of 6,400 tons of copper concentrate was exported using this route. There is 286 km of surface truck transport to the railway handling station, of which 175 km is unpaved dirt road and the remaining 111 km is paved. Prior to using this route OT had originally trucked to the railway station using a more direct “OT-Malai Country Road” until the longer more established route from OT to Tsogtsetsii and then on to the road to Zuunbayan was established by the Aimag governor (regional governmental authority). The trial shipment was approved by various Local and State agencies prior to commencement. An NoC was submitted in Q1 2022 for the potential future export of concentrate using this third option. A map of this third export option is provided as Figure 2 -1.

<sup>14</sup> Transport Management Plan - Doc. No. OT-10-C3-PLN-0001 Version 1.4.

There are multiple KPI's identified in the Transport Management Plan. Metrics for outbound service providers, of which there are three, are provided in Table 4-6. In sum total for 2021 there were 47 documented breaches of KPIs. The IESC views these non-conformances as good indicators of the vigilance that is given to transport management off site. NoC 2022-001, submitted in Q1 of 2022, address the potential transport option to Zuunbayan . The IESC will be critically evaluating this NoC for potential environmental and social impacts subsequent to completion of this Audit Report.



**Table 4-6 Breaching of Transport Management Plan KPIs for Year 2021**

KPI	Total count of breaches	Infraction	Classifications
TMP-KPI01 Any breach of C3 vehicles & driving standard	15	Exceeding speed limits	8
		Incident	3
		Distracted by using cellphone while driving	1
		Other	3
TMP-KPI 02 Any breach of C4 working at height standard	0	0	0
TMP-KPI03 Any breach of company's HSE policy & procedure KPI	3	Unplugged cabin camera, distracted by using cell phone	1
		Delay action (on health condition)	1
		Other; forgetting new valid passport	1
TMP-KPI04 Any breach of life saving rules & essential safety practices	12	Covid19 prevention at Huafang yard	2
		Covid19 prevention and isolation at site	7
		Covid19 prevention at China	1
		Other; unplugged cabin camera intentionally and used cell phone; and unplugged smoking sensor in a room	2
TMP-KPI05 Any breach of Drug & Alcohol management standard	0	No non-compliance reported	0
TMP-KPI06 Any breach of camp standard & code of behavior at OT & HF	3	Fight and individual misbehavior at camp	3
TMP-KPI07 Any areas that affects the on time or scheduled daily shipment plan	14	Technical imperfections and lack of manpower	6
		Temporary transit stop	5
		Incident, other	3
TMP-KPI08 Any breach of local content commitment set out in schedule of this contract	0	No non-compliance reported	0

## 4.8 Biodiversity and Ecological Management

OT manages its impacts on biodiversity and ecosystem services through a Biodiversity Management Plan<sup>15</sup> (BMP) and an Offset Management Plan. Additional management controls are included in other management plans, including the Land Disturbance Control and Rehabilitation Management Plan (LDCRMP), Pasture and Livelihood Improvement Management Plan (PLIMP) and a further 10 management plans. In 2020, OT updated the BMP and Priority Plant Protection Procedure through the Notice of Change (NoC) Procedure. OT monitors the effectiveness of mitigation measures and tracks progress to deliver net gain and/or no net loss outcomes through a Biodiversity Monitoring and Evaluation Plan (BMEP) which was also revised in 2020 through a NoC. For ecosystem services an Ecosystem Services Monitoring and Evaluation Plan (ESMEP) identifies key users and beneficiaries for four critical or priority ecosystem services including pasture, biomass fuel, freshwater and water regulation. OT sets out the various management and monitoring measures that are used to maintain flows of these services and the benefits they provide. The indicators in the ESMEP were updated during 2020 through a NoC.

OT's Environment and Biodiversity Team coordinates implementation and monitoring of controls described in the above documents. Field and technical support is provided by the following organizations and consultants: Global Biodiversity Conservation (GBC), Wildlife Conservation Society (WCS), Sustainability East Asia (SEA), Wildlife Science and Conservation Centre (WSCC), Good Growth Company, and the Professional Biology Society of Mongolia (PBSM), which is a Mongolia-based science institute.

For this Site Audit the IESC visited OT on September 20-22 to meet with staff, review ongoing activities, and visit facilities (compost production area, plant nursery, TSF rehabilitation pilot area) and project sites (rehabilitation sites, poplar tree protection area). **Given the information available at this time the IESC concludes there is one Class III non-conformance related to the commitment to achieve a Net Gain for rangeland.** The following subsections detail the IESC's current observations and recommendations, organized according to biodiversity values for which OT has committed to achieve a Net Gain.

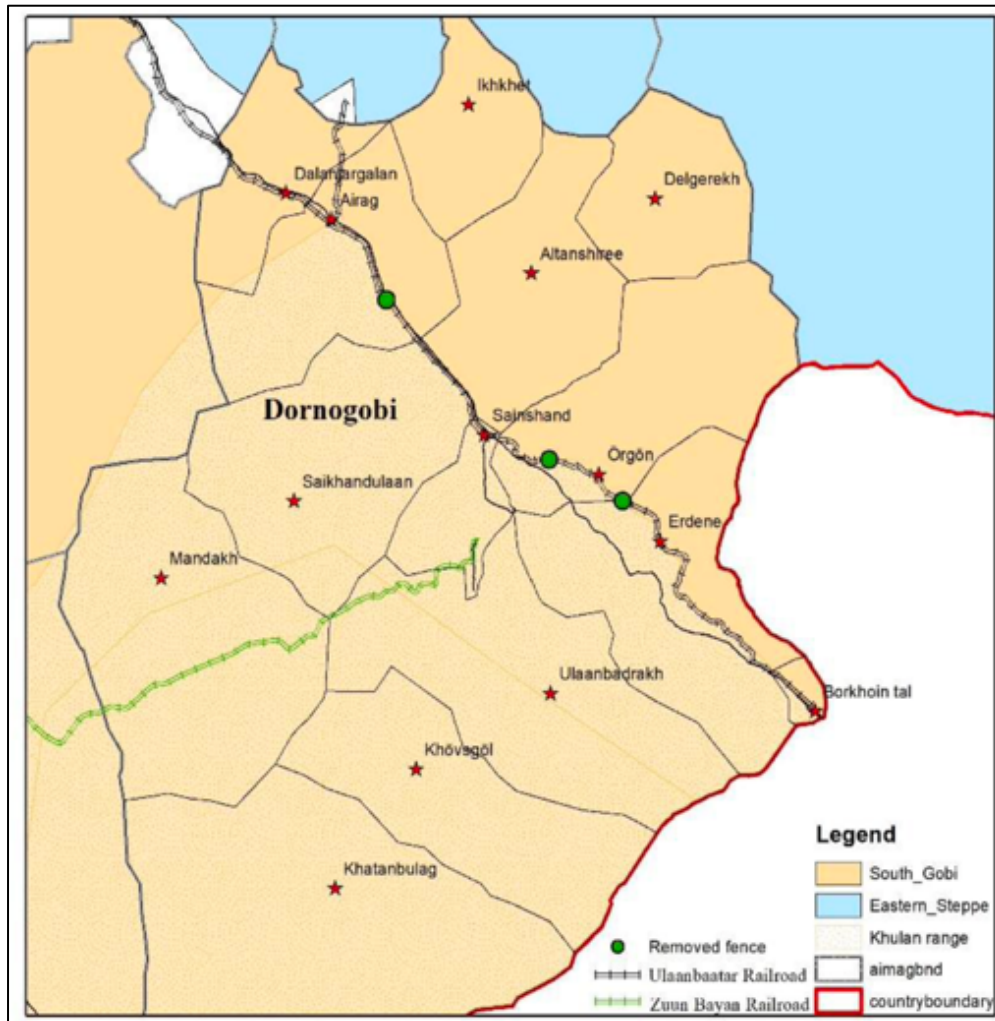
### 4.8.1 Asiatic wild ass (khulan) and Goitered gazelle

The proposed offset for indirect habitat loss will remove fencing and decrease habitat fragmentation along the rail line from Ulaanbaatar to China. If successful, this will generate a substantial net gain in accessible rangeland habitat (>1 million hectares). Khulan were extirpated from the habitat on the eastern side of the rail line. Removal of the fencing barrier will effectively make unoccupied habitat newly available to the existing population of khulan currently on the western side of the rail line and will improve access for gazelle (as well as reduce gazelle mortality from entanglement in fencing).

OT has been successful in working with rail authorities to open three pilot segments of fencing, 300, 500 and 700 meters in length, for a total of 1.5 km of openings in the rail line (Figure 4-43). OT funds guards to monitor livestock near the rails and to notify their owners to avoid train collisions. Livestock herds are tracked using GPS collars and automatic cameras. Gazelles were the first to respond to the openings, but three khulan have also now used the openings.

<sup>15</sup> Lender commitments were initially included in a Biodiversity Action Plan, now retired, with open actions incorporated in the BMP

Figure 4-43 Map of Locations of Openings on Rail Line from Ulaanbaatar to China



Over time it is becoming increasingly apparent that more and more linear infrastructure will be constructed and fragment the southern Gobi. This changing context should be recognized in terms of the strategies OT is taking to manage and offset its own impacts. OT has been participating in discussions at a national level with rail operators, Ministry of Transportation, Ministry of Environment, and NGOs about adequate implementation of a national standard for new rail construction that requires appropriate wildlife crossing structures. At present, rail companies claim to meet this requirement with culverts installed for other purposes such as drainage and livestock passage. Such structures are not adequate for species like khulan that require larger underpasses. Unfortunately, there is little expectation that this will change in the immediate future, posing a serious risk of large-scale fragmentation of habitat for very wide-ranging mammals as new rail lines are being constructed in the Gobi.

**If rail line openings can be maintained (if not expanded) permanently along the rail line from Ulaanbaatar to China, and khulan and gazelle utilization increases and is sustained, it is the IESC’s opinion that this project could fulfill OT’s Net Gain obligation related to habitat fragmentation for these mammals. Additionally, if OT can influence the implementation of a national standard for new rail construction *and* other alternatives to railway fencing, it will prevent additional fragmentation of habitat in the Gobi and could also fulfill OT’s commitment to achieving a Net Gain for habitat**

**fragmentation. In this case, OT could revise/simplify its current metric for habitat fragmentation and instead focus on the functioning of rail line openings or crossing structures and the habitat that is accessed through them. The IESC recommends that OT consider this when next updating its BMP and Net Gain forecast.**

In addition to the railway fence removal project, the anti-poaching offset continues. The program now includes Omnugobi and Dornogobi provinces. Rangers are using the SMART method and WCS continues to provide technical support as rangers slowly grow accustomed to the technology. A training video has been developed to reduce the number of physical trainings required. The program also utilizes online monitoring of social media to track the prevalence of buyers and sellers of wildlife. The number of online offers to purchase wildlife has substantially dropped in 2022, with only seven recorded thus far, relative to a total of 61 in 2021. OT continues to develop an updated system to measure the program's effectiveness using acoustic monitoring of gunshots near watering holes. This system will replace carcass monitoring, which was not generating reliable results. As stated in the last audit report, the IESC observes that the method for quantifying this program's contributions to Net Gain relies on the assumption, albeit intuitive and reasonable, that patrols will reduce illegal hunting. Overall trends in hunting may be changing at the same time, and it is possible that hunting pressure will decline on its own with the rapidly changing economic and social context of the southern Gobi.

No new data were available on khulan movement at the time of the audit. All khulan collars had dropped (as planned) in 2020 and new collars were being attached at the time of the audit. Monitoring of khulan foaling this year show that reproduction rates appear to be in line with past years.

#### 4.8.2 Rangeland

OT has a requirement to offset several thousand hectares of rangeland lost to the mine's development. Progress in achieving a Net Gain for rangeland is measured using a rangeland condition metric. At present, OT's contractor, WCS, has been monitoring rangeland condition in the landscape and within an area targeted for a rangeland offset called the South Gobi Cashmere Project. The IESC has noted in the past that the statistical analyses performed by WCS requires improvement, and this has been addressed in part by a consultancy with Arthur Rylah Institute for Environmental Research (ARI). The ARI work includes recommendations and guidance, including a statistical power analysis, that makes a strong contribution to the project. **The IESC recommends that WCS integrate the ARI recommendations and guidance into their monitoring work.**

The South Gobi Cashmere Project has faced challenges in implementation, raising concerns that it may not be viable. A new entity, The Good Growth Company, currently leads the project, but concerns remain that goals for reducing the local herd sizes and improving rangeland quality may not be achievable. It is also noted that the effects of the project on rangeland quality are expected to take as long as 10 years to be measurable. The combination of the uncertainty about the project's viability, and the lag time to see effects, suggests that a "Plan B" is needed to hedge the risk of failure.

In the previous audit (May 2022), the IESC recommended that OT begin developing such complementary/alternative plans to achieve its rangeland offset requirements. This has yet to be done. **Given OT's very large offset requirement for rangeland lost to OT's footprint, a key stakeholder concern, and the slow progress in demonstrating a way to do so, the IESC is opening a Level III non-conformance. OT should develop implementation-ready plans to achieve its offset requirements for rangeland via complementary /alternative projects, to be agreed at the next IESC audit (proposed for May 2023).** It is important to assert that *any* offset project has uncertainties related to its implementation and biological outcomes. It may be prudent to execute multiple projects in parallel as a hedging strategy, rather than rely exclusively on one option over another.

In addition to the offset, OT is actively rehabilitating rangeland that it has impacted. OT has initiated biological rehabilitation on over 500 hectares, both within and outside the mine lease. It has also established

a well-functioning compost production facility to support planting activities. However, rehabilitation outside of the mine lease is very challenging given the pressure from herders to allow grazing on rehabilitated areas. The IESC observed the effects of grazing on rehabilitated areas during the site visit (Figure 4-44). Expectations for the biological rehabilitation of these areas will need to be tempered by the practical reality of the local land use context. This will affect the long-term rangeland “quality” scores that can be achieved in these areas – an important factor in determining Net Gain for this biodiversity value.

**Figure 4-44 Area Planted for Biological Rehabilitation That Has Been Grazed**



OT is also currently designing biological rehabilitation trials for the TSF Cell #1, in preparation for full-scale rehabilitation beginning in 2027. Thirty centimeters of topsoil will be placed on the tailings, mixed with gravel to control erosion. Revegetation trials will include replicated experimental blocks of hydroseeding, core seeding, and planting.

#### **4.8.3 Riparian Elms**

There is stakeholder concern that OT’s diversion of the Undai River around the mine site will affect the health of elm trees that occur along the dry riverbed downstream. To address this, OT is monitoring the condition of elms along the Undai relative to control sites in three other riverbeds. In addition, the monitoring includes comparison of elm condition in grazed versus un-grazed areas to determine whether grazing pressure is a major influence on elms. Monitoring has been conducted this season, but the data analysis



was not available at the time of the audit. OT continues to plant elm trees and expects to achieve a Net Gain for this biodiversity value. In addition, OT is also participating in the national “billion-tree” initiative through which it will conduct additional tree plantings.

#### 4.8.4 Saxaul Forest

As an offset, OT is currently planting approximately 5 hectares of saxaul forest per year to expand existing saxaul forest stands. It is also rehabilitating some areas impacted by the company with saxaul trees (Figure 4-45).

**Figure 4-45 Rehabilitation of Linear Impacts with Saxaul Vegetation**



OT is also working to reduce human pressure on existing saxaul forests by providing scrap wood as a substitute for saxaul for use as fuelwood and construction material. Additional planting of saxaul will also be included in OT’s participation in the national “billion-tree” initiative. Project plans and progress to date suggest that reaching a Net Gain for this biodiversity value will be achieved.

#### 4.8.5 Priority Plants

Four priority plant species (*Spongiocarpella grubovii*, *Amygdalus mongolica*, *Cistanche lanzhouensis* and *Zygophyllum potanini*) have Critical Habitat in the Mine Lease Area. OT staff continue to manage impacts on priority plants within the mining lease via a land use disturbance permit process. Approximately one-third of land disturbance requests require an action to conserve priority plants. To facilitate this process, OT is conducting surveys of the entire mining lease to map the locations of seven priority plant species. The company surveyed the eastern half of the lease in 2020 and the western half will be completed this year.

OT continues to work with the Biotechnology Lab at the Biological Institute, MAS, and is successfully propagating priority species. It is also running a successful nursery operation close to the site where these, and other species, are prepared for eventual transplanting in rehabilitation areas or translocation to other appropriate habitats (Figure 4-46) . In the case of *Spongiocarpella grubovii*, 300 young plants will be translocated to a variety of locations in the wild in an experimental manner to better understand their requirements for survival in the wild. Once site requirements are better understood, translocation can be scaled up to meet OT's Net Gain requirement for this species.

**Figure 4-46 Rehabilitation of Linear Impacts with Saxaul Vegetation *Spongiocarpella grubovii***



#### 4.8.6 Saxaul forest

A total of 12 hectares of saxaul forest have been lost in OT's footprint. This is being replaced via planting of saxaul trees and reduction of human pressure on existing saxaul forests by providing scrap wood as a substitute for saxaul for fuel wood and construction material. The planting of saxaul will also support OT's participation in the national "billion-tree" initiative.

OT provided in 2021 provided for free 298 loads of scrap wood to local communities. While some members of the community prefer saxaul because it provides more heat and better aroma as a fuelwood, scrap wood does appear to be substituting a portion of saxaul use. And, OT continues to support saxaul planting. The IESC expects OT will have no trouble achieving and sustaining NPI for saxaul.

#### 4.8.7 Priority Plants

Four priority plant species (*Spongiocarpella grubovii*, *Amygdalus mongolica*, *Cistanche lanzhouensis* and *Zygophyllum potanini*) have Critical Habitat in the Mine Lease Area. During the May 2018 audit, the IESC opened a Level III non-conformance related to management of impacts on *S. grubovii*. This species is challenging due to infrequent and unpredictable seeding and low survival following translocation. There is a lack of technical experience with this species. The non-conformance was reduced to Level II during the May 2019 audit as a result of OT's progress in researching and developing propagation methods, including development of new tissue culture techniques that allow plantlets to be generated in a lab setting. Similar challenges apply to the three other potentially impacted priority plant species (*Amygdalus mongolica*, *Cistanche lanzhouensis* and *Zygophyllum potanini*). OT developed a Priority Plant Corrective Action Plan (CAP) to address the concerns regarding the priority plant species and the IESC closed the Level II non-conformance in December 2020. Implementation of the work laid out in the corrective action plan will continue for a total period of least five years.

Priority plant species continue propagation testing at the Biotechnology Lab at the Biological Institute, MAS, and in 2022 approximately 300 saplings will be ready to transfer to the land rehabilitation operation (NPCC) implemented by the contractor Priroda LLC. The IESC looks forward to receiving confirmation of the transplanting of priority plant species in the next audit.

#### 4.8.8 Short-toed snake eagle

This season, monitoring detected eight short-toed snake eagle nests, five of which were successful. Six short-toed snake eagles have been tagged with GPS transmitters to monitor movements. This continues to be positive news from the three-year period when nests in the area had been inactive – the monitoring results allay concerns about short-toed snake eagles no longer inhabiting the study area.

#### 4.8.9 Houbara bustard

No mortality of Houbara bustards was detected along OT's transmission lines this season.

As noted in the last audit report, OT has fulfilled its commitments to lenders for this biodiversity value. Impacts to this species are compensated out-of-kind via an offset that reduces transmission line mortality for other bird species (esp. Saker Falcon). In addition, OT also promoted the passage of a national design standard for low-voltage transmission lines that will mitigate the risk of electrocution to birds for all new low-voltage transmission lines constructed in Mongolia.

OT has also funded research on the migratory movements of Houbara bustards, including again fitting two individuals with tracking transmitters this year.

#### 4.8.8 Recommendations

1. Rangeland monitoring should integrate the recommendations from the technical consultancy of ARI to improve the quality of statistical analysis.
2. Given the information available at this time the IESC concludes there is one Class III non-conformance related to the commitment to achieve a Net Gain for rangeland. OT should develop implementation-ready plans to achieve its offset requirements for rangeland via complementary/alternative projects, to be agreed at the next IESC audit.
3. If rail line openings can be maintained (if not expanded) permanently along the rail line from Ulaanbaatar to China, and khulan and gazelle utilization increases and is sustained, it is the IESC's opinion that this project could fulfill OT's Net Gain obligation related to habitat fragmentation for these mammals. Additionally, if OT can influence the implementation of a national standard for new rail construction *and* other alternatives to railway fencing, it will prevent additional fragmentation of habitat in the Gobi and could also fulfill OT's commitment to achieving a Net Gain for habitat fragmentation. In this case, OT could revise/simplify its current metric for habitat fragmentation and instead focus on the functioning of rail line openings or crossing structures and the habitat that is accessed through them. The IESC recommends that OT consider this when next updating its BMP and Net Gain forecast.

## 5 Social Performance

Social management plans guiding the work of the Communities and Social Performance (CSP) team are the Community Health, Safety and Security Management Plan (CHSSMP); Stakeholder Engagement Plan (SEP); Pasture and Livelihood Improvement Management Plan (PLIMP); and Resettlement Action Plan (RAP). The OT People and Organisation Team is responsible for the implementation of the Labour Management Plan and associated documentation, while the Contractor Engagement team is responsible for the Contractor Management Framework Procedure and supporting documents.

As at September 2022, the SEP and IMP are under review, while the PLIMP review has been approved. The RAP review is pending the result of the RAP Completion Audit, the timing of which is dependent on the procurement process. The ICMM self-assessment process is ongoing and the Rio Tinto cultural heritage audit completed. The CSP team has additionally completed the OT railway PFS community chapter.

The Rio Tinto CSP Standard discussed at the previous audit has now been finalized. The IESC communicated with CSP specialists from RT and OT following the previous audit, with the amendments proposed providing clarity on how the Standard will be applied and from when for operational assets. The IESC considers the language in the CSP Standard no longer creates a conflict with that in the OT Project documentation regarding Indigenous and Land-Connected Peoples. The IESC welcomed the constructive dialogue to resolve this issue.

### 5.1 Labour and Working Conditions

The OT Investment Agreement specifies requirements for employment of Mongolian nationals. The Labour MP<sup>16</sup> applies to all OT activities including contractors. Implementation by contractors is addressed in the Contractor Management Framework<sup>17</sup>. Issues addressed through the Labour MP include:

- targets for employment of Mongolian nationals;
- ensuring access to training for South Gobi residents;
- recruitment processes;
- support of women;
- rosters/working hours;
- employment centres and recruitment officers;
- salary benchmarking;
- retrenchment and demobilisation; and
- maintaining accommodation standards

A range of other social issues that are drawn from ESIA commitments are presented in labour-related MPs including: targets for national, regional and local content of Project procurement (In-migration MP); requirements of contractors to meet HR/HSE standards (Contractor Management Framework); and Identification of Mongolian suppliers and service providers available regionally and locally (Supplier development policy).

<sup>16</sup> HR-10-PLN-0001-E, v.1.5

<sup>17</sup> OT-07-PRC-0001-E, v.2.0



### 5.1.1 Recruitment and Manpower

Changes to the Mongolian Labour Law reported previously have required the recruitment of the fourth panel (additional shift crew, to implement an even time roster). OT advertised over 500 roles via 3 separate tranches to recruit for the fourth panel. Over 32,320 applications were received in total, including duplicate applicants, and through this process, the recruitment team used a combination of online, face to face assessment centers and structured interviews to interview more than 1,500 people. As at 15 September, 475 roles from the fourth panel have been filled and 49 are at the onboarding stage. Of the total, 31% of recruits are female and 42% are from Umnugobi, including through support of the Local Employment Working Group (see also Section 5.4.2). While fourth panel recruitment is now finished, the recruitment team is now addressing recruitment for approximately 120 business as usual roles.

Since May, OT has continued to respond to changes to the Mongolian Labour Law and requests from the OT Trade Union (OTTUC). Firstly, due to the Labour Law amendment, the list of roles which are required to be on standby/on-call outside usual work hours had to be approved by OT LLC. This has been achieved, and has resulted in on-call hour payments to those eligible employees. Secondly, the OTTUC requested that salary calculations be explained to the 17 leading OTTUC members, including public holiday payments stipulated under the current Collective Agreement. Lastly, regarding interpretation of overtime payments, the decision by the Supreme Court of Mongolia is still pending, and is to be discussed at the National Labour and Social Partnership Tripartite Committee. OT LLC and the OTTUC mutually agreed not to negotiate or initiate any dispute on this matter until the official interpretation by the Supreme Court of Mongolia is received. Further, one individual as well as two lawyers filed complaints with the Constitutional court of Mongolia claiming 14/14 roster or relevant clauses of new labor law are in breach of the Constitution of Mongolia, Human rights bill and other international conventions which Mongolia is party to. The Constitutional court rejected to resolve the dispute instead noted to improve the legislation based on further review of relevant clauses. In addition, a Mongolian Member of Parliament (Labor party) has challenged that the even time roster and its application and impact to both employees and employers and announced potential submission on amendment of 14/14 roster to Parliament. While this may result in further changes to the Labour Law and its roster requirements, the requirement for an even time roster remains current (effective 1 January 2022).

As at Q2/2022, OT is meeting its labour KPIs as set out in the Investment Agreement, with Mongolian nationals comprising 96.7% of the OT LLC workforce<sup>18</sup>).

### 5.1.2 Management of Worker Relations

There were 61 grievances raised in the year to 31 August 2022, to myVoice, OT's worker grievance system. Of these, 23 are subject to ongoing investigation and 26 have been closed, while 8 have been assessed by the Business Conduct Office (BCO) and 4 have been completed by the BCO investigations. Of the total cases (open and closed), 38% relate to business integrity issues (mostly conflict of interest [13 cases]) and 49% relate to personnel issues (mostly bullying [8 cases] and sexual harassment [7 cases]). Positively, the numbers of grievances raised has increased with the introduction of the "Everyday Respect" program, particularly on personnel issues. Of the sexual harassment cases, two of these resulted in termination. The IESC commends both those who reported the cases for the courage to report and to OT for strong follow-up on these cases. The majority of ongoing investigations (8 of 23 cases) relate to business integrity (conflict of interest).

The Everyday Respect Task Force, being implemented at OT following the Report into Workplace Culture at Rio Tinto<sup>19</sup>, seeks to promote respect within the workplace. Workstreams under the project support the

<sup>18</sup> Where the KPI is 90%

<sup>19</sup> Report into Workplace Culture at Rio Tinto, Elizabeth Broderick and Co., released 1 Feb 2022.

<https://www.riotinto.com/news/releases/2022/Rio-Tinto-releases-external-review-of-workplace-culture>

actions to address both the Report's recommendations as well as being responsive to findings specific to Mongolia. Workstreams at OT include: Leadership, Culture, Safety, Care and Response.

In recognition that a culture shift needs to be initiated from leadership, the Leadership workstream requires individual and group commitments from the OT Senior Leadership Team (SLT) and group commitment from the OT Board. Communications campaigns will follow on these commitments. For all OT leaders (531 leaders with direct reports), 60% have completed foundational training on everyday respect, facilitated by psychologists, to support a safe working environment across all teams. The remainder are to be completed by Q4/22. Compared to the findings for Rio Tinto in the Everyday Respect Report, Mongolia has a low propensity for reporting, which the Caring Response workstream seeks to address. A communications pack has been developed, employee webcast commenced and from 2023, a rollout of the Everyday Respect training will commence for all staff. One trigger for low reporting rates was due to difficulties in reporting in Mongolian language and loss of trust in the efficiency of the reporting system. One of the 26 recommendations in the RT Workplace Culture Survey Report was to establish a discrete, specialist unit to provide support to people experiencing harmful behavior. The Business Conduct Office has established a unit focused in Mongolia to provide a culturally appropriate and safe process for all team members based in Oyu Tolgoi and Rio Tinto Mongolia. The reporting and grievance mechanism MyVoice Mongolia is operated by a third party organization and receives and responds to the issues raised in the native language of the reporter. The Safe and Inclusive Facilities workstream is addressing accommodation issues, improvement of shower and toilet facilities, implementing security controls, improvement of lighting in the Oyu Tolgoi residential camps and work areas. Engagement is currently underway program-wide to determine the approach for rolling the program out to Contractors.

Implementation to date has resulted in an increase in grievances raised through myVoice Mongolia, and interviews with workers conducted during this monitoring visit confirm that expectations remain high of the outcomes of the Everyday Respect program. Interviews also indicated both hope and expectation that the program will facilitate closure of gaps between salaries (for the same work) between OT LLC compared to contractor employees.

Implementation of the People with Disability (PWD) employment strategy continues to work towards the statutory target of employment of 4% PWD. For OT this requires employment of 130 PWD or to pay a fine to the GoM; OT continues focus to increase the number of employment opportunities for people with disabilities. Recent changes to the Labour Law provides for exemptions or discounts for companies to paying the fine for not meeting disability targets where workers are also supporting children/family members with disabilities or individuals with disabilities by purchasing services or products from them.

Further to the measures reported from the previous monitoring report, there are now 29 PWD employed, 40% of whom are women (total up from 19 at the previous audit). A referral program using existing recruitment processes and an internal declaration process are now in place. The benefit to employees with disabilities in making the internal declaration include: personal income tax exemptions, allowances from Social Welfare, extra annual or other leave days, with an overall intent to aid retention in a diverse and inclusive workforce. Ten employees have accessed the internal declaration to date. External recruitment to fill vacancies are eligible for PWD to apply (health conditions and workplace accessibility will be considered), but OT can also specifically announce vacancies to target PWD. The ambitious target is to hire from internally and externally an additional 20 PWD before the end of 2022. An NGO is in place to support the PWD program in identifying what the accessibility needs are. Current and future areas of work include: support for PWD to use site flights; conducting a site assessment focused initially on the administration block and mess hall; and provision of a sign language interpreter service. Further, partnerships for PWD or caregivers of children/family with permanent disabilities are also being pursued, including through the OT Proud Recognition program to promote caregiver workers.

Implementation of the Alcohol and Other Substances Management Procedure is ongoing, which provides, inter alia, opportunities and access to professional counselling and rehabilitation programs. Overall, the alcohol breaches have been significantly increasing for this year whilst the total number of OT LLC headcount is up by approximately 23% due to the even time roster. For 2021, there were only 2 alcohol

related cases due to the Covid 19 restrictions and hotel isolations prior to the site travels. Data suggests that the rehabilitation service reduces the termination cases, but workers are tending to test positive more often for alcohol through breath testing on arrival at site. The procedure stipulates that repeated breaches will result in termination. As at September 2022, 33 employees have been offered to attend rehabilitation. The Minnesota Life Psychology Center is the professional service provider in Mongolian language for this program; positive feedback has been received from program participants.

### 5.1.3 Worker Accommodation

At this audit, the IESC had the opportunity to inspect new worker accommodation in Khanbogd. This accommodation is intended as an alternative to site-based accommodation for roles including: IT, Geology, Camp services, and CSP. The CSP team members reported that this accommodation offers a two-hour time saving in not having to drive from site to commence work in KB; employees who can access this accommodation are those who work for 10 hours per day and only day shift people are selected due to fatigue management criteria. Interviewees spoke positively of the facilities; the accommodation itself is within a compound on the outskirts of KB soum center, run under what is a new model in Mongolia, of serviced apartments. There are apartments fully furnished with one or two bedrooms, all with one kitchen and bathroom and all with access to laundry, a yoga room, the ability to book OT transport (e.g., for grocery shopping in addition to site access). Workers on back-to-back rosters share one room and each is provided with their own locker for personal effects. The apartment complex has two security staff in addition to entrance security access (door codes/fobs to tag in and out of the building). Buses provide transport to site and the food allowances received by workers accommodation in the serviced apartments matches what those in UB headquarters receive. Workers were moving in at the time of the audit and rooms almost fully subscribed. The IESC was informed that the intent is to provide accommodation for the families of OT workers to also be able to access accommodation in the serviced apartments.

The OT ESAP includes a commitment on worker housing development<sup>20</sup>. At the time of ESIA and ESAP preparation, the serviced apartment model was not envisaged nor available in Mongolia<sup>21</sup>. **The IESC finds a non-conformance, in that a NOC should have been prepared to account for this new model of offsite accommodation**, including describing how OT intends to manage risks associated with providing family accommodation in the serviced apartment complex, in line with Lender E&S Standards and Project commitments. The IESC acknowledges the KB Development Strategy which encourages workers to move to KB if they wish, to private accommodation of their own choosing, with family or otherwise. The serviced apartment accommodation is provided for workers by OT and is an OT controlled activity. The IESC recommends that a NoC on new employee accommodation is prepared.

Drivers for the concentrate shipments continue to be accommodated in a separate worker accommodation camp (Power Camp), under a separate roster, to minimize the potential for Covid-related disruptions on concentrate deliveries to China. This camp has a separate kitchen, gym, supermarket, bar, hairdresser, volleyball and SOS Clinic. The IESC did not inspect this accommodation.

Weekly inspections for all accommodation blocks/rooms continue and results of these are discussed during KPI meetings with the vendor. This active management has been key to reducing complaint numbers regarding defaults. Issues reported by camp users have declined from approximately 1000 in 2018 and 2019, to 100-150 in 2022.

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<sup>20</sup> ESAP item 5: "Worker Housing Development: ... OT LLC will deliver to the IESC a Worker Housing Development ESIA prepared in accordance with Applicable Lender Environmental and Social Standards and applicable Environmental and Social Laws, ... including the approval of any site agreed with GOM for review and approval by the Lenders." <https://disclosures.ifc.org/project-detail/ESRS/29007/oyu-tolgoi-llc> (accessed 27.10.2022)

<sup>21</sup> ESIA Chapter C8, section 8.1.1

## 5.2 Resettlement and Livelihood Restoration

The strategy, management plans and coordination mechanisms guiding resettlement, compensation and livelihoods improvement are framed around the internal OT Resettlement Action Plan (RAP), and the external Cooperation Agreement (CA) and Development Support Fund (DSF). The operation of the Cooperation Agreement (CA) remains in place in contributing to sustainable livelihoods via funding from the Gobi Oyu Development Support Fund (DSF).

The Cooperation Agreement (CA) is the mechanism of engagement between OT and partner *soums*<sup>22</sup>. The Tripartite Council (TPC), between OT, Khanbogd *soum* authorities and Khanbogd *soum* herders, acts as a working group under the Cooperation Agreement's Relationship Committee, which has responsibility for managing commitments related to pastureland management and herder livelihood improvements. The Relationship Committee (RC) is responsible, in collaboration with Khanbogd herders, for prioritizing and recommending projects under the Cooperation Agreement that will contribute to sustainable livelihoods, via funding from the DSF, as well as all animal husbandry, herder cooperative development and related activities that are being implemented under the Pastureland and Livelihood Improvement Management Plan (PLIMP) to work together towards sustainable development in water, environment, pastureland management, cultural heritage, tourism, local business development and procurement. The RAP covers both physical (10 households signed off Resettlement Agreement(s) in 2004) and economical displacement (92 households signed off Compensation Agreement in 2011).

### 5.2.1 Economically Displaced Herders

The KPI for the number of livelihoods restored was investigated by the Outcome Evaluation conducted in 2018. The Outcome Evaluation identified that eleven of the original 89 (which had grown to 92) affected households required ongoing livelihood restoration programs, to be delivered through tailored Household Livelihood Improvement Plans (HLIPs). The remainder of the households were identified as having met or improved their livelihoods.

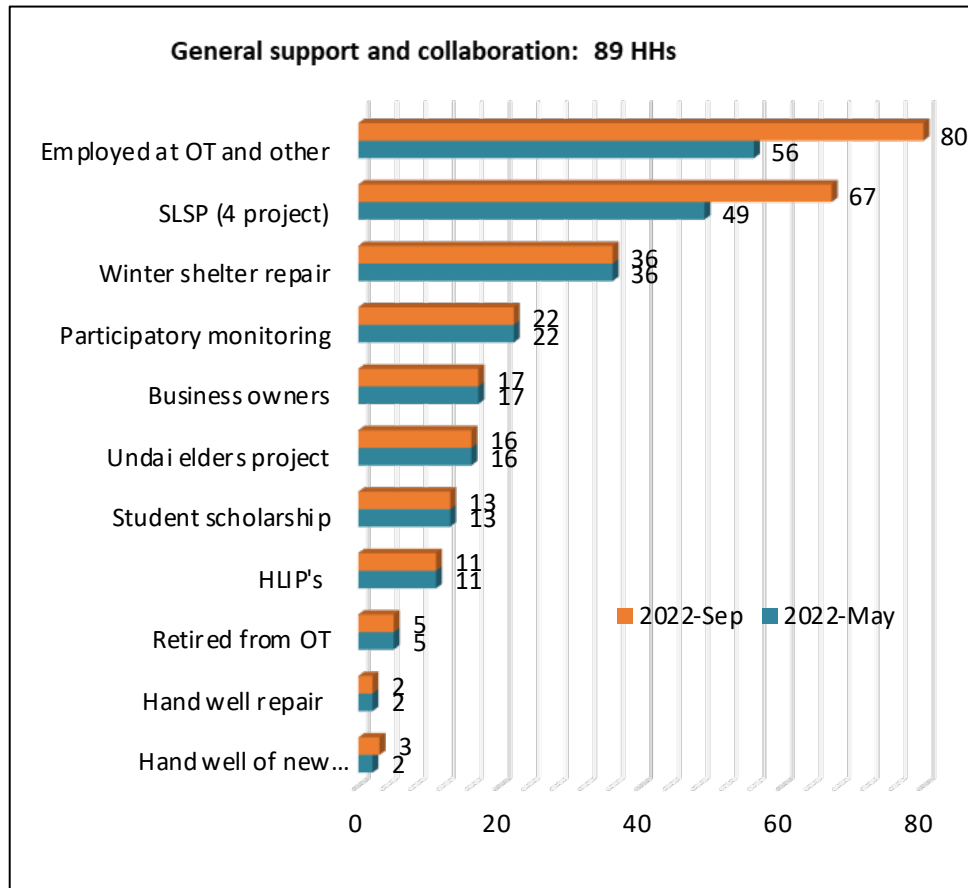
RAP households' participation in livelihood improvement measures is shown in Figure 5-1. This shows that OT continues to increase the participation in livelihoods projects in the last quarter, with an increase from 49 to 67 households now joining the four Sustainable Livelihood Projects (SLPs). These are the sewing business (of which 12 households are members), agribusiness (9 households), Angus breeding (12 RAP households plus 3 non-RAP households are members), and the Gaviluud sheep breeding project (13 RAP households plus 3 non-RAP household members). In 2022, OT has provided an additional USD \$24,700 to the four SLPs.

While it is commended that ongoing support is offered to households, the IESC observes that at this stage, OT has an obligation to conduct and close out the RAP Completion Audit. It will be challenging to identify completion and sustainability of SLPs while membership of the projects continues to grow and expand to non-RAP household members, including after the Completion Audit TORs have been finalized.

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<sup>22</sup> Umnugobi aimag, and Khanbogd, Manlai, Bayan-Ovoo and Dalanzadgad soums

Figure 5-1 Livelihood improvement project participation of RAP Households (Q1 and Q2/22)



OT's commitment<sup>23</sup> is to conduct a Completion Audit of the 2011 economically displaced households, based on the Outcome Evaluation, in 2020. While recognizing delays due to the challenges of Covid-19, the TORs for the Completion Audit had been completed at the previous audit following an extensive period of consultation with external stakeholders (including the new EHT/TPC). The international tendering process takes a number of months and is ongoing. **The IESC finds a non-conformance with the RAP**, and that that Completion Audit should be completed as a cross-departmental priority. The 11 HLIPs households have been supported since the Outcome Evaluation in 2018 including through student scholarship, job application priority support and participation in SLPs. Livestock monitoring for the 11 households indicate typical livestock herd sizes for the soum. The IESC considers it reasonable to now seek closure of 2011 economic displacement impact mitigation measures, particularly prior to any possible impact assessment relating to subsidence in the Mine Protection Zone. The IESC looks forward to the final Completion Audit report at the next monitoring visit.

The IESC notes that interviews during the monitoring visit with a sample of EHT representatives at the TPC, that the purpose of the RAP Completion Audit is perceived to be mostly understood by herder households. The IESC advises careful communication (at the appropriate time during the RAP Completion Audit process) that ongoing support to herders will continue in some form for all KB herder households, however not under the auspices of the RAP. For this reason, the proposed RAP milestones and implementation outline scheduled to 2027 should be reconsidered.

<sup>23</sup> RAP (OT-10-PLN-006, v.3.0), s.9



Representatives of two of the four SLPs (Angus breeding and sheep breeding), were interviewed during this site monitoring visit and reported challenges and successes in growing their cooperatives and improving breeding and meat, milk and wool yields under a changing climate. Ongoing support from OT and Development Solutions NGO was highly commended by interviewees; a mix of technical support consultancy and material support is being provided to each cooperative.

### **5.2.2 Pastureland and Livelihood Improvement**

The PLIMP seeks to identify the supporting role of OT in contributing to pastureland management and livelihood improvement programs and initiatives of the soum Government Office in conjunction with local herders. Support is on-going for local agribusiness to contribute to local economic diversification and community food safety and security under the Local Agribusiness Support Strategy (LASS).

Since monitoring in May, the actions taken under the LASS include: the ongoing stable operations delivering 11 primary services at the KB soum Animal Health Care Centre, and the accreditation of its certified laboratory. The soum has been registered as a 'healthy region' following 2 consecutive years of no animal diseases. Under the Pasture Water Improvement Project (2020-22), 56 wells have been restored. In total, 84 families access these wells, as do 33,600 head of livestock.

The Slaughterhouse project continues under the 'Market Linkages' pillar of the LASS. The project feasibility study has been completed, and preparation of construction bidding documents has commenced. An engineer has been contracted to support the construction phase of the Project. Establishment of the management cooperative is also underway: the 'umbrella' cooperative is to be established at the soum level, so representatives to sit on the cooperative are to be elected from each bagh. Membership of the management cooperative will be drawn from the 295 herder households across the baghs (which is 71% of the total number of herder households in KB). This progress is highly commended.

### **5.2.3 Vulnerable People**

The list of vulnerable households continues to be identified by the Livelihood Support Committee at the Khanbogd soum Government administration office; the 20 households identified by the soum office for 2022 has not changed since the previous IESC report. No RAP households are included in this year's list.

Since the previous report, donations have been made to vulnerable households following a flooding event in KB. Four gers were donated to the households, one of whom was interviewed during this monitoring visit. Updating from May 2022, the Healthy Teeth program is ongoing, with 29 children from 13 households provided with dental examinations and treatment. The tender has been announced for the project to support creation of a rehabilitation room for children with disabilities.

## **5.3 Stakeholder Engagement**

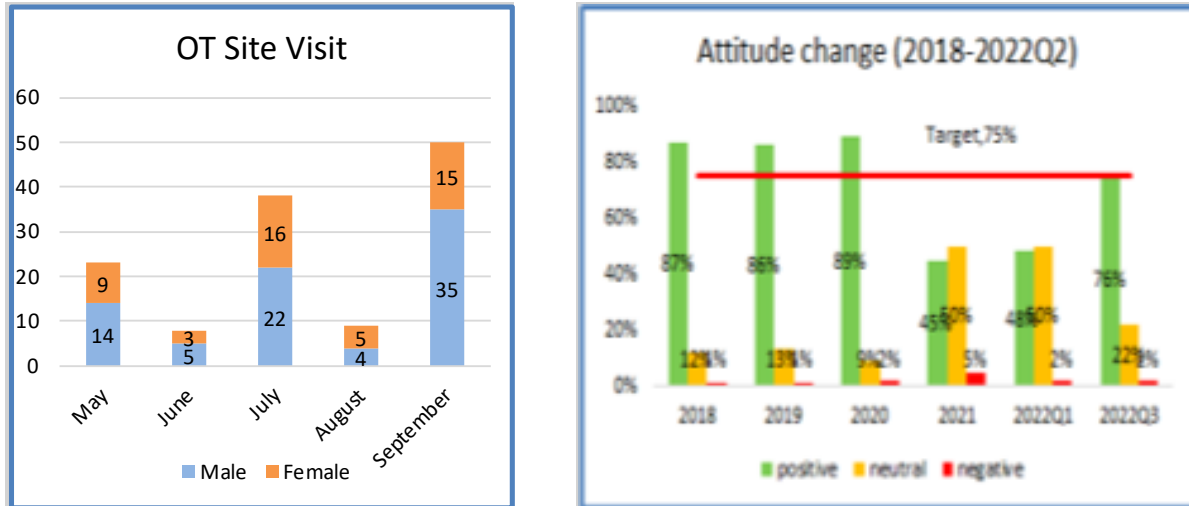
Community engagement is the responsibility of the Communities and Social Performance (CSP) team delivered under the Stakeholder Engagement Plan (SEP), while the External Affairs and Communications team manage national government and other national-level stakeholder engagement. The cross-functional SEP has cross-linkages to almost all other OESMPs. Community relations staff members from the CSP team typically work from offices at OT site, Khanbogd, Dalanzadgad and Ulaanbaatar.

### **5.3.1 Engagement and Information Disclosure**

In the period May-September 2022, 120 engagements have been recorded with 495 stakeholders, predominantly conducted face-to-face (66%). More than 40% of visits have been conducted in September, with the reintroduction of site visits to OT. Over a third of site visit attendees are women (see Figure 5-2).

Maintaining face-to-face meetings in Q1 and Q2/22 has been key to improvements in attitude changes. OT’s self-assessed data on attitude changes (see Figure 5-2) shows an increase in positive attitudes toward the project from Q1 to Q2, now slightly exceeding the target of 75% through a reduction in the number of neutral attitudes. Negative attitudes hold steady at 2%.

**Figure 5-2 OT Site Visit Attendance and Attitude to OT (2018 to Q2/2022)**



Covid-19 restrictions prevented 90<sup>th</sup> anniversary celebrations for the Umnugobi aimag in 2021, thus the 90<sup>th</sup> and 91<sup>st</sup> anniversaries were celebrated over summer 2022. Celebrations included sales of locally-produced products ‘SG Made’ at OT site and information disclosure on the Gaviluud sheep breed, both of which are cooperatives supported by OT under livelihoods projects. The IESC notes that the event was well attended, with OT recognized as a trusted partner.

Other engagements have included the Town Hall meetings. In May, updates were provided on OT operations, CSP activities, employment (including reporting on and advertising for the fourth panel recruitment) and tree planting opportunities. September’s Town Hall focused on livestock sector and cooperative development. OT also facilitated discussions also featuring external panelists (scientists, veterinarians, cooperative members) discussed livestock productivity, herding practices and new technologies. Follow up actions from the Town Hall meetings are captured under Project Desert Rose<sup>24</sup>.

Production and distribution of the OT newsletter continues; it is disclosed to 70 stakeholders via email, and 400 hard copies are distributed. Each newsletter is also disclosed on the OT website.

*TSF Environmental incident*

Stakeholder engagement on an Environmental Incident has been carried out in 2022. In November 2021, OT identified an Environmental Incident at the TSF related to seepage collection and offsite detection. The seepage collection system has not sufficiently contained collected waters, allowing this water to access the Khaliv ephemeral drainage. This was detected through the monitoring of an offsite shallow alluvial bore, where high TDS concentrations were first detected in 2018. Further detail is provided in Section 4.1.5.

<sup>24</sup> ‘Desert Rose’ is an OT internal project with a substantial work program, with workstreams to align initiatives provided by OT departments in area of herders’ livelihood, employment, minimizing impacts on communities and environment, initiated in January 2022 following community protests focussed on local employment.

Notification to and engagement with stakeholders commenced in 2022. The timeline is described in the following Figure 5-3.

**Figure 5-3 Timeline of stakeholder engagement regarding TSF Environmental Incident**

Date	Detail
Feb 2022	OT Environmental and Community Managers provided TSF incident related information to Khanbogd soum Governor
15 Jun 2022	Extended meeting with Soum governor and Environmental inspector
21 Jun 2022	Organized TSF incident area site visit for TPC, Munkh Nogoos Galba NGO and KB soum administration representatives Following the site tour, conducted wrap up meeting and established joint working group (WG) with 12 members consisting of representatives of the local authority, TPC, Munkh Nogoos Galba NGO, herders, and OT
2-3 Jul 2022	Joint WG conducted joint fact-finding exercise: digging at 5 points and sent the water sampling to the labs
5 Jul 2022	WG meeting
24-29 Jul 2022	Digging additional 2 points and collected water sampling from all 6 points sent to lab
2 Aug 2022	WG meeting – discussed the digging site reports
2 Sep 2022	WG meeting – discussed the water lab results and agreed to hire third party experts
4 Sep 2022	WG presented their work at the TPC meeting to all members – agreed to present the case to the Javkhlant bag citizens meeting and engage with third party experts.

The IESC notes that at the time of the site monitoring visit, herder households downstream of the TSF had not been engaged by OT. Rather, the TPC members determined that the WG should present findings of joint fact finding efforts to those households. The household data of downstream winter shelters and herder households has been consistently collected and updated over a number of years by OT, and is clearly understood.

The IESC recognizes that OT sought the best available understanding of the seepage and its movement prior to notifying stakeholders, interviews with a sample of TPC members during this monitoring visit reflected that there were conflicting messages with time over whether the TSF should seep, and if so, whether this is safe. Concerns were expressed regarding the seepage, including: what it contains, how far it travelled, and its potential impacts to people, livestock, water and land, as well as whether the controls will be sufficient for the operation of the second planned TSF cell. The SEP provides for issues-specific engagement<sup>25</sup>, including that: “Specific stakeholder engagement plans and consultation approaches will be developed based on key issues as required (including) Tailings Storage Facility”.

The IESC acknowledges that the Joint Working Group established has an agreed work plan and meets regularly. However, understanding of how the TSF is seeping and being able to clearly articulate this is the responsibility of the Operator, OT. A topic-specific SEP cannot now be developed in advance of offsite seepage detection. However, **the IESC finds that to demonstrate that project-affected people, including downstream in Javkhlant bagh, are meaningfully engaged in decisions that may have a bearing on public safety and the integrity of the tailings facility, a topic specific SEP should be prepared.** A TSF SEP should seek to ensure that, inter alia, OT can communicate clearly and consistently across departments about technical issues associated with the TSF and its seepage, to affected

<sup>25</sup> SEP (OT-10-PLN-0008-E, v.2.1), s.5.5

stakeholders. A consultation approach should also be consistent with the Global Industry Standard on Tailings Management (GISTM), the industry standard that Rio Tinto has a commitment to implement<sup>26</sup>, specifically Topic 1 (Affected Communities), Requirement 1.3.

### 5.3.2 Community Grievances

In the period May – September 2022, 3 complaints have been received from the community regarding environment, resettlement and the contractor HR process. All are Class II risk level, and one has been closed (hydrocarbon pollution in a herder's well). No incidents or repeat complaints have been received. The IESC is satisfied that reasonable responses with required review processes are underway in the two open cases.

Additionally, 5 cases of positive feedback were received (on the Dalanzadgad museum and the DSF), and 76 requests have been received, 63 of which are completed and 13 in progress.

### 5.3.3 Tripartite Council

The TPC is operating under the TPC Agreement (2017-2024). Following election of the Elected Herder Team (EHT) representatives in April 2022, capacity building training has been implemented. In September, this included capacity building training, covering aspects such as: the TPC history, procedures and teamwork recommendations; representatives' responsibilities and team decision-making. Interviews conducted with a sample of TPC representatives during the IESC monitoring visit confirmed that the onboarding process is well received.

The TPC's internal evaluation of progress in implementation of the Herder Complaints Resolution Agreements (HCRAs) has not been updated since the previous audit, i.e., completion of commitments remains at 74% (as at Q1/2022). However, activities to implement HCRAs has continued. This includes: winter shelter maintenance (now 90% completion progress, up from 52% in the previous report); solar panel installation for 22 water wells now completed, with handover to beneficiary herders ongoing; and hand well restoration achieved for 4 pilot wells and tendering initiated for 16 planned locations.

Terms of Reference are to be prepared for two separate independent (external) reviews. One review will be of TPC Governance (also proposed to be supported by Lenders via IFC, and RT). Interviews conducted by the IESC during the monitoring visit confirmed that TPC members agree on conducting an update of the TPC Charter; which is required as a result of changes in legislation in Mongolia. The IESC is concerned that this may not be accurate, and urges TPC members to consider that given the TPC is not a legal entity, it is not subject to legislation guiding state organizations.

The second external review is proposed of the completion implementation status of HCRAs. This review will seek to resolve how to measure whether clauses can be considered 'completed'. Interview respondents opined that the HCRA clauses remain relevant, but the challenge is in closing them. Interviews with a sample of TPC members also discussed the TSF Environmental Incident. See Section 5.3.1. Transparency of TPC activities is supported through reporting and information disclosure measures including a flyer update on progress in 2022 and bagh meetings in September. The TPC is also online through a Facebook page and website, with Joint Statements from each meeting publicly disclosed.

### 5.3.4 Participatory Environmental Monitoring

The Munkh Nagoon Galba NGO (MNG) was established in 2017 to lead OT's Participatory Environmental Monitoring (PEM) program. The number of participants currently stands at 126 participant herders involved in monitoring at 171 points. Current efforts have focused on strengthening of MNG NGO through partnership

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<sup>26</sup> <https://www.riotinto.com/en/sustainability/environment/tailings>

with other stakeholders, including the Soum environmental inspectors and rangers, and collaboration on data analysis with external environmental experts. This has been of particular importance to supplement internal capacity due to staff turnover.

No critical issues have been identified by MNG NGO in fauna monitoring. Collaboration with OT is close for pasture monitoring and has resulted in inclusion of results in the national 'rangeland database' 'Database for Inventory Monitoring and Assessment (DIMA) program. Dust monitoring is conducted (using OT's Dustrack equipment) at 6 points along roads and one point in the KB soum centre. One exceedance was recorded on the Coal Road between OT and Tavan Tolgoi (TT mine), at which point water suppression is regularly conducted. The IESC notes that TPC EHT representatives interviewed during this site monitoring visit reported that there was mistrust in PEM program data due to their use of OT's equipment. The IESC suggests that the new EHT representatives observe the monitoring being carried out by MNG NGO to satisfy any queries they may have about the data collection process and results, as a means of being able to agree and close out issues; challenging the validity of Dustrack results should not prevent EHT representatives from continuing to negotiate on solutions to dust control. Water monitoring is conducted in 126 wells of 112 households by PEM, of which OT measures 16 hand wells. A joint monitoring event was conducted in August 2022 between external hydrologists on behalf of the OT water team and MNG NGO specialists. The IESC notes and commends this collaborative process between specialists.

## 5.4 Regional and Community Development

Regional and community development is implemented largely through the Cooperation Agreement for the South Gobi, supported by thematic areas that address community development in the partner *soums* and in Umnugobi *aimag* where the mine is in operation.

The Cooperation Agreement (CA) between OT and the Umnugobi aimag, and Khanbogd, Manlai, Bayan-Ovoo and Dalanzadgad soums (collectively making up the Partner Communities) was signed in April 2015, in compliance with the OT Investment Agreement and the Mongolian Minerals Law. OT is obliged under the Agreement to provide USD 6.2 million each year into the Gobi Oyu Development Support Fund, which is administered by a Relationship Committee and DSF Board. The investment was CPI adjusted up from USD 5m annually, following third party review of the CA.

The regional and community development program is directly related to issues addressed in Operational Management Plans: in-migration management, addressed through the In-migration Management Plan<sup>27</sup> (IMP), the Labour Management Plan<sup>28</sup> and Community Health, Safety and Security MP (CHSSMP)<sup>29</sup>. These plans are all designed to minimize unplanned influx, maximize regional and community development to help the host communities cope with population growth, and promote sustainable economic development.

### 5.4.1 Cooperation Agreement

The total budget delivered to DSF since 2015 now stands at USD \$38.9million, invested into 313 projects and programs. As at 31 August, 194 projects have been completed (up from 188 at the previous monitoring report), 110 are progressing on track and 9 projects are progressing through the procurement process. Currently, 70% of funds are allocated to social infrastructure projects. Key ongoing projects across the categories of health, education, basic social services, IT and agriculture, are presented in Figure 5-4.

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<sup>27</sup> In-migration Management Plan – Doc. No. OT-10-PLN-0007-E, v.2.1.

<sup>28</sup> Labour Management Plan – Doc. No. HR-10-PLN-0001-E, v.1.4.

<sup>29</sup> Community Health, Safety & Security Management Plan - Doc. No. OT-10-PLN-0001, v.1.2.



**Figure 5-4 Ongoing key projects funded by DSF**

Area	Ongoing key projects	Progress status
<b>Health</b>	Construction of Health Centre in Tsogt-Ovoo soum	30% completed
	Integrated health program with UNFPA	Approved in July
	Regional Diagnosis Treatment center equipment supply work	Tendering
<b>Education</b>	Construction of School in Dalanzadgad	45% completed
	Construction of kindergarten in Dalanzadgad	80% completed
	Kitchen furnishing of kids' summer camp	50% completed
	School Eco Toilet of Ger district in Dalanzadgad soum	Tendering
	Integrated education program in partnership with UNICEF	Approved in July
<b>Basic service</b>	Feasibility study of infra development	Contract signed
	Development Master Plan of Dalanzadgad soum	Contract signed
	Khanbogd soum fresh and sewage water pipeline work	Commenced
	Installation of chimney at Heating plant, Dalanzadgad soum	Tendering
<b>Information technology</b>	Feasibility study of Data Centre in Umnugovi aimag	60% completed
<b>Agriculture</b>	Water access and Pastureland project	80% completed

Priorities in the coming months include the continuation of the lengthy selection process of the DSF Executive Director. Nine applicants have been interviewed and the Board will make the final selection; OT is supporting a merit-based approach. The Relationship Committee has met to follow up on the recommendations of the independent review of implementation of the CA. Follow up actions will include updating of both the thematic areas funded under the DSF, and of the DSF's procedures. A strategy update is also envisaged to focus on projects with longer term impact and away from the construction sector. Applications for the next round of Govi Oyu student Scholarships closed in September; to date, there have been 324 scholarship recipients. Of these, 74% are employed in Umnugobi. Almost one third work in the health sector.

Regarding specific DSF-funded projects, the KB potable water and sewage pipeline project has commenced, which will connect 30 enterprises and 325 households to a centralized drinking water and sewage networks. The 15-bed health care centre in Tsogt-Ovoo soum is anticipated to be commissioned in September 2022. The budget for the DZ school construction requires government approvals process (from the Construction Development Agency) to progress; the effect of price rises on construction materials has caused the increase.

The KB Masterplan 2040, while not implemented by OT, has been heavily supported in its preparation by OT under the goal of shared value. The OT and Turquoise Resources (TRQ) Boards approved OT contribution to the Strategy. At the time of the monitoring visit, the KB Development Project implementation had commenced, with a Partnership Agreement developed. A KB Catalyst Fund and Fund Charter have been designed. The Fund’s Executive Director has been appointed and a first Board meeting held. The project delivery team structure has been developed and recruitment and onboarding in progress. Implementation of the Masterplan will receive USD \$50 million spend over the coming 5 years from OT LLC, which is part of the \$300m total investment secured from a range of investors (including local leaders, aimag and the Construction Development Agency). Twelve priority projects have been identified for implementation in 2022-23; a tendering process has commenced for these. OT has appointed a KB Development Strategy Specialist to support the company’s contribution to Masterplan implementation.

Interviews with a sample of TPC representatives during the monitoring visit highlighted that Quota funding disbursed under the DSF is not accessible by herders. While the funding is available, the herders do not have the time or resources to invest in making applications. Quota funding for 2022 approved by the DSF Board is USD\$ 460,000 across the 12 target soums of Umnugobi (KB, Partner soums, plus non-mining soums selected annually by the Umnugobi aimag Governor’s office). The target beneficiaries are the vulnerable, disabled, elderly, those with special needs, women and herders, with a view to improving soum community living conditions and livelihoods.

#### 5.4.2 In-migration

In-migration management controls remain the two broad categories of (i) managed in-migration through recruitment and procurement practices; and (ii) contributing to social infrastructure and services to ensure adequate service for the evolving local population, inclusive of unplanned in-migration.

Updated data on KB in- and out-migration was not available since the previous monitoring report. The Local Employment (LE) and Local Procurement (LP) working groups (WG) have had changes in leadership and have had varying levels of activity since the previous IESC report. Targets and achievement for both groups are shown in Figure 5-5 below; both are below target as at August 2022.

**Figure 5-5 Local Employment and Local Procurement Performance Targets/achievement (2021-22)**

	2021		2022	
	target	actual	target	actual-Sep
<b>LE</b>	<b>32%</b>	<b>24.7%</b>	<b>37%</b>	<b>22.5%</b>
<b>LP</b>	<b>25%</b>	<b>26%</b>	<b>26%</b>	<b>25.16%</b>

Longer term, the LE target is that 50% of OT employees will be Umnugobi residents by 2026. As at 31 July, 3,780 employees were from Umnugobi (i.e., 22.5% of the total site-based workforce). The LE WG met at OT in June (including a site tour) and in September in KB soum centre. Employment for the fourth panel was underway at that time and was identified as a key opportunity to recruit locally. Recruitment stages included confirmation of the applicant’s permanent residence by the Umnugobi labour office, and completion of Assessment Centres. Screening of potential employees using Assessment Centres is relatively new in Mongolia and a process that local authorities are now keen to replicate. Further, surveys of participants

showed that 92% were satisfied with the process. The IESC interviewed representatives of the LE WG during the monitoring visit; feedback to the WG included that citizens considered the recruitment process was too long for local people and that they wished to see it expedited. As at 15 September, 42% of the 4th panel new roles have been filled by Umnugobi people.

Project Desert Rose, introduced in the previous monitoring report, was stated by OT during the monitoring visit to be currently focused on local employment, and that, as intended, this internal Project is prompting discussion between operations and UG mine leaders on community issues. The Project was influential in encouraging the hire of people from Umnugobi for the fourth panel. Representatives of the LE WG interviewed during the monitoring visit recognized that there is a gap between OT requirements and Umnugobi people and that all parties are jointly working to bridge the gaps in both technical and soft skills training. While OT's construction phase had focused on skills development and vocational training, the current, operational needs include specific training and skills transfer. OT stated that it recognizes it needs to change its training programs to reflect current gaps and requirements.

Further LE WG activities have included collaboration to prepare a single Umnugobi skills database to register all labour supply and demand in the aimag. The single database intends to most of the issues between different databases held by different institutions. It has been developed by the aimag with a budget of MNT 13m (±USD 5,000) and OT is currently testing and identifying areas for improvement. All parties agreed with the potential for the platform and the collaborative efforts coming to fruition. Discussions have also commenced in the WG to establish a Mining School of Excellence in Dalanzadgad, a commitment provided for under the Cooperation Agreement<sup>30</sup>. OT has agreed to conduct a Feasibility Study on this matter. The IESC looks forward to an update at the next monitoring visit.

The Local Procurement (LP) WG has a target spend in Umnugobi of USD \$256 million and its last meeting was in May 2022. This WG is intending to commence three sub-working groups to address procurement; development; and improvement. Planned actions additionally include: a restart of the Capacity building program; make accessible 'soft' finance for Umnugobi organisations, and to resume joint efforts to engage local business community to educate about the process, opportunities and enablers. The IESC notes the GM Procurement responsibilities for leading on local procurement commitments under the In-migration MP and ongoing commitments for focused supplier development and local procurement in KB and Umnugobi<sup>31</sup>. An update is anticipated at the next monitoring visit on delivery of Q4/22 plans to organize a supply chain job fair in Umnugobi (including a local suppliers forum) to progress this commitment.

## 5.5 Community Health

Community health programs are supported under the operations CHSS MP as well as indirectly through DSF. Following the summer holiday period in July-August, positive community cases of Covid-19 have increased. From July to August: the number of cases had increased from 216 to 769 in Dalanzadgad, and from 61 to 103 in KB. In the same period at OT site, cases had declined from 672 to 422. Aimag communicable disease data show that 98.8 % of all communicable diseases were Covid-19 as at Q2/22.

During the summer, activity on health programs progressed. The Healthy Herder (phase III) program has 1,033 herders involved, of whom 220 have accessed the KB Hospital to undertake detailed examinations. The IESC observed during the site monitoring visit that hearing and sight check-ups could be considered under the Healthy Herder program. These are currently out of scope of the Program but may be increasingly relevant particularly for an ageing herder population. The KB employee<sup>32</sup> health checks have continued at the KB hospital Occupational Health Unit. As of September, 540 employees completed their check-ups there (up from 60 checks in May).

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<sup>30</sup> Schedule 8, section 2/Education(r)

<sup>31</sup> IMP Appendix 2 - Outputs

<sup>32</sup> OT employees and employees of 20 contractor companies based in KB

## **5.6 Community Safety**

Since the previous monitoring event, joint fact finding has been initiated regarding the environmental incident at the TSF. This engagement, community health and safety, and environmental issue is covered under section 5.3.1 (stakeholder engagement) with regards to OT's engagement with stakeholders about the incident.

Community safety monitoring is ongoing, with no substantial changes in reported figures from Q1 to Q2/2022. The largest percentage of crime in Umnugobi are: physical injuries to others, theft, and fraud.

The domestic violence shelter in Dalanzadgad continues to be supported by OT. The number of people receiving support through the facility has markedly increased in 2022 to date (from 18 adults and 50 children up to May 2022, to 78 adults and 99 children to June 2022). Financial stressors due to the Covid-19 pandemic has been the main reason for accessing the facility. Positively, access to the centre is now being used as evidence in domestic violence cases; it is the third year of the centre's operations.

## 6 Worker Safety and COVID-19 Response

Occupational safety is managed under the OT HSESC Management System which is consistent with OHSAS 18001. General workplace health and safety is addressed in the ESMP and companion documents: Element 3 - Hazard and Risk Management; and Element 6 - Training, Competency and Awareness. These documents describe the framework for hazard and risk assessment, including tiered assessment levels to address a range of occupational and operational activities that support understanding of the hazards and controls. The ESMP was updated in 2021.

Contractors are required to have their own safety teams. Hazard identification and risk management processes are in place, and documented safe work procedures cover activities with significant risk. Assessments and inspections are performed to evaluate if objectives are being met and verify personnel training, certification and equipment. Internal audits are conducted to evaluate implementation of standards.

In 2021 there were no fatalities, serious incidents or potentially fatal incidents. The All Injury Frequency Rate (AIFR) is a commonly used metric to assess overall health and safety performance of an operation. For 2021 OT had a very strong AIFR of 0.14 per 200,000 hours worked which is within the internal target ratio of 0.21 per 200,000 hours worked. There were a total of six Lost-Time Incidents in Year 2021, and 12 Medical Treatment Case Injuries. For the first half of 2022 (Q1 and Q2) the AIFR is 0.21 per 200,000 hours worked, with over 14.5 million hours of labor completed. OT is one of the safest performers across Rio Tinto operations. Over 122,800 critical risk management verifications were completed during 2021 as part of Oyu Tolgoi's proactive fatality prevention program; this program has accelerated in the first half of 2022 with over 100,000 critical risk verifications performed.

In 2020 OT adopted a new Rio Tinto Safety Maturity Model (SMM) Program. This SMM Program standardizes the management of safety and enables comparable evaluation and learning across the organization. In 2021 assessment for both the OT surface and underground projects resulted in meeting SMMR targets despite challenges of the pandemic.

Potentially the biggest current risk to worker safety is infection from COVID-19. Project personnel are lodged in tight quarters and working conditions similarly are also often in confined spaces. As of Q3 2022 there are approximately 7,700 employees at site. The IESC reported in 2021 that there had been relatively few infections relative to other countries. However beginning in Q2 of 2021 the pandemic swept into Mongolia in distinct cycles. The most recent cycle, which is of less magnitude than past cycles, occurred in Q3 2022 with a maximum of approximately 2,000 new infections per day. separate waves with the most recent one abating at the end of Q1 2022. There is an active vaccine campaign in Mongolia with 5.49 million doses administered at the time of writing, covering 66.4% of the population.

In calendar Year 2022, and through Q3, there have been 4,088 total COVID-19 cases of OT personnel. The recent Q3 spike in COVID-19 cases is apparent in data for OT personnel as there were 672 active cases of OT personnel in July, down to 422 in August, and as of September 2022 only nine active cases. As of Q3 2022 the vaccination booster rate of OT personnel is 75%. As the current COVID-19 variant impact severity is relatively low none of the registered cases over the last three months were of extreme impact, with 80% of recorded cases of mild symptoms and 20% moderate impact. As part of the prior November 2021 audit, OT provided video footage to the IESC of worker accommodation, including facilities being used for isolation of workers mobilized to site, as well as for positive cases of COVID-19 or close contact cases. See Section 5.1.3 for more information on COVID-19 and worker accommodation including current periods of isolation required during mobilization to site.

OT has been actively working on COVID-19 preparation and management since January 2020. OT is a project of vital importance in Mongolia and the Government of Mongolia Ministry of Health has worked directly with OT to establish agreed protocols. These protocols have shifted over time in response to outbreak conditions. The wearing of K95 masks is still required for air and bus transport to site. However on site masks are not currently required.



## 7 Cultural Heritage

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Cultural heritage management is set out in the OT Cultural Heritage Management Plan<sup>33</sup> (CHMP), reviewed in 2021, and complementary Cultural Heritage Management System (CHMS) procedures including the Chance Find and Land Disturbance Procedures (OT-10-E9-PRC-0003-E). This applies to all OT activities including those of contractors. Overall responsibility for cultural heritage lies with the GM Communities.

There have been no cultural heritage incidents since the previous audit and no breaches at the nine sites of cultural heritage monitoring sites (including Demchog monastery and Chavga cave). Since the previous audit, 17 land disturbance permits have been issued (14 on site and 3 offsite) and engagement with 19 herders has been conducted regarding RC drilling at six different locations. Community induction training has been completed by 582 employees from 11 contractors, while within OT LLC, currently 51.5% of staff have completed the mandatory requirement on this training. No chance find inductions have been conducted.

An independent cultural heritage audit was carried out in September 2022; findings are forthcoming. Further, an ethnographic study of the UG subsidence area is commencing. This will be conducted by the Mongolian Academy of Sciences – Institute of History, to understand the cultural value of one potentially affected water well within underground mining subsidence protection zone. Results will inform upcoming impact assessment. Lastly, the Undai River Elders association continues to provide training on cultural practices; 1,803 people participated in training over the past five months (over 300 people monthly) and continues to share photos and videos of traditional cultural practices via social media.

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<sup>33</sup> Cultural Heritage Management Plan - Doc. No. OT-10-PLN-0002 v 1.4

## 8 Non-Conformance Table

This chapter tabulates a summary of non-conformances identified in this report based on the desktop review (Table 8 - 1). The table identifies non-conformances with respect to associated commitments as included in the ESIA, Operational Management Plans, the ESAP, and internal procedures which altogether define how the OT operations manage applicable Lenders' Environmental and Social Standards. The categorization non-conformances is based on the same non-conformance levels defined in the ESMP which also reflects the RT Health, Safety, Environment and Community (HSEC) Management System classification.

These include the following descriptions:

- **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.

Each non-conformance identified in the table will require actions from OT and will be followed-up by the IESC in subsequent audits. 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 collective experience and the 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;
- Two Class III non-conformances identified;
- One Class II non-conformance identified; and
- Four Class I non-conformance identified.

**Table 8-1 Non-Conformance Table**

Non-Conformance Date	Non-Conformance Observation	ESIA Reference	Status	Non-Conformance Class	Report Reference/IESC Comments
May 2022	Environmental Incident causing potential impacts to water quality outside of the Mine License Area	WRMP WRm-02	Open	II	<p><b>See Section 4.1.5.</b> In November 2021 OT identified an Environmental Incident at the TSF related to control of seepage from TSF Cell#1. Follow-on monitoring has identified migration of seepage beyond the MLA (i.e., outside of the OT fence line). Water Resources Management Plan commitment WRm – 02 references a commitment to preserving groundwater quality in the mine area of influence. This commitment in turn references Section 6.3 of the Water Monitoring Plan which sets out analysis protocol and trigger levels for remedial action. OT has implemented a number of remedial actions as detailed in this report.</p> <p>OT has agreed with the IESC that further groundwater quality investigation is warranted. The IESC is proposing an urgent Detailed Water Review, as discussed in WRMP Section 8.2, to comprehensively review available water data, and perhaps identify additional mitigations and/or remedial actions to ensure adequate containment of seepage at the OT site.</p>
May 2021 - current	Long-term temporary storage of hazardous materials which is not anticipated in the ESIA	HWM 03, HWM 13	Open	III	<p><b>See Section 4.3</b> Appropriate disposal of non-recyclable hazardous materials is a long-standing issue at the site. OT operates the only appropriately engineered Hazardous Waste Storage Facility in Mongolia. Use of this facility has been delayed due to non-issuance of required domestic permits.</p> <p>In prior Audit Report the IESC has recommended that OT urgently work with federal and regional regulatory officials to obtain the requisite Operational Permit, which would allow disposal in the hazardous waste cell constructed at the WMC. However most recently the Government of Mongolia has issued hazardous waste management permits to newly-formed entities located outside of UB. OT is actively engaging these entities to transport and dispose of hazardous materials currently store at the OT site. OT has visited the facilities operated by these entities and verified that they have sufficient controls and procedures to adequately dispose of hazardous waste using an incinerator. However the IESC has no familiarity with the capacity of these entities, and disposal of hazardous waste using external contractors was not</p>

Non-Conformance Date	Non-Conformance Observation	ESIA Reference	Status	Non-Conformance Class	Report Reference/IESC Comments
					envisioned in the ESIA. There is a risk that these contractors do not have suitable equipment and/or methodologies for disposal of the various types of hazardous waste currently stored at OT. An NoC should be submitted to Lenders and the IESC prior to the use of external contractors for the disposal of hazardous waste.
January 2022	Monthly mean stack emission sampling results for SO <sub>2</sub> from boilers at the Central Heating Plant (CHP) above Project Standard.	Atmospheric Emissions Management Plan (AM03)  Air Quality Monitoring Plan – 7.1.1 CEMS and 7.1.2 CHP Stack testing)	Open	I	<b>See Section 4.4.3</b> As addressed in NoC 2021-003 the IESC is evaluating monthly and annual CHP stack emission quality to assess compliance relative to the stack emission Project Standard. For the month of January 2022 the monthly mean of SO <sub>2</sub> emissions from the CHP was above the Project Standard for usable data set (i.e., when boiler loads were >70%). This temporary non-conformance was attributed to a blockage in the limestone feeding pipeline to the CHP, specifically to Boilers #5 and #6. At OT limestone is mixed with the coal feed to lower SO <sub>2</sub> emissions. This blockage in the limestone supply system was recognized quickly and immediately repaired, also in January. Since then measured SO <sub>2</sub> stack emission quality conforms with the Project Standard on a monthly and annual basis. The IESC is recognizing the non-conformance in monthly mean performance of the CHP in January 2022; however the situation has since been mitigated and it is expected that data from the next IESC audit will allow closure of this item.

Non-Conformance Date	Non-Conformance Observation	ESIA Reference	Status	Non-Conformance Class	Report Reference/IESC Comments
September 2022	OT is not making measurable progress in offsetting the loss of rangeland habitat caused by the mine footprint	Appendix 1: OT Biodiversity Strategy Appendix 4: Biodiversity Offsets Strategy (BOS)	Open	III	<p><b>See Section 4.8.2</b> The South Gobi Cashmere Project has faced challenges in implementation, raising concerns that it may not be viable. A new entity, The Good Growth Company, currently leads the project, but concerns remain that goals for reducing the local herd sizes and improving rangeland quality may not be achievable. It is also noted that the effects of the project on rangeland quality are expected to take as long as 10 years to be measurable. The combination of the uncertainty about the project's viability, and the lag time to see effects, suggests that a "Plan B" is needed to hedge the risk of failure. In the previous audit (May 2022), the IESC recommended that OT begin developing such complementary/alternative plans to achieve its rangeland offset requirements. This has yet to be done.</p> <p><b>The BOS states:</b> The aim of OT's biodiversity offsets strategy is: 'to achieve Net Positive Impact on biodiversity through the generation of gains in priority biodiversity features to offset residual project losses'. It is proposed to achieve this aim through a series of six objectives as summarised in the logical framework and detailed below: ..., Improved rangeland management, ..." Rangeland is a natural habitat and supports priority biodiversity features in the landscape.</p> <p><b>BOS Section 4.3 Improved rangeland management</b> describes the program and the committed outcomes of:</p> <ul style="list-style-type: none"> <li>• Reduced degradation of rangeland by livestock leading to improved habitat quality</li> <li>• Increased population of priority biodiversity features</li> <li>• Reduced disturbance to wild ungulates</li> <li>• Increased wild ungulate populations</li> </ul> <p><b>BOS Section 7.2 Socio-political risks</b> and <b>Section 7.3 Technical risks</b> identify issues that have affected this program, such as difficulty in changing traditional herder culture and practices, inability to prevent non-participating herders from entering the area of intervention, and the effects of challenging climatic conditions such as periods of low</p>



Non-Conformance Date	Non-Conformance Observation	ESIA Reference	Status	Non-Conformance Class	Report Reference/IESC Comments
					<p>precipitation. <b>BOS Section 8 Recommendations</b> includes a recommendation to exceed NPI targets by a sufficient margin to hedge for under-performance.</p> <p><b>The NPI Workbook</b> (updated April 27, 2021) states: “As of the end of Q4 2020: 6410.5 ha [of rangeland] directly lost, which equates to 2435.99 QH (using Q=0.38: see Annex for how this was calculated) + unknown area around Khanbogd.” The residual position, considering mitigation implemented to that date, was -2,251.65 QH.</p> <p>Currently the footprint of OT is expected to continue growing and is outpacing the rehabilitation and offset programs.</p>
Sept 2022	A Notice of Change should have been prepared in advance of implementing the Serviced apartment worker accommodation model	ESAP: Worker Housing Development / ESIA C8, s.8.1.1	Open	I	<b>See Section 5.1.3.</b> At the time of ESIA and ESAP preparation, the serviced apartment model was not envisaged nor available in Mongolia. A NOC should have been prepared to account for this new model of offsite accommodation, including describing how OT intends to manage risks associated with providing family accommodation in the serviced apartment complex, in line with Lender E&S Standards and Project commitments.
Sept 2022	The RAP commits OT to conducting the RAP Completion Audit in 2020	RAP, v3.0, s.9	Open	I	<b>See Section 5.2.1.</b> While acknowledging delays due to Covid, the international tendering process remains ongoing to identify and contract a suitably qualified Completion Audit consultant. The RAP Completion Audit should be completed as a priority, to close out 2011 impact mitigation measures.

Non-Conformance Date	Non-Conformance Observation	ESIA Reference	Status	Non-Conformance Class	Report Reference/IESC Comments
Sept 2022	A topic-specific SEP should be prepared on the Tailings Storage Facility	SEP, v.2.1, s.5.5 / GIIP (GISTM, Req. 1.3)	Open	I	<b>See Section 5.3.1.</b> To demonstrate that project-affected people, including downstream in Javkhlant bagh, are meaningfully engaged in decisions that may have a bearing on public safety and the integrity of the TSF, a topic specific SEP should be prepared. A TSF SEP should define clear and consistent communication from across OT departments about technical issues associated with the TSF and its seepage, to affected stakeholders. The TSF SEP should also be consistent with the Global Industry Standard on Tailings Management (GISTM), specifically provisions relating to Affected Communities.
May 2022	Inconsistencies between RT CSP draft standard and OT Project Documents regarding indigenous peoples / land connected people	RT CSP Draft Standard; IFC PS7; OT ESIA ch.B8, s.8.3.6	Closed	I	See Section 5. The IESC recommends that the language on 'indigenous and land-connected people' in the draft RT CSP Standard be amended to 'indigenous people' for consistency with the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). The current language in the draft CSP Standard is not clear on applicability of the standard to the land-connected but not indigenous, nomadic and semi-nomadic herders in Umnugobi, and subsequently the circumstances under which FPIC is sought to be applied.  September 2022: The NC is closed following agreement with OT/RT on language that no longer establishes a conflict between the requirements of the CSP Standard and the OT Project Standards and Lender requirements.
October 2013 - current	Stack emission sampling results for SO <sub>2</sub> from boilers at the Central Heating Plant (CHP) just recently marginally below Project Standard.	Atmospheric Emissions Management Plan (AM03)  Air Quality Monitoring Plan – 7.1.1 CEMS and 7.1.2 CHP Stack testing)	Closed	II	<b>See Section 4.4.3</b> The IESC comments that Level II non-conformance regarding CHP emission quality has been a long-standing issue, dating from the time operations commenced in 2013. NoC 2016-015 attempted to provide a pathway for better evaluation of emission quality, acknowledging that monitoring results are compromised when boiler loads are below 70%. Further the Air Quality Monitoring Plan stipulates emissions should be monitored on a continuous basis, and this has only recently become possible with installation of the CEMS in 2019.  In Q3 of 2021 OT submitted a Notice of Change (NoC 2021-003) related to (i) omission of significant CEMS data from analysis due primarily to low seasonal operational loads; and (ii) clarification on the appropriate Project Standard.

Non-Conformance Date	Non-Conformance Observation	ESIA Reference	Status	Non-Conformance Class	Report Reference/IESC Comments
					<p>The IESC has reviewed NoC 2021-003, which details comprehensive review of is occurring concurrent with the production of this Desktop Audit Report. In summary the CHP generally meets the Project Standard as a mean annual average regardless as to if individuals boilers are operating at &gt;70% or less than 70% load. The most pronounced impact is to SO<sub>2</sub> emission quality, although these values are also below the Project Standard. Going forward monthly and annual CHP stack emission quality will be used to evaluate compliance. The IESC will continue to report on the available data set, including those times for when boiler capacity is below 70%</p>

Table 9 – 2 summarizes the status of non-conformances starting from the October 2013 IESC review, and since the beginning of OT operations.

**Table 8-2 Non-Conformances Identified by IESC Over Operations**

<b>Mission No.</b>	<b>Site Visit</b>	<b>New Non-Conformances Identified</b>	<b>Non-Conformances Closed</b>	<b>Non-Conformances remaining Open</b>
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	Desktop Audit October 2017	0	3	6
M11	Desktop Audit April 2018	1	3	4
M12	September 2018	1	1	3
M13	Desktop Audit May 2019	1	1	4
M14	Desktop Audit May 2020	1	2	3
M15	Desktop Audit December 2020	1	1	3
M16	Desktop Audit December 2021	0	0	2
M17	Desktop Audit May 2022	2	1	3
M18	Desktop Audit September 2022	3	1	2

Prepared By:

STRENGTH GEOLOGICAL AND ENVIRONMENTAL CONSULTING, LLC  
27 Songbird Lane, Durango, CO, 81301  
United States of America  
Phone: +1 (202) 630-8585  
Email: [Dana@StrengthGEC.com](mailto:Dana@StrengthGEC.com) | URL: <http://www.StrengthGEC.com>