



REPORT OF THE:

**INDEPENDENT
ENVIRONMENTAL & SOCIAL
CONSULTANT**

**OYU TOLGOI MINE
PROJECT**



MONGOLIA

Site Visit: September 2015



*Prepared by:
D'Appolonia S.p.A.*

*Prepared for:
Senior Lenders Group*

**REPORT OF THE:
INDEPENDENT ENVIRONMENTAL & SOCIAL CONSULTANT**

**ENVIRONMENTAL & SOCIAL
COMPLIANCE MONITORING**

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Mongolia

Site Visit: September 2015

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ACRONYMS

AEMP	Atmospheric Emissions Management Plan
AQMP	Air Quality Monitoring Plan
BAP	Biodiversity Action Plan
BMEP	Biodiversity Monitoring and Evaluation Programme
BMP	Biodiversity Management Plan
BRMP	Business Resilience Management Plan
CAO	Compliance Advisor Ombudsman
CBMP	Core Biodiversity Monitoring Plan
CH	Cultural Heritage
CEO	Chief Executive Officer
CHMP	Cultural Heritage Management Plan
CHP	Central Heating Plant
CHSSMP	Community Health, Safety & Security Management Plan
COS	Coarse Ore Stockpile
COO	Chief Operating Officer
CSETS	Community and Stakeholder Engagement Tracking System
CSP	Communities and Social Performance
CSP MS	Communities and Social Performance Management System
CWG	Compensation Working Group
EBRD	European Bank for Reconstruction and Development
EC	Electrical Conductivity
ECAs	Export Credit Agencies
EDC	Export Development Canada
EFIC	Export Finance and Insurance Corporation
EHT	Elected Herder Team
EPRP	Emergency Preparedness and Response Plan
ER	Employee relation
ERM	Environmental Resources Management
ERP	Emergency Response Plan
ERT	Emergency Response Team
ESAP	Environment and Social Action Plan
ESIA	Environmental and Social Impact Assessment
FFI	Fauna & Flora International
GHGs	Greenhouse Gas Emissions
GIIP	Good International Industry Practice
HR	Human Resources
HSE	Health, Safety and Environment
HSE MS	Health, Safety and Environment Management System
IA	Investment Agreement
IESC	Independent Environmental and Social Consultant
IEP	Independent Expert Panel
IFC	International Finance Corporation
IFIs	International Financial Institutions
IMP	Influx Management Plan
IOM	International Organisation for Migration
ITRB	Independent Technical Review Board
IWRC	Interim Waste Recycling Center
KCB	KlohnCrippen Berger, Ltd.
KPI	Key Performance Indicator
LBAP	Lender Biodiversity Action Plan
LDCRMP	Land Disturbance Control and Rehabilitation Management Plan

LDP	Land Disturbance Permit
LMP	Labour Management Plan
LTi	Lost Time Injury
LTIFR	LTI Frequency Rate
LUiP	Land Use Implementation Plan
LUMp	Land Use Management Plan
MAPU	Mobile Anti-Poaching Units
MAT	Multi-Agency Team
MDT	Multi-Disciplinary Team
MEGD	Ministry of Environment and Green Development
MIGA	Multi-lateral Guarantee Agency
MLA	Mine License Area
MoC	Management of Change
MoH	Ministry of Health
MUST	Mongolian University of Science and Technology
MWMP	Mineral Waste Management Plan
NAF	Non-acid forming
NAMEM	National Agency of Meteorological and Environmental Monitoring
NPPC	Native Plant Propagation Centre
NPI	Net Positive Impact
OMP	Offsets Management Plan
OT	Oyu Tolgoi
OT-GS	Oyu Tolgoi – Gashuun-Sukhait
OT-KB	Oyu Tolgoi – Khanbogd
PAF	Potentially acid forming
PEM	Participatory Environmental Monitoring
PR	Performance Requirement
PS	Performance Standard
RAP	Resettlement Action Plan
RECB	Research and Experiment Center for Boilers
RFDS	Royal Flying Doctor Service
RT	Rio Tinto
RTBS	Rio Tinto Business Solutions
SC	Standard Chartered Bank
SEA	Sustainability East Asia LLC
SEP	Stakeholder Engagement Plan
SHCF	Stakeholder Coordination Function
SOW	Scope of Work
TBC	The Biodiversity Consultancy
TDS	Total Dissolved Solid
TMP	Transport Management Plan
TPD	Tonnes per day
TSF	Tailings Storage Facility
UG	Underground
US EXIM	Export-Import Bank of the United States
WCS	Wildlife Conservation Society
WMC	Waste Management Centre
WMP	Water Monitoring Plan
WRD	Waste Rock Dump
WRMP	Water Resources Management Plan

EXECUTIVE SUMMARY

The Oyu Tolgoi Project (“the Project” or “OT Project”) is a world-scale copper/gold mine located in Khanbogd soum¹ of Ömnögovı aimag, in the South Gobi region of Mongolia, approximately 600 km south of the capital city, Ulaanbaatar, and 80 km north of the Mongolia-China border. The mineral resources consist of a series of deposits containing copper, gold, silver and minor amounts of molybdenum. The project is being developed by Oyu Tolgoi LLC (the “Project Company” or OT), a joint venture between Turquoise Hill Resources (66 per cent) and Erdenes Oyu Tolgoi (34 per cent), a company wholly owned by the Government of Mongolia. Rio Tinto (RT) is a major shareholder in Turquoise Hill Resources and since 2010 is formally managing the Project on behalf of all shareholders. The Project comprises the operation of an existing open pit copper/gold mine and associated ore processing operation as well as the development, construction, operation and financing of an underground copper/gold mine.

Since September 2013, D’Appolonia S.p.A. (D’Appolonia), located in Genoa, Italy, has been appointed to act as the Independent Environmental and Social Consultant (IESC) on behalf of the Senior Lenders² group planning to provide financing for the OT Project.

The key role of the IESC is to conduct periodic visits to the Project in order to:

- assess the level of conformance/non-conformance of the Project with the Operational Environmental and Social Management Plans and the underlying monitoring plans and procedures, as necessary, to verify that OT is implementing the actions/commitments embedded in the plans;
- verify that the activities are carried out consistent with the environmental permits as listed in the Environmental and Social Impact Assessment (ESIA);
- provide professional recommendations relative to Good International Industry Practice (GIIP)³, if any identified; and
- identify specific issues, and conduct follow-up and closure of findings and observations identified in the April 2015 IESC Interim Audit Report⁴.

This report details the findings of the IESC site visit conducted between the 15th and 19th of September, 2015. The main purpose of the visit was to provide an external monitoring evaluation of OT activities with a focus on health, safety, environment and social aspects and to monitor conformance with the environmental and social commitments made for the project operation phase that began in July 2013. The commitments made by the Project for environmental and social management are integrated in the OT HSE Management System and documented in the Operational Phase Management Plans which define OT’s environmental and social commitments during the project operational phase and have been signed off by the previous IESC⁵ as “Fit for Purpose”. The Operational Management Plans are under review by OT to reflect the latest status of mine operation and are progressively submitted to the Lenders and the IESC for review to the extent finalized. An additional document of reference is the Environmental and Social Action

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

² 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.

³ Good International Industry Practice (GIIP) as defined in the April 2007 IFC EHS General Guidelines as “the exercise of professional skill, diligence, prudence and foresight that would be reasonably expected from skilled and experienced professionals engaged in the same type of undertaking under the same or similar circumstances globally...”

⁴ D’Appolonia, “Independent Environmental & Social Compliance Monitoring Report – April 2015 Interim Audit Report”, dated August 2015.

⁵ Environmental Resources Management (ERM) was engaged to act as the Independent Environmental and Social Consultant (IESC) for the period August 2010 – April 2013 to support the Senior Lenders in assessing that the Project’s Environmental and Social Impact Assessment (the “ESIA”) and Construction Phase Environmental and Social Management Plans (the “ESMPs”) were in compliance with the various Senior Lender Environmental and Social Standards (“E&S Standards”).

Plan (ESAP) prepared to define gaps with Lender standards which require time-bound commitments. At the time of this audit some of these gaps were already completed and closed and the ESAP is being revised.

The Operational Management Plans as originally disclosed were prepared considering the development of open pit and underground mines. As documented in previous IESC reports, suspension in the underground mine development has occurred. Over this period various Operational Management Plans have been updated to reflect changes to the original OT project scope and activities, and continue to address underground mine development. As presented in Section 4.2.4 of this report, material changes in the ESIA and Operational Management Plans have been subject to Management of Change procedures, and most proposed changes have been approved. Those proposed changes that remain under review do not relate to the underground mine development, and are anticipated to be resolved. In the IESC's view, the delay in underground mine development and approved changes to the OT project scope and plans as cited in Table 4.1 have not impacted the ability of OT to meet the project requirements and Lender standards as cited in the Operational Management Plans.

Based on the above and upon the review of the additional environmental, social, health and safety documentation provided by OT and the outcomes of the September site visit conducted by the IESC, D'Appolonia confirms that the Project is in substantive compliance with Lender requirements, apart from with respect to IFC PS6/ EBRD PR6. On the basis of evidence to date, the Project's implementation of its commitments and plans for biodiversity and the resources allocated are not commensurate with the level required for assurance of a net positive outcome for species with critical habitat affected by the Project. There are discussions ongoing between the IESC, Lenders and OT to address these aspects (see footnote⁶). Key findings identified as part of the IESC periodic audits are presented in the Issues Table (Section 3 of the IESC reports). These are being addressed by the Project through on-going corrective actions whose status and progress is regularly monitored as part of IESC monitoring visits.

The information included in this report is based on the review of the most recent environmental, social, health and safety documentation/data associated with Project since the last IESC report (April 2015), on the observation made in the field and on the results of interviews with Project personnel conducted during the visit.

The main observations of this field visit are summarized as follows.

Environmental and Social Management System

The Environmental and Social Management System provides for administering the project and meeting the Project Standards, the laws and regulations of Mongolia, permit conditions, Investment Agreement of 6 October 2009, as well as the environmental, health & safety and social policies, standards and requirements of the IFC and EBRD. The management system includes planning, operations, reporting checks, and

⁶ OT disagrees with the IESC opinion, specifically related to non-compliance to IFC PS6/EBRD PR6 and has provided the following statement in response:

"Oyu Tolgoi (OT) welcomes the IESC's monitoring visit report conclusion that OT is in substantive compliance with Lender requirements. Whilst there are some non-conformances related to biodiversity noted in the IESC's monitoring visit report, OT maintains that these do not make the project substantively non-compliant to IFCPS6/EBRD PR6. OT considers that its activities, plans and resources are commensurate for implementing and achieving our biodiversity related commitments.

OT considers that biodiversity is a very important issue and, accordingly, since the date of the monitoring visit OT have further agreed a revised biodiversity action plan with lenders to support ongoing compliance and proactively address this issue. Key elements of the action plan include the following:

- (i) the establishment of a scientific advisory panel to provide independent opinion on the road mitigation strategy (with public disclosure of findings);*
- (ii) recruitment of additional biodiversity expertise (to supplement the existing resourcing);*
- (iii) the establishment of a sustainable mechanism for long-term offsets financing prior to the date of Project completion (previously agreed and now with a specified timeframe); and*
- (iv) an Offsets Management Plan (OMP), with updated timeframe and required inclusions, reflecting these commitments which will be developed and implemented, including updated Net Positive Impact accounting to correspond with the OMP. OT has further agreed that the final draft OMP to be developed will be submitted for IESC and Lender review, and Lender approval, along with the updated NPI accounting corresponding with the Final draft OMP, as a condition of disbursement.*

review elements with a focus on continual improvement. Specific operating plans define the project commitments, key performance indicators and monitoring parameters, and reference specific implementation documents. Also included in the system is a Management of Change (MoC) process, which has been implemented by the Project to address modifications of project plans and commitments, as discussed in associated sections of the report. Some of these have been accepted by the Lenders, while others that have not been accepted are the subject of workshops and ongoing review and monitoring to reach resolution.

Water and Wastewater Management

OT has implemented the Undai River Partial Adjustment and Protection project as a result of being unable to implement the full Undai Diversion as described in the ESIA. A long-term delay in issuing a Land Use Permit prohibited OT from constructing aspects of the Undai River Diversion project that was to take place outside of the fenced Mine License Area (MLA). A detailed water review was undertaken in November 2014 to assess available hydrogeological data related to system performance of the Undai River Partial Adjustment and Protection project. The detailed water review did not identify a risk of significant impact to groundwater resources as a result of the current system. Notice of Change 2015-005 acknowledges that the Undai River Partial Adjustment and Protection Project maintains continuity of groundwater flow and is serving as a valid interim mitigation. Final configuration of the Undai River Diversion is pending outcome of discussion within a newly formed Tripartite Consultative Committee (TPC). This committee includes 15 representatives from the Elected herder Team (EHT), Khanbogd (KB) government and OT.

Evidence exists of exploration bores interconnecting hydrogeological units within the Gunii Hooloi borefield. Sealing of five known interconnecting bores outside of the MLA is currently under evaluation by a workgroup established with the Khanbogd soum. Best efforts are being made by the project to progress the sealing of these interconnecting bores. The Water Monitoring Plan (WMP) and the Water Resources Management Plan (WRMP) discuss additional studies and efforts that will be undertaken by OT to address commitments made in these plans. Erosion monitoring now takes place and a general hydrogeologic consulting assistance contract has been issued to assist in review of monitoring results, QA/QC assurance, and the oversight of supplementary monitoring bore installation. Although some additional monitoring bores have been installed during the 2015 field season the completion of all supplementary monitoring bores, as discussed in the WMP, has not yet taken place. OT anticipates completion of all supplementary monitoring bores in the 2016 field season.

Mineral Waste Management

Mineral waste management associated with the Open Pit, Waste Rock Dump (WRD), and Tailings Storage Facility (TSF) is continuing under the Project strategy. Waste rock stockpiled or placed in dumps is subject to segregation of potentially acid forming (PAF) materials from non-acid forming materials, and monitoring under the geotechnical ExPit program and WMP. Combustion ash from the Central Heating Plant is treated as PAF material and disposed in an inert waste pit which will become part of the South Dump WRD.

Tailings from the Concentrator are pumped to the TSF for disposal and recovery of process water. Cell 1 of the TSF continues to be operated, with construction of embankments to provide for projected tailings deposition into 2016 with the required design freeboard to accommodate flood storage. Tailings slurry density and beach slope within the TSF remain improved as a result of improved thickener operation. Reclaim water management within the TSF has been effectively managed by the barge pump station, resulting in shallow water depths and limiting the extent beyond the reclaim pond. Seepage emanating from the toe areas in the northeast section of the TSF is within design estimates for the facility, and is being monitored. Water quality within the tailings reclaim pond and seepage contains generally high concentrations of TDS and salts, and low levels of metals (with the exception of selenium). Consistent with the TSF design, seepage water is collected and pumped back to the TSF for recovery to the Concentrator.

An update to the TSF feasibility study is being completed along with further engineering, design and technical reviews for crest raising of Cell 1, planning for Cell 2, and further TSF expansion for the mine life.

Non-Mineral Waste Management

The Project continues to implement the waste management strategy defined in the relevant Operational Management Plans and related operating procedures. The effort to identify off-site recyclable options continues and viable solutions have been identified for selected waste categories. The process to remove the residual waste accumulated during construction at the Interim Waste Recycling Center (IWRC) is progressing. OT has completed two water monitoring bores down-gradient of the facility and started monitoring of water quality to identify possible contamination. All wastes generated at site continue to be disposed at the new Waste Management Center (WMC) where they are either incinerated, buried in the disposal pits or temporarily stored before recycling. During the visit the IESC observed that some oily drums were improperly stored on a geomembrane liner with holes and evidence of leaks at the WMC. Although in the IESC view this is not a situation that represents a potential environmental concern given the remoteness of the site, these drums should not have been sent to the WMC as the facility is not designed to store used oil. Rather, these drums should have been sent to the designated collecting areas at the truck or the Gobi shops. If there are plans to send this type of waste to the WMC, even as a temporary solution, a properly designed storage area should be built.

Air Quality

Historically there has been significant dust generation at the coarse ore stockpile (COS) facility. As mitigation a foam dust suppressant system (surfactant system) has been installed. This has resulted in reduction of ambient environment TSP concentrations by over 80% although particulate monitoring results continue to exceed the Project Standard. The OT Concentrator Operations department is contracting with the supplier of the dust foam suppressant to identify further mitigations that can be implemented. The supplier was on site on October 2015 to review the dust problem in the stockpile and will prepare a report that will be sent to OT by end of November 2015. Under consideration is the use of a polymer to create a “crust” on areas near the ore stockpile.

The ambient air monitoring network available on site requires improvement to meet commitments made in the AQMP and to monitor ambient air quality relative to Project Standards. An equipment specification list has been developed by a third-party contractor to ensure purchased materials are capable of meeting AQMP requirements. A capital expenditure request to purchase this equipment was denied in March 2015. It is now estimated that this equipment will be procured and installed in 2016.

The Central Heating Plant (CHP) currently lacks monitoring equipment to allow direct sampling of stack emissions in conformance with the monthly periodicity identified in the AEMP. To address this OT has executed a contract for a third party vendor to perform monthly stack testing at the CHP, incinerator, and coal-fired boilers at the Khanbumbat (OT) airport. Sampling at the CHP shows persistent exceedences of Project Standards for NO_x, SO₂, and particulate matter.

Emissions quality of the CHP has been a persistent issue and OT is planning an internal review of the whole system, including monitoring procedures, by the Asset Management Group. Options to improve emissions quality include boiler “tune out” during the light summer load and modifications to boiler air flows. Additional monitoring equipment may be procured. In summary it is expected that the OT internal review will provide solid information to address the quality of CHP stack emissions.

An October 2014 site visit by the manufacturer of the project incinerator noted inappropriate after-market modifications and operational practices. Recent monitoring results indicate emissions are not meeting Project Standards, which the incinerator has been designed to meet. It is likely the incinerator is not achieving the designed combustion temperature of 1000 degrees Celsius. The unit manufacturer has been scheduled to visit the OT site in December 2015. It is expected that this visit will lead to recommendations for modifications that would lead to improved incinerator performance.

OT records greenhouse gas emissions (GHGs) and reports a total of 1,353,805 tonnes CO₂ (eq) generation in 2014, of which over 80% of GHGs generated were related to the purchase of electricity. GHG reduction and energy efficiency improvement opportunities were identified and implemented by OT with other measures under consideration.

Emergency Preparedness & Response

The Emergency Response Team operating under the Emergency Preparedness and Response Plan (EPRP) has updated the Business Resilience Management Plan (BRMP), and updating or preparing emergency response procedures to address potential incidents specific to Project areas/departments where high and critical risks exist. A reformatted draft TSF Emergency Response Procedure has been prepared under the new BRMP and incorporating input from the Communities team. When completed, it should address downstream impacts and emergency response coverage area beyond the mine, including detection, notification, response steps, communication and community awareness, training and exercises, and plan administration.

The Underground Emergency Response Plan was updated in July 2015 and submitted to the Ministry of Mines, incorporating care and maintenance activities, including inspection, equipment maintenance, and ground control.

Transport Management

Control over transport vehicles for concentrate to the border is effectively managed as shipments have been relatively steady over the period of May through August. Traffic monitoring and reporting has been implemented and is continuing in support of wildlife road crossing evaluations. Induction, Communities and Environment Awareness training programs are being maintained for contractors and OT personnel.

Ecological Management and Biodiversity

OT's revised Biodiversity Management Plan (BMP) has been through several reviews and updates and is now up to date and fully aligned with the OT Management System. Notices of Change 2014-006 and 2014-007 were re-submitted in June 2015. They included some revisions agreed by OT and the Lenders and others that were not agreed and are under review. The key topic under discussion is OT's mitigation strategy for potential barrier effects on ungulate species associated with the OT – GS road, as OT's proposed revisions to the BMP fail to provide sufficient assurance that ESIA commitments would be met. An adaptive approach is considered acceptable so long as it is underpinned by monitoring and allows for corrective action to be triggered both by traffic-thresholds and by evidence of reduced crossing frequencies or avoidance behaviour. As agreed following discussions with Lenders in November 2014, OT needs to develop a robust mitigation and monitoring strategy with a plan in place to resource mitigation measures should they be triggered.

Now that the BMP is established and fully operational, a review of the Lender Biodiversity Action Plan (BAP) is timely. This will provide an opportunity to identify any updates needed and incorporate clear commitments to mitigation of transport impacts. During the September IESC visit, Lenders and OT agreed that the Lender BAP would be reviewed, updated and removed from the BMP to become a stand-alone document, to be disclosed annually..

OT has developed a strong monitoring programme to provide the evidence base for its efforts towards a net positive impact on biodiversity in the South Gobi, however a comprehensive Biodiversity Monitoring and Evaluation Plan is overdue. This plan needs to allow outcomes for the full range of priority species and species with critical habitat affected by the Project to be accounted for as the monitoring programme evolves, with annual reporting. OT has removed some monitoring indicators for critical habitat qualifying values from its current monitoring programme, notably argali and short-toed snake eagle. It is accepted that short-toed snake eagle can be monitored as part of a wider raptor assemblage (and the same may be true for Saker falcon, which should be incorporated additionally into the monitoring framework). Outcomes for argali need to be explicitly addressed and appropriate indicators may need to be re-introduced into the 2016 programme.

OT's biodiversity consultants have used results of the pilot "Core Biodiversity Monitoring Programme" to update the net positive impact forecast for the South Gobi Region and develop options for a biodiversity Offset Management Plan (OMP). A menu of options for implementing biodiversity offsets and mitigating power line impacts is presented which OT is now assessing as the basis for its final OMP.. A costed programme is needed as a basis for proactive discussion with stakeholders so that tangible progress can be made towards biodiversity gain at a regional level.

The OT Project has a large infrastructure footprint on natural and critical habitat and is required to comply with national and local government requirements for rehabilitation as well as Lender requirements for No Net Loss outcomes in natural habitat. Accordingly, OT has developed a new Land Disturbance Control and Rehabilitation Management Plan (LDCRMP) and associated Biological Rehabilitation Procedure. When finalised on the basis of IESC and Lenders comments, these will form part of an integrated and improved package of procedures related to land disturbance control, technical and biological rehabilitation, meeting Lender requirements for a “Land Use Implementation Plan” or equivalent. However OT’s current approach to planning and management of land disturbance control and rehabilitation is considered to lack the strategic approach needed to ensure that impacts on natural and critical habitat are appropriately avoided. The approach is reactive and potentially places priority biodiversity features at risk (notably priority plant species). This shortcoming needs to be addressed in OT’s overall management system and a proposed approach presented in the finalised LDCRMP. To support an improved approach, current gaps in baseline data for priority plants need to be filled so that the locations where they occur can be better avoided. This is particularly important for species on the Mongolian Red List that have not yet been propagated successfully in the Native Plants Propagation Centre.

OT’s Native Plant Propagation Centre, its efforts to develop stocks of propagules for biological rehabilitation and its rehabilitation programme are examples of OT’s commitment to effective biological rehabilitation in sensitive desert environments. There was little experience or information to build on and OT has worked hard to address key gaps in knowledge of South Gobi vegetation and associated challenges for rehabilitation. It is important that these efforts continue and that best use is made of the results, by ensuring resources are available for the research and follow-up needed to ensure that rehabilitation efforts are channelled into the most effective methods. This is also needed to feed into engagement with local and national government regarding rehabilitation requirements and to manage expectations regarding reasonable timeframes for achieving final outcomes in challenging environments. There are some situations where delay in biological rehabilitation and/or the field trials needed to develop effective methods could compromise chances of a successful outcome. An example is delay in planned trials to inform reclamation of the WRD final slopes and surfaces.

OT has now developed a draft biodiversity-related stakeholder engagement plan through the Ecosystem Services Group. The Group completed a stakeholder mapping exercise and identified priorities for engagement as a basis for developing the initial plan. A more detailed programme of specific engagement activities and events is now required to take this forward. Stakeholder engagement has been identified as a key component of consultant recommendations regarding participatory monitoring, implementing biological rehabilitation and gaining support for OT’s biodiversity OMP and a proactive approach is needed. OT’s plans for managing and monitoring impacts on critical ecosystem services still need to be finalised, but considerable progress has been made since the last IESC visit.

OT committed to maintain a technical biodiversity advisory position under the Lender BAP (item 20) but has merged this role with that of “Manager, Environment and Biodiversity”, reducing available capacity. Given the complexity of biodiversity issues to manage and the challenge of developing a biodiversity offset policy that meets ESIA commitments and aligns with Government policy, a dedicated role is considered critical to ensure compliance with Lender requirements and the project’s overall Net Positive Impact (NPI) commitments.

Labour & Working Conditions

As of the 31 August 2015 there were 6,044 workers at the OT operation including those employed by OT LLC and contractor companies. The total workforce comprises 95% Mongolian nationals. There has been a reduction in workforce due to the end of fixed term contracts and the reduced need for catering and cleaning services staff at OT site. Employment numbers from Umnogobi are 1,199⁷ in total which is down slightly from 1,361 in March. Employees from Khanbogd have also reduced slightly from 703 in March down to 650⁸ in August. Although the numbers have reduced, more than 20% of the workforce still comes

⁷ OT LLC-382 and contractors-817 = 1,199 workers in total from Umnogobi.

⁸ OT LLC-382 and contractors-268 = 650 workers in total from Khanbogd.

from the South Gobi. Good progress has been made recently on embedding local recruitment processes through the establishment of branch offices of several contractor companies in Khanbogd *soum*. OT recently disclosed detailed data on Umnugobi employment figures and have also started to answer frequently asked questions on recruitment, employment and training in the community newsletter. Planning for UG construction is still in the early stages and therefore was not assessed as part of this audit. In the period from March to August 2015 a total of 9 employee complaints were raised through Speak Out; three are closed and the others are under investigation. This is a similar level to previous periods and remains low overall for the workforce size. An issue of concern was raised by the Trade Union about the non-delivery of awards/gifts for the recognition of long-service as defined under the Collective Agreement. It is understood that OT is aware of this issue and at the time of the audit had reached internal approval to provide these gifts (of monetary value but not cash) retrospectively to all those eligible. It is important that this situation is expediently addressed. There are still some concerns about a small number of national workers who travel significant distances on their week off, some of whom are reportedly overnighing at UB airport. The IESC encourages further investigation by OT; to determine if additional assistance is warranted to ensure safe and affordable transfer of workers between home and site.

Significant progress was made by OT to implement enhanced HR/ER performance audits of contractors since the last IESC review. The audit protocol has been improved to include further HR/ER checks, a detailed audit schedule is being implemented and several audits have already occurred. Some minor areas for improvement were noted including ensuring that corrective actions can be tracked and closed out and identifying priority actions to be implemented before the next annual audit (e.g., those required to meet Mongolian Labour Law). OT should also review the audit schedule to ensure contractors with more significant potential HR/ER risks are subject to physical rather than desk-top audits.

A temporary camp has been established for OT-GSK road construction with capacity for around 350 beds. There were some issues with running water at the time of the audit and the camp was closed temporarily and the current residents moved to OT site. The road construction contractor has been instructed to remedy this issue by OT. The new contract has been signed with Jiayou and includes regular audits of the Huafang transport worker accommodation in China. Improved standards for worker accommodation were included in the contract but there were some key areas missing (e.g., regarding beds per room, quantity of ablutions etc). The first audit of this facility had not been completed at the time of the IESC review and now needs to be expedited.

Resettlement, Compensation and Livelihoods Improvement

Implementation of the corrective action plan from the Completion Audit is well advanced; there are only minor actions still to be implemented. With the exception of one family who is in the vulnerable people program, the resettled households are considered to have restored or improved their livelihoods and standards of living. All resettled herders will continue to be part of the Khanbogd-wide herder program being implemented by OT.

A shortlist for the multi-disciplinary team (MDT) study of herders in Khanbogd has been identified and the new Tripartite Council expects to award the work before end 2015. The outcome evaluation for affected herders is still being planned as part of this study. It is positive that this process will be managed by the council, but the IESC notes that it will need to be very carefully managed to ensure it stays focused on the main objectives; which are to assess the outcomes for affected herders to date and identify tangible corrective actions to resolve any identified shortcomings. The scope is open to interpretation in some places and has the potential to present significant risks to OT if not well understood.

All one-off entitlements have been delivered to directly affected herders under the economic displacement program. Education support and scholarships for children are ongoing. There continues to be good participation by directly affected herders in OT community programs. Employment support training was recently provided to 12 members of directly affected herder families.

Significant further progress has been made by OT since the last site visit in terms of supporting herder economic development. Some of the notable achievements include supporting cooperatives to implement camel and sheep shearing services, animal health disinfection services, environmental rehabilitation works and a baby wool combing project. A women's cooperative was also established to produce felt products and handicrafts. A total of 9 new herder cooperatives have been recently established with OT support. The

previous non-conformance regarding herder livelihoods has been closed. Nevertheless, as many of these cooperatives/businesses are still in their infancy, ongoing support will be required from OT and their cooperative training partners.

The first rangeland management plan workshop was facilitated by Nutaag Partners between OT and the Khanbogd government. The aim is to have a series of discussions with the *soum* to define how to implement recommendations from the participatory rangeland monitoring program and how OT can support the Khanbogd government to prepare their rangeland management plan.

Demonstrable advances have been made on the vulnerable herder program since the last site visit. A time bound and costed plan is now in place and delivery of support measures is well underway. The vulnerable households met had demonstrably benefited from the recent support provided by OT (e.g., restocking, participation in felt handicraft production, access to credit etc) and although some measures are still being implemented the previous non-conformance can be closed.

The RAP update has been finalised. OT has addressed the comments received by the IESC/Lenders and the revised RAP is well prepared and fit-for-purpose for this phase of operations and post-displacement activities. This satisfies the ESAP commitment to Lenders to revise the RAP.

Stakeholder Engagement

The IESC visited a range of stakeholders in Khanbogd as part of this visit including local authorities, Tripartite Council representatives, vulnerable families, herder households, herder and other cooperative members, local contractors and local/national workers. The CSP team has now finalised the Community and Stakeholder Engagement (CSE) guideline designed to complement the SEP operational management plan. This guideline has been used to assist OT teams to develop detailed engagement plans on specific topics of importance and/or interest to local stakeholders. The SEP operational management plan is also scheduled for revision and it will be important for this update to include recent advances and changes in local engagement, e.g., Tripartite Council, Community Interaction Centre.

The Undai River engagement plan has now been finalised and is a comprehensive action plan to engage herders and others on the diversion project and Bor Ovoo spring location. This non-conformance is now closed. Upcoming priorities for Undai engagement include reaching agreement on the new Bor Ovoo Spring location and rehabilitation of wells/springs in to offset changes to the Undai River system. Other issue specific plans in draft include one for ecosystem services/biodiversity and UG construction.

Engagement with the Elected Herder Team (EHT) has formally transitioned to the Tripartite Council. The Tripartite Council has been officially sanctioned and the governance arrangements are robust. It will meet every 2 months or more if required; three meetings have been held to date. The council has the potential to be an effective engagement forum for joint herder/*soum*/OT activities if operated as intended. There have already been a number of successes for the council in agreeing and implementing joint activities. The council does not replace direct herder household engagement which continues on a daily basis.

The Tripartite Council is overseeing the MDT study which aims to deal with past herder complaints to the CAO.

Community consultations with Javkhilant bagh residents were conducted prior to the start of OT-GSK road construction in Zone 3.

Cooperation Agreement consultations are ongoing and a range of events will be held locally to share information about the operation of the agreement and collect proposals from communities for the initial allocation of the “Gobi Oyu” Development Support Fund (DSF). A total of 340 community members have participated in OT site tours year to date.

The Open Day (also known as the “town hall meeting”) was held in July together with a Contractor’s Fair. There were more than 250 in attendance at the open day and more than 500 at the contractor’s fair. Feedback from participants was favourable and a total of 15 persons from Khanbogd secured employment with contractors from 34 open positions advertised.

The Community Interaction Centre (CIC) in Khanbogd was opened in May 2015. This has given a boost to way in which OT can disclose information in Khanbogd and provides residents a more passive way to

obtain information in their own time. There is a model of the OT site and samples of different ore on display amongst other things. There is an opportunity to improve further the range of materials presented in the CIC, e.g., posters, procurement opportunities, cultural events etc. There are several rooms available in the CIC and these have already been used to host around 15 local events with approximately 800 visitors.

A total of 11 community grievances were received between April and August 2015 and all of these are resolved. The most common types of complaints continue to be environmental (dust, water, pollution) and those related to road construction (road litter, animal injury). Analysis of complaints overtime showed that human resources complaints were most repeated and in response OT organised several actions including having the HR manager work in Khanbogd for several days to meet local workers/prospective workers. Two complaints about herder livelihoods or compensation were received in this period and they were also resolved. The overall number of complaints is low for the size of the operation.

Regional and Community Development

The water source, water supply main, the distribution network across the *soum* centre and its supporting facilities construction bulk water supply project with ADB has been started in Khanbogd. OT has commenced construction of the distribution network. The construction of flood and drainage facilities in the soum centre is complete and will be handed over in September 2015. The Manlai sports hall construction is almost 50% completed. OT also recently financed the construction of 5.1 km of transmission line from OT to the central grid. Road construction of the Zone 3 of the OT-GSK road commenced in the summer and will restart again next year after winter.

Good progress has been made to enable the Cooperation Agreement to begin implementation. The Development Support Fund (DSF) of the Cooperation Agreement has been registered as an NGO under the name “Gobi Oyu”. The DSF and Relationship Committee (RC) governance arrangements have been finalised. Detailed protocols and funding guidelines are currently being developed. The 1st DSF board meeting and RC meeting are scheduled for September 2015. The first funding transfer is scheduled for 30 September 2015. The Tripartite Council is the working group involved in all screening and implementation of projects under the Cooperation Agreement related to herder livelihoods and rangeland management.

It is still early in the planning for the micro-credit scheme under the Cooperation Agreement. The “Future Next Generation Fund” has been allocated 5% of the DSF to be used as a revolving fund for micro-loans. OT is investigating potential banking partners to administer this scheme and is aware that the criteria to access these micro-loans need to be readily accessible to herders and other families/individuals to make a range of livelihood investments (not only small business start-ups).

A total of 12 suppliers currently operate at OT site from Umnogobi and 11 of these businesses are from Khanbogd. More significantly, 93% of the spend in the South Gobi is with Khanbogd suppliers. Local supplier development recently focused on local vegetable growers in Khanbogd who now supply cucumbers and tomatoes to the OT site.

Worker Health and Safety

The Health Team is a centralized entity under the HSESC Department, and includes occupational health services and the main SOS clinic. Periodical health assessments and screenings are performed under the continuing occupational health program.

Training and implementation of the Critical Risk Management program, focusing on 17 critical risks and conducting critical risk control verification, was completed in July. CRM has been integrated into pre-start meetings, task assignments and maintenance planning. Workplace health and safety incidents are tracked within the RTBS system, reviewed and evaluated by management, and reported in monthly or quarterly reports. Vehicle safety has received considerable attention in response to incidents, including training, roadway segregation for heavy and light vehicles in the Open Pit and TSF areas, and fatigue management and the use of SmartCap technology providing operator alerts in real time.

Community Health and Safety

The most notable recent community health and safety program contributions by OT include the fit-out of a disabled children's fitness and therapy room at the Khanbogd *soum* hospital and establishment of a Youth Development Centre (YDC) in the OT Trade Training building. The disabled children's room is being used by hospital staff to provide twice weekly sessions of play, massage and therapy to disabled children and their parents. The YDC includes a drop in centre for youth, counselling and various other services that have never been present in Khanbogd before. This was implemented in collaboration with the UNFPA. Other recent contributions include in-kind donations for the Khanbogd *soum* hospital including used furniture, gers, computers and an air-conditioning unit and installation.

No community safety incidents or concerns were reported to the IESC at this visit. It was noted that registered crime statistics have risen considerably in Khanbogd in the past 6 months. This is at least in part likely to be due to increased activities in the *soum* during summer. Nevertheless, it is suggested that OT engages with the authorities to investigate this issue and determine if any support actions are needed.

Oyu Tolgoi continued to support the International Organisation for Migration (IOM) on human security and human trafficking issues. The most recent activities include a survey of 127 migrant women to evaluate their living conditions and two-day training for 100 women on safe migration, family development etc). A total of 30 women have been provided with a settlement support grant for 8 small businesses. Forty-four civil servants from four *soums* were also trained to work with migrant women.

Cultural Heritage Management

No cultural heritage incidents have been recorded so far in 2015 and 32 land disturbance permits have been approved (22 inside the fence and 10 outside). The chance finds procedure and cultural heritage monitors are being implemented during all ground works for the construction of the OT-GSK Zone 3 road. Monthly monitoring of cultural sites is continuing at 19 locations by 8 CH assistants (including a number of herders).

Cultural heritage and community relations inductions have been given to 1,191 workers, and 717 workers have been trained in the Chance Finds Procedure year to date (including 210 copper concentrate drivers). A total of 1,367 OT site workers (and visitors) have visited the Culture *Ger* this year.

Three leading archaeologists and palaeontologists from Japan and the United States travelled to Mongolia in April to May 2015 to conduct work on preparation of the CHMP for the *Shar Tsav* paleontological site and *Khurdet* cave (regional sites). A Draft CHMP was subsequently developed with the input from these international experts. Engagement on the Draft CHMP is still being implemented.

Recent cultural events supported by OT include the Khanbogd mountain worship ceremony and Nadaam festivals in Dalanzadgad, Khanbogd, Bayan Ovoo and Manlai.

1 INTRODUCTION

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

In September 2013, D’Appolonia S.p.A. (D’Appolonia), located in Genoa, Italy, was retained by Oyu Tolgoi LLC to act as the Independent Environmental and Social Consultant (IESC)⁹ for the OT Project being developed by Oyu Tolgoi LLC (the “Project Company” or OT), a strategic partnership between the Government of Mongolia, Rio Tinto (RT) and Turquoise Hill Resources. Since 2012 RT has also been appointed as the manager of the project on behalf of the shareholders.

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

This report details the findings of the IESC site visit conducted in September 2015. All findings identified in this report are primarily based on field observation, written information made available by the Project through existing reports, disclosed studies and ad-hoc presentations, as well as from interviews with OT employees. The report provides an update on the Project status limited to some key topics as well as a follow-up of the status of the non-conformances with respect to the Project commitments as included in the Operational Management Plans, the ESIA, the ESAP and other reference documents.

Specific activities conducted before, during, and after this site visit included the following:

- desk review of the HSE and social documentation and other project-related reports provided by OT in advance to the visit;
- visits to the project sites and “spot” onsite observations of the implementation of EHS and social requirements;
- meeting with the project teams responsible for HSE and social compliance monitoring and review relevant plans and procedures;
- evaluation of implementation of the commitments contained within the Operational Management Plans and the ESAP;
- identification of deviations and/or gaps with respect to the Operational Management Plans and ESAP commitments, including recommendation for possible HSE improvements based on Good International Industry Practice (GIIP);
- follow-up and closure of findings and observations identified in the April 2015 IESC Audit Report¹⁰, and

⁹ IESC Team members: Giovanni Battista De Franchi (Project Manager and Team Leader – EHS Specialist), Robert Snow (Senior Reviewer - HS and Mining Specialist), Dana Strength (Environmental / Hydrologist Specialist) – not in the field, Angela Reeman (Social / Community Specialist), Jo Treweek (Biodiversity Specialist).

¹⁰ D’Appolonia, “Independent Environmental & Social Compliance Monitoring Report – April 2015 Interim Audit Report”, dated August 2015.

- drafting of an IESC report (this report) to be publicly disclosed.

A close out meeting was held at the OT site offices on September 18th to share preliminary findings and to present the result of observations made during the visit that form the basis for this report.

This report presents the IESC's understanding and assessment of conformance of Project commitments from an EHS and social perspective, based on the review of the Operational Management Plans, ESIA, Action Plans, and related plans and procedures, along with site observations and interviews with project personnel. The document provides a snapshot of the Project's state at the time of the visit. Although focus has been given to the assessment of how the commitments included in the Operational Management Plans are implemented by the Project, the audit is also a review of those issues identified in previous IESC visits that might still have implications during the current operational phase of the project.

The information, observations, and opinions presented in this report are those of D'Appolonia 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 PROJECT OVERVIEW

2.1 CONSTRUCTION AND OPERATIONS STATUS

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

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

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

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

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

The project achieved the operation phase in 2013 with open pit mining ongoing, the concentrator production rates progressively increasing, and the concentrate exported to China. By 30 June 2015 over 312 million tonnes of material had been moved in the open pit and 64.7 million tonnes of ore processed to produce 1,195kt of concentrate that contained 313kt of copper and 1,064koz of gold. OT expects the 2015 annual production to be between 175 and 195 kt of copper and 600 to 700koz of gold.

Development of the underground mine was suspended in August 2013 while the Project shareholders and the Government of Mongolia worked to resolve certain differences that had emerged between them. At the time underground development was suspended, Shaft #1 was complete, 1,167 meters of Shaft #2 (out of a planned 1,284 meters) had been sunk, Shaft #5 had reached a depth of 208 meters out of a planned 1,174 meters and 16km of underground lateral development had been completed. Underground mining will resume in 2016, following shareholder board approvals and closing of the project financing. With completion of underground development and cave establishment, the mine plans substitution of open pit ore with higher grade underground ore resulting in significantly increased copper production. Average annual production of payable metals over the first five years following Project Completion (2026-2030 inclusive) is estimated at about 555kt of copper and 409koz of gold.

During the IESC September 2015 site visit, the underground mine remains under care & maintenance by OT with underground work limited to ongoing inspection and maintenance of equipment and structures. No further decisions have been made regarding the potential development of a coal-fired project Power Plant and the expansion of the concentrator's capacity above 100 ktpd, both items subject to further environmental and social impact assessment as established in the ESAP.

2.2 REPORT ORGANIZATION

Subsequent sections of this report are organized as follows:

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

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

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

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

3 ISSUES TABLE

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

The table has been structured to provide a color-coding for strict non-conformances referenced with respect to Project commitments as included in the Operational Management Plans, in the ESAP and in the underlying OT monitoring documents and procedures which all together define how the OT operations comply with applicable Lenders' Environmental and Social Standards. The nomenclature of the color-coded categorizations is assigned based on the same non-conformance levels defined in the OT ESMP¹¹ which reflects the RT HSEQ Management System classification.

The following descriptions are provided:

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

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

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

Overall, results of the audit are as follows:

- No Class IV non-conformances have been identified;
- Three Class III non-conformances identified;
- Nine Class II non-conformances identified; and
- Eight Class I non conformances identified including one against ESAP commitment.

¹¹ *Environmental and Social Management Plan (ESMP) - Doc. No. OT-10-PLN-0003 dated 01.09.2013.*

Starting from the October 2013 IESC site visit, eight non-conformances were closed during the March/April 2014 site visit, two during the August 2014 Desktop audit, ten during the November 2014 site visit, three during the April 15 desktop audit, and six during this audit.

Mission / Issue No.	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
Environment – Water and Wastewater Management							
M1.1	Oct. 13 April 14 Desktop Audit Aug. 14 Nov. 14 Desktop Audit April 15	Sept. 15	<p>The Undai River Diversion has not been completed in accordance with the ESIA due to a delay in issuance of a Land Use Permit. A temporary approach (the Undai River Partial Adjustment and Protection Project) has been completed to divert surface flow and to capture and re-route groundwater flow from the Undai River and around the zone of influence of the open pit.</p> <p>The current Undai River Partial Adjustment and Protection Project does not fully meet the design requirements as specified in the ESIA.</p>	II	IESC - April 2013 Audit Water Resources Management Plan (WR12)	Closed	<p>See Sections 5.1.2 and Issue M1.18. The ESIA MoC procedure, as identified in the ESMP, was implemented by the Project on May 20, 2014. The submitted Notice of Change (2014-001) was not accepted by the Lenders as a detailed technical review of available hydrogeological information was pending. This reflected a precautionary approach in assessment of potential impacts to the Undai River groundwater system.</p> <p>In November 2014 a detailed hydrogeology review was undertaken to assess potential impacts of the current Undai River Partial Adjustment and Protection Project to the groundwater flow regime. The detailed water review did not identify a risk of significant impact to groundwater resources as a result of the current system.</p> <p>In December 2014 OT and the Elected Herder Team (EHT) agreed to transition the IFC's Compliance Advisory Ombudsman (CAO) facilitated meetings into a permanent dialogue, inclusive of local stakeholders, to further the topic of final Undai River Diversion configuration. Stakeholders include OT, the EHT, and the Khangbogd government. Collectively these entities constitute the Tripartite Committee (TPC).</p> <p>In September 2015 OT submitted Notice of Change 2015-005 recognizing the role of the TPC to develop the finalized Undai River Diversion project. Based on ongoing consultation this finalized project may reflect the current configuration or a different design. The Notice of Change 2015-005 acknowledges that the current Undai River Partial Adjustment and Protection Project maintains continuity of groundwater flow and is serving as a valid interim mitigation. Once the TPC has developed the final Undai River Diversion Project a subsequent Notice of Change will be filed by OT seeking approval of the decision. It is acknowledged that any accepted final design will meet the requirements of the ESIA and the WRMP.</p>

Mission / Issue No.	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
M1.5	Oct.13 April 14 Desktop Audit Aug. 14 Nov.14 Desktop Audit April 15 Sept.15		Mitigations are required in the event of interconnection of hydrogeological units. These mitigations have not yet been implemented in all instances. OT is progressing efforts to abandon or convert to productive use these interconnecting bores.	II	IESC - April 2013 Audit Water Resources Management Plan (WR04, 14)	Open	See Section 5.1.2.7. Evidence exists of exploration bores interconnecting hydrogeological units within the Gunii Hooloi borefield. Future disposition of these wells is under evaluation by a workgroup established with the Khanbogd soum. There are some requests for conversion of the wells for community use. Best efforts are being made by OT to progress the sealing of interconnecting bores within and outside of the MLA, however the issue is outstanding. OT is now working with the regional Basin Administration to further abandonment or conversion of the bores.
M2.3	April 14 Desktop Audit Aug. 14 Nov.14 Sept.15		The drilling and installation of supplementary monitoring bores, as discussed in the WMP, has not yet been implemented.	II	Water Monitoring Plan, Section 3.2.6, 3.3.5 Water Resources Management Plan (WR14, WRm06)	Open	See Section 5.1.2.8. The drilling and installation of supplementary monitoring bores, as discussed in the WMP, has not fully been completed. 14 supplementary bores were installed in 2015 prior to halting of the work over drilling safety concerns. The remaining bores will be completed in the 2016 field season.
M4.1	Nov. 14 Desktop Audit April 15	Sept.15	Not all rain gauges have been installed at the locations described in the WMP.	I	Water Monitoring Plan, Section 3.8 Figure 11	Closed	Section 5.1.2.6. A total of nine points are used to monitor precipitation instead of the originally specified 10 regional rain gauges. There have been security issues with rain gauge installation due to their remote locations. A total of five rain gauges are currently installed and monitored. In addition information is received from four state-owned weather stations. This modification was approved via Notice of Change 2015 – 013 (August 2015).

Mission / Issue No.	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
Environment –Non-Mineral Waste Management							
M5.1	Sept. 15		<p>At the WMC some oily drums were improperly stored on a geomembrane liner with holes and evidence of leaks.</p> <p>This is not in line with the intent of the Operational Non-Mineral Waste Management Plan to ensure an effective management of non-mineral waste at OT through safe handling, treatment and disposal of generated wastes.</p>	I	Non-Mineral Waste Management Plan (WM03, 10, WMM3)	Open	See Section 5.3.2. At the WMC some waste oily drums were improperly stored on a geomembrane liner with holes and evidence of leaks. Although this is not a situation that represents a potential environmental concern given the remoteness of the site, it is more a management issue (WMM3) as these drums should not have been sent to the WMC, as it is not designed to receive used oil. Rather, the drums should have been sent to the designated collecting areas at the truck or the Gobi shops. If there are plans to send this type of waste to the WMC, even as a temporary solution, a properly designed storage area should be built.
Environment – Air Quality							
M1.11	<p>Oct. 13</p> <p>April 14</p> <p>Desktop Audit</p> <p>Aug. 14</p> <p>Nov. 14</p> <p>Desktop Audit</p> <p>April 15</p> <p>Sept. 15</p>		Significant dust (particulate) emissions are generated intermittently at the coarse ore stockpile. A foam dust suppressant system has been installed with overall good efficacy when operational; additional mitigations are needed.	II	Atmospheric Emissions Management Plan (AQ05)	Open	See Section 5.5.2.1. There has historically been significant dust generation at the coarse ore stockpile (COS) facility. As mitigation in March 2015 a foam dust suppressant system was put into use. This has resulted in reduction of ambient environment TSP concentrations by over 80%, although particulate monitoring results continue to exceed the Project Standard. The OT Concentrator Operations department is contracting with the supplier of the dust foam suppressant to identify further mitigations that can be implemented. It is anticipated that the supplier will visit the site in Q3 or Q4 of 2015. Under consideration is the use of a polymer to create a “crust” on areas near the ore stockpile. This could be applied before the winter freezing season and may help reduce dust generation. Optimizations already undertaken include appropriate metering of foam dust suppressant as a function of conveyor loading rate from the crusher.

Mission / Issue No.	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
M1.12	Oct. 13 April 14 Desktop Audit Aug. 14 Nov. 14 Desktop Audit April 15 Sept. 15		There are limitations to the existing ambient air monitoring network. The revised AQMP describes additional necessary equipment to monitor ambient air conditions relative to Project Standards.	III	Atmospheric Emissions Management Plan (Section 1.5; Air Quality Monitoring Plan – Appendix A; AQ-KPI02)	Open	See Section 5.5.2.1. As noted in prior audits the ambient air monitoring network available requires improvement to meet commitments made in the revised AQMP, and to monitor ambient air quality relative to Project Standards. Information from the August 2014 Audit suggested that this equipment would be available on site and ready for installation by November 2014. November 2014 estimates for installation were 6 – 12 months into the future (i.e. by the end of 2015). However a March 2015 capital expenditure authorization for the equipment has been denied. It is now anticipated that the equipment will be procured in 2016. This has been maintained as a Level III non-conformance due to the lack of timely corrective action. It is noted that the project is currently capital constrained; however lack of an ambient monitoring network that complies with Project Standards has been a consistent non-conformance since the first operations phase audit. It is noted that there are plans to include the necessary capital expenditure will be considered during the January 2016 meeting of the OT Investment Committee.
M1.13	Oct. 13 April 14 Desktop Audit Aug. 14 Nov. 14 Desktop Audit April 15 Sept. 15		Stack emission sampling results from boilers at the Central Heating Plant (CHP) and KB airport do not meet Project Standards.	II	Atmospheric Emissions Management Plan (AM03) Air Quality Monitoring Plan – Appendix B)	Open	See Section 5.5.2.2. Emissions quality of the CHP has been a persistent issue and OT is planning an internal review by the Asset Management Group of the whole system, including monitoring procedures. Options for improvement to emissions quality include boiler “tune out” for the light summer load and modifications to boiler air flows. Additional monitoring equipment may be procured. In summary it is expected that the OT internal review will provide solid information to address CHP stack emission quality.

Mission / Issue No.	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
M2.4	<p>April 14 Desktop Audit Aug. 14</p> <p>Nov. 14 Desktop Audit April 15 Sept. 15</p>		Stack emission sampling results from the incinerator do not meet Project Standards.	II	<p>Atmospheric Emissions Management Plan (AM06)</p> <p>Air Quality Monitoring Plan – Appendix C</p>	Open	<p>See Section 5.5.2.2. An October 2014 site visit by the manufacturer of the project incinerator noted inappropriate after-market modifications and operational practices at the unit. Recent monitoring results indicate emissions are not meeting the Project Standards, which the incinerator has been designed to meet. It is likely the incinerator is not achieving the designed combustion temperature of 1000 degrees Celsius. The unit manufacturer has been scheduled to visit the OT site in October 2015. It is expected that this visit will lead to recommendations for modifications to the unit which would lead to higher combustion temperatures.</p> <p>This has been maintained as a Level II non-conformance due to near-term plans to achieve successful operation of the incinerator. However, it is noted that there are long-standing issues with incinerator operations and resultant non-compliance with emission Project Standards. This item has the potential to be escalated to a Level III non-conformance if current operational practices continue.</p>

Mission / Issue No.	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
Environment – Emergency Preparedness & Response							
M4.2	Nov. 14 Desktop Audit April 15 Sept. 15		The tailings dam breach analysis has not been performed to establish the potential extent and impact of failure on mine facilities, infrastructure, communities, and the environment. An Emergency Action Plan for the potential of a tailings dam failure has not been prepared.	I	Emergency Preparedness and Response Plan (ERP02, 02b, 02c)	Open	See Section 5.7.2. A draft TSF Emergency Response Procedure with an emergency response coverage area has been prepared, reviewed by the ERT and Communities teams, and is pending further review, approval and finalization. The procedure should incorporate or provide reference for: participant responsibilities with designation of position responsible for administration and maintenance of the plan; exercises/training activities and plan maintenance, establishing review and update requirements including public notices and interactions; and resource requirements and maintenance to ensure serviceability of communication and other equipment necessary to respond to an emergency. EBRD Performance Requirements and IFC Guidelines (that cite UNEP APELL Guidance on raising awareness and preparedness for emergencies, including Tailings Dam Failure) emphasize emergency preparedness and response for potential hazards that could affect works, the community and environment. Finalizing the TSF Emergency Response Plan is warranted, including documenting the rationale for inundation mapping and establishing the emergency response coverage area, and other administration, training/exercise, and resource requirements (ERP02, 02b, 02c).

Mission / Issue No.	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
Environment – Biodiversity and Ecological Management							
M1.16	Oct.13 April 14 Desktop Audit Aug. 14 Nov.14 Desktop Audit April 15 Sept.15		Bird Flight Diverters must be “maintained as necessary to minimize wildlife mortality throughout operations”.	III	Biodiversity Management Plan (B08, B09) Lender Biodiversity Action Plan (ID1) Core Biodiversity Monitoring Plan (CBMP)	Open	<p>Section 5.9.2.1. A proportion of flapper-type bird flight diverters installed to manage risks of birds colliding with power lines have failed. There are incidences of mortality of species of conservation concern within critical habitat, notably Houbara and Great Bustard, and the scale of undetected collisions remains unknown. Interpreting the significance of collisions is further compounded by lack of reliable information on the size and distribution of affected populations. More intensive monitoring is challenging due to the low density of these species and it is not considered feasible to take corrective action (to re-fit functioning diverters) during operation. OT has worked with specialist consultants to develop a “Powerline Options Paper” that sets out potential solutions, including a captive breeding and release programme and Engagement with the Government of Mongolia to develop and implement national powerline standards through measures such as insulation, bird flight diverters and horizontal powerline arrays.</p> <p>OT needs to review the financial and political feasibility of these options, decide which it will pursue as part of its efforts towards NPI and develop a costed implementation plan. Because impacts are continuing on critical habitat values, without any current ability to evaluate the significance of these impacts and without a clear plan of action in place, the Level III non-conformance remains open.</p>

Mission / Issue No.	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
M1.18	Oct.13 Apr. 14 Nov.14 Desktop Audit April 15 Sept.15		Ecological equivalence of Replacement BorOvoo Spring.	I	ESIA Ch B7a Table 7.1	Open	<p>Section 5.9.2.5. The replacement BorOvoo spring should “mimic” the characteristics of the BorOvoo spring as closely as practicable - taking into consideration the extent of inundation and catchment size, establishing vegetation and rocky outcrop habitats” (ESIA Ch B7a Table 7.1).</p> <p>Data from camera traps installed at the Spring show regular use by wildlife, including Khulan and the current spring location is considered acceptable for wildlife drinking. Stocks of propagules of appropriate plant species are being developed and will be available to support field trials. Through the Ecosystem Services Group, OT has undertaken to discuss the possibility of temporary fencing to protect rehabilitated vegetation and plant communities so that they have a chance to establish without damage from grazing and this will make field trials more effective. Progressing field trials remains a priority and needs to include specific attention to rocky outcrop habitats. As soon as it is clear that target vegetation types can be developed at a confirmed spring location, this non-conformance can be closed.</p>

Mission / Issue No.	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
M2.5	Apr. 14 Desktop Audit Aug. 14 Nov. 14 Desktop Audit April 15 Sept. 15		Installation of underpasses. Measures to maintain habitat connectivity for wide-ranging wildlife species with critical habitat affected by the Project.	III	BMP ID B16 and Annex C, ID 5	Open	<p>Section 5.9.2.2. OT undertook to develop a workplan for installation of underpasses to include activities and timelines for stakeholder consultation, design, locations, engineering and environmental assessment consistent with expert advice. This was due to be agreed with the Lenders by Q4 2013 (BMP Annex C, ID 5) and the proposed approach remains uncertain.</p> <p>Increased traffic volumes in future could make the OT-GS and other roads a functional barrier to movement of species such as Khulan and Goitered Gazelle. Current levels of traffic do not create a complete barrier, but monitoring results also indicate a possible degree of avoidance behaviour even at these levels.</p> <p>OT has committed to demonstrate best practice to manage its residual impacts on critical habitat for ungulates and other species vulnerable to barrier and disturbance effects. A meeting in November 2014 in Ulaanbaatar discussed practical measures OT could take to maintain habitat connectivity throughout its operations. It was agreed that under or overpasses may not be the best or most cost-effective solution in the near term and other potential solutions were discussed, including carefully timed road closures.</p> <p>As agreed with Lenders, OT needs to detail the actions that will be taken in a Road Mitigation and Monitoring Strategy. OT plans to follow an adaptive management process in which implementation of mitigation measures is triggered by monitoring and threshold-exceedance. These thresholds therefore need to be clearly defined for both traffic levels and for animal crossing frequency. The monitoring that will be undertaken to ensure that changes will be detected and the responses that would be triggered need to be specified. Meanwhile OT has undertaken to appraise lenders of any changes in its transport strategy, particularly where there are implications for sensitive species.</p>

Mission / Issue No.	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
M2.6	Apr. 14 Desktop Audit Aug. 14 Nov.14 Desktop Audit April 15 Sept.15		Stakeholder Engagement Plan for biodiversity and ecosystem services.	I	Biodiversity Management Plan (B05) LBAP ID 24, (BMP Annex C)	Open	Section 5.9.2.4. Stakeholder engagement underpins many biodiversity commitments and OT has committed to “substantial stakeholder engagement and consultation to ensure that its biodiversity offset programme is consistent with national conservation priorities and stakeholders’ interests”. OT committed to develop a “targeted Stakeholder Engagement Plan” to ensure effective integration of biodiversity-related stakeholder engagement requirements with OT’s systems. The Ecosystem Services Group has now produced a biodiversity-related Stakeholder Engagement Plan and has carried out an initial stakeholder mapping process. OT’s internal stakeholder engagement planning system is currently being updated and biodiversity-related aspects will be taken forward as part of this process. Issue-specific, targeted engagement is needed to progress offset and road mitigation strategies. This non-conformance will be closed when this is in place and can be seen to underpin effective engagement (BMP B05; LBAP ID 24, BMP Annex C).

Mission / Issue No.	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
M2.7	Apr. 14 Desktop Audit Aug. 14 Nov. 14 Desktop Audit April 15 Sept. 15		Land Use Implementation Plan or equivalent.	I	LBAP ID 18c (BMP Annex C)	Open	<p>Section 5.9.2.5. OT committed to submit a LUIP or equivalent plan to the Lenders by Q1 of 2014, with a view to presenting a clear indication of OT's proposed commitment in terms of vegetation or habitat rehabilitation. This is required to provide a framework to monitor OT's success in meeting PS 6 requirements with respect to "no net loss" of natural habitat and also OT's Biodiversity Strategy regarding net positive outcomes for priority species, including plant species.</p> <p>Production of the LUIP is no longer a Rio Tinto requirement. Lenders agreed it could be replaced with an alternative "Land Disturbance Control and Rehabilitation Management Plan" and this was submitted for lender review in September 2015, together with a new Biological Rehabilitation Procedure and revised Technical Rehabilitation Procedure, Topsoil Handling Procedure and Land Disturbance Permit Procedure. The Plan needs to be revised and resubmitted based on technical review by Lenders and the IESC and finalization of the completion indicators needed to evaluate outcomes. The Rare Plant Protection Procedure should also be updated. The LDCRMP needs to prescribe an approach that places greater emphasis on avoidance of priority features rather than jumping straight to later steps such as translocation (see also M5.3). The non-conformance will be closed when the Plan and procedures are approved by Lenders.</p>

Mission / Issue No.	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
M4.3	Nov.14 Desktop Audit April 15 Sept.15		Measures to control disturbance of animals caused by off-road driving and any associated increases in mortality from hunting and collecting.	II	LBAP ID6 (BMP) Transport Management Plan (OT-10-C3-PLN-0001) OT Site Wide Traffic Management Plan (OT-10-C3-PRC-0005-E).	Open	<p>Section 5.9.2.2. The ESIA identified risks to wildlife from induced increases in levels of hunting and disturbance caused away from roads by vehicles driven off-road. Lenders approved the removal of road barriers as a solution to prevent vehicles from leaving the road because specialist advisers raised concerns about barriers to free movement of ungulates and because communities raised objections. Alternative solutions have not yet been recommended.</p> <p>OT has engaged in awareness-raising on this issue at local, regional and national levels and is pursuing efforts to control illegal hunting through community outreach. However the issue of cumulative levels of disturbance to ungulates from vehicles throughout the landscape due to OT's activities and those of others operating in the area remains. This is an important part of the baseline situation, relevant to management of barrier effects from OT's roads and necessary for OT to be able to demonstrate that it is managing its disturbance impacts.</p> <p>Monitoring of the disturbance footprint caused by vehicles driven off road over time is necessary, (for example as indicated by density and extent of off-road tracks detected from aerial photographs or satellite imagery) so that impacts can be appropriately attributed to the Project or other causes. The fact that off-road driving is considered to be a "cultural" practice lends further weight to the need for solutions to be found, as it increases the risk that background levels of off-road driving might escalate further in the region. OT's proposed approach needs to be articulated in the comprehensive Biodiversity Monitoring and Evaluation Plan and Road Mitigation Strategy.</p>
M4.4	Nov.14 Desktop Audit April 15		OT undertook to develop a biodiversity Offset Management Plan and submit it for lender review, identifying proposed offsets and implementation mechanisms.	II	LBAP 13	Open	<p>Section 5.9.2.7. OT undertook to develop and implement an Offset Management Plan (OMP), identifying options for sustainable financing, that mitigates the significant adverse impacts of the Project on critical and is sufficient to have a net positive impact over the life of the mine. A</p>

Mission / Issue No.	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
	Sept.15						revised timeline for submission of the OMP of Q1 2015 was agreed with Lenders in November 2014. OT's consultants have submitted an Interim OMP that presents potential options but does not specify the actions OT proposes to take and is not considered to meet the requirement for a "costed management plan". The OMP must specify the actions that will be taken in the near, medium and longer term to deliver outcomes compatible with ESIA commitments and lender requirements. The OMP must also include OT's intended approach to sustainable financing over the life of the mine. This is a level II non-conformance due to lack of assurance about tangible outcomes until OT's intentions and commitments are clear.
M4.5	Nov.14 Desktop Audit April 15 Sept.15		Monitoring of critical Ecosystem Services	I	LBAP 17 ESAP Item 7; Pastureland and Livelihood Improvement Strategy; RAP Entitlements Matrix	Open	<p>Section 5.9.2.8. Through the Ecosystem Services Group, OT undertook to implement a multi-disciplinary Monitoring and Evaluation Program for critical ecosystem services, to be designed in a collaborative manner with environmental and social specialists and integrated with social monitoring. This was to include relevant metrics and threshold values, provide a basis for adaptive management and be statistically relevant.</p> <p>The Ecosystem Services Group has made efforts to develop a robust framework for monitoring OT's impacts on ecosystem services. While this is incomplete, good progress has been made in identifying suitable indicators, further developing participatory rangeland monitoring and understanding OT's impacts on surface water. Stakeholder engagement activities taking place through the Cooperation Agreement mean that OT is now well placed to complete a robust monitoring plan. Finalizing this remains a priority, but many of the essential building blocks are now in place and OT is already engaged in relevant monitoring activities.</p>

Mission / Issue No.	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
M5.2	Sept.15		Dedicated resources for OT's biodiversity management programme, including on-site mitigation, offset management and biodiversity monitoring to meet the requirements of lender performance standards and ESIA commitments and demonstrate a net positive impact.	II	LBAP 19 and 20	Open	Section 5.9.2.10. As a commitment in the Lender BAP (LBAP 19), OT committed to allocate the resources needed to meet the requirements of lender performance standards and ESIA commitments related to biodiversity and to achieve a Net Positive Impact on biodiversity in the South Gobi. OT further committed (LBAP 20) to engage a full time senior level specialist with demonstrated experience in international best practices to provide support, capability and leadership to OT's biodiversity team in their implementation of biodiversity commitments. OT appointed a full time Biodiversity Offset advisor to meet this requirement but later merged the role with that of Manager - Environment and Biodiversity so it is no longer full-time. Lenders see fulfillment of this commitment as critical and expect OT to seek support from a suitably qualified senior level specialist. Furthermore, to meet Lenders requirements and ESIA commitments, ongoing allocation of resources to essential field trials and research on biological rehabilitation will be necessary, in addition to the support given to OT's comprehensive monitoring programme. The IESC understood that there are ongoing discussions on this issue between the Lenders and OT that could be handled through the MoC process in place.
M5.3	Sept.15		Planning of Land Disturbance to support appropriate application of the mitigation hierarchy.	II	LBAP ID 18c (BMP Annex C)	Open	Section 5.9.2.5. The OT Project has a large infrastructure footprint on natural and critical habitat and is required to comply with national and local government requirements for rehabilitation as well as Lender requirements for No Net Loss outcomes in natural habitat. IFC PS6/ EBRD PR6 require avoidance of impacts on critical habitat before moving to subsequent steps in the mitigation hierarchy. The current approach to land disturbance planning and permitting does not allow risks to natural habitat and RT priority plant species to be assessed sufficiently far in advance, and provides insufficient scope to avoid priority features. This means that rare plant species, for example, are sometimes translocated at an inappropriate time of year and don't survive. OT's approach to strategic management and environmental

Mission / Issue No.	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
							assessment of land disturbance needs to be reviewed to ensure that design alternatives can be considered as a means of avoiding impacts on priority features.
Social - Labor& Working Conditions							
M4.6	Nov. 14	Sept. 15	Monitoring and auditing of contractor HR and Employee Relations (ER) performance is the responsibility of the Procurement department. A robust prequalification and audit process is in place with contractors, however, the audit process does not include sufficient HR/ER scope to assess compliance against all relevant OT requirements.	I	Labour Management Plan Sections 5.1.8 and 9.2	Closed	Section 6.2.2. A revised audit protocol for assessing contractor performance to include additional checks on HR/ER performance has been developed. An audit schedule to implement these enhanced audits with key contractors has been prepared and a number of audits have already been implemented. The IESC were able to verify this at the site visit and review the findings from a number of audits with contractors. These audits will be ongoing but the non-conformance to have a protocol and schedule in place is closed.
M5.4	Sept 15		In the Collective Agreement between OT LLC and the Trade Union there is a commitment to provide gifts (of monetary value) for recognition of long-service.	I	Labour Management Plan, OT LLC Collective Agreement	Open	Section 6.2.2.2. The clause of the Collective Agreement about gifts for long-service recognition has not been implemented by OT LLC. Upon discussion with OT during the site visit it was evident that management was aware of this issue and had been working to rectify the situation. Apparently an internal decision was made that week to approve gifts for long service. Nevertheless, this is a non-conformance until the situation has been remedied including retrospective provision of the agreed gifts to all those reaching long service milestones during the term of the agreement.

Mission / Issue No.	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
Social –Resettlement, Compensation and Livelihoods Improvement							
M1.23	Oct.13 April 14 Desktop Audit Aug. 14 Nov. 14 Desktop Audit April 15 Sept 15		An Outcome Evaluation of affected herders is a specific commitment in the Resettlement Action Plan and is due to be conducted for economically displaced and other affected herders in Khanbogd <i>soum</i> .	I	Resettlement Action Plan (Sections 10.1, 10.2 and 10.4)	Open	Section 6.3.2. The shortlist for a Multi-Disciplinary Team (MDT) to conduct a study on the 2011 compensation program has now been agreed by OT with the Tripartite Council. The preferred bidder is expected to be awarded by end 2015 (the Outcome Evaluation of the 2011 compensation program is part of this study). It will be important for the study to incorporate all categories of affected herder households and evaluate the outcomes for different groups in terms of livelihood and standard of living improvements. It should be focused on identifying areas for improvement and agreeing resolutions with tangible corrective actions.
M3.1	Desktop Audit Aug. 14 Nov.14 Desktop Audit April 15	Sept. 15	Assistance to vulnerable people affected by economic displacement as a result of the mining operation is a key component of the RAP. Some support measures have been provided by OT to vulnerable herder households, however, a more comprehensive vulnerable people program is yet to be implemented.	II	Resettlement Action Plan (Section 6, Table 25 -R05, R11) Stakeholder Engagement Plan (SEP14)	Closed	Section 6.3.2.4. A vulnerable people assistance action plan based on suggestions made by the IESC has now been finalised. OT is also well advanced with implementation of key support measures from the plan for vulnerable herder families. Some actions are still being implemented and regular monitoring of vulnerable herder households will be required. However, this can be conducted in the normal course of implementing the vulnerable people assistance plan and the non-conformance can therefore be closed.

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M3.2	Desktop Audit Aug. 14 Nov. 14 Desktop Audit April 15	Sept. 15	The well rehabilitation program, supplemental fodder distribution, grazing access inside OT fence and others have contributed towards OT's commitment to implement a sustainable pastureland management program. ¹² However, a review of these projects and participation by herders has identified the need for additional small scale enterprise development and income diversification opportunities for Khanbogd <i>soum</i> herders.	I	Resettlement Action Plan (Section 5)	Closed	Section 6.3.2.3. Significant progress was made by OT to support herder income diversification and generation opportunities since the last site visit. A number of new herder cooperatives/business including for vulnerable women, animal health services, wool shearing and combing and sausage production were initiated. Other existing herder cooperatives or businesses were also provided with additional training and other assistance. There has also been explicit agreement to incorporate all Khanbogd <i>soum</i> herders into a holistic "herder program" as part of the re-framing of support for herder families under the Cooperation Agreement and guidance of the Tripartite Council. Although there are still some challenges to ensure these small-scale enterprises are viable and sustainable, as long as ongoing support is provided for a reasonable period this should be achievable.
Social – Stakeholder Engagement							
M2.11	April 14 Nov. 14 Desktop Audit April 15	Sept. 15	A general Undai River community consultation plan was developed for the ESIA and included in the Stakeholder Engagement Plan (Annex E). Given the highly sensitive nature of the Undai River diversion project and the complex range of stakeholders, studies and issues, it is essential the community and other engagement on this topic is well coordinated.	II	Stakeholder Engagement Plan Annex E, SEP05	Closed	Section 6.4.2. An Undai River specific engagement plan has now been finalised by OT incorporating comments from the IESC. It was apparent during the site visit that much work has been done by OT to ensure that the various teams are aligned on Undai River engagement. A total of 48 herder households identified by the IEP Phase 1 study are the key stakeholders of the Undai engagement plan. Direct engagement with all key Undai River stakeholders has already commenced and the plan sets out clear actions for upcoming engagement. This non-conformance can be closed.

¹² As described in Section 5.4 of the Resettlement Action Plan.

4 HEALTH, SAFETY, ENVIRONMENT AND SOCIAL PERFORMANCE MANAGEMENT SYSTEMS

Environmental and social management for the OT Project has been defined through a series of interlinked processes and documents. The first tier of these is the Framework Document – Environmental and Social Management Plan¹³ (ESMP), Biodiversity Management Plan (BMP), and associated Operational Management Plans. Additionally, the Pastureland and Livelihood Development Strategy document also provides commitments for Regional Development and Social Performance. These documents have been developed, reviewed and approved by the Project, Lenders and independent consultant. These management plans integrate the results of the Project ESIA and the Lenders' requirements, as well as cite relevant Mongolian laws and standards.

Specific measures to comply with the operational management plans have also been summarized in the ESAP, which has been prepared by the Project.

In addition to the management controls specified in its Operations BMP, OT has committed to a number of biodiversity management activities specifically required to meet Lender Standards. These are currently described in the Lender's Biodiversity Action Plan which is attached as Annex C to the Operations BMP. During the September IESC visit, Lenders and OT agreed that the Lender Biodiversity Action Plan would be reviewed, updated and removed from the BMP to become a stand-alone document, to be disclosed annually.

OT's revised Biodiversity Management Plan (BMP) has been through several reviews and updates and is now up to date and fully aligned with the OT management system. Notices of Change 2014-006 and 2014-007 were re-submitted in June 2015. They included some revisions agreed by OT and the Lenders and others that were not agreed and are under review. The key topic under discussion is OT's mitigation strategy for potential barrier effects on ungulate species associated with the OT – GS road. It articulates all of the Project's biodiversity mitigation and offset objectives, actions and targets. A Core Monitoring Strategy is in place to ensure that requirements relating to critical habitat are progressed and initial data are being analyzed. OT's comprehensive Biodiversity Monitoring and Evaluation Plan and biodiversity Offset Management Plan (OMP) are not yet in place but are being developed.

In support of the Operational Management Plans, other specific implementation plans, procedures, guidelines and policy documents have been prepared for implementation of management controls.

4.1 PROJECT STRATEGY

The Health, Safety and Environment Management System (HSE MS) framework for the OT Project is governed by the RT HSEQ MS, which is a mature system aligned with ISO 9001, ISO 14001, and OSHAS 18001 requirements and which is applied across the RT group. The Communities and Social Performance Management System (CSP MS) shares some elements with the HSE MS but is governed by the RT Communities Standards. These Management Systems were developed to manage the Project in compliance with RT, Mongolian and Lender requirements. OT's Management Systems document key components of how OT manages HSE including key management controls, performance indicators, and monitoring measures.

The OT ESMP is consistent with the RT standards, and reflects the identification and assessment of impacts and risks detailed in the integrated OT ESIA. The ESMP describes how the mitigation measures that have been identified to minimize the significant residual environmental and social impacts and risks have been incorporated into the HSE MS and CSP MS.

The Operations Management Plans are based on the ESIA incorporating Lender requirements (mainly Performance Standards from the IFC, and Performance Requirements from the EBRD) as well as Mongolian laws and standards. The Operational Management Plans reference key implementation documents that provide additional guidance and procedures for management control, system performance or monitoring. The Pastureland and Livelihood Improvement Strategy is a key guidance document for the

¹³ *Environmental and Social Management Plan – Doc. No.OT-10-PLN-0003 dated 01.09.2013.*

Communities and Social Performance (CSP) team¹⁴, and addresses how interactions and competing interests with wildlife conservation of the same land areas as rangeland will be coordinated and resolved.

4.2 OBSERVATIONS

4.2.1 Status of Operational Management Plans

There have been updates to several of the Operational Management Plans, as part of scheduled OT reviews and generally to reflect the operational conditions of the Project and refine Key Management Controls, Performance Indicators, and Monitoring Measures. These updates were submitted to Lenders with a Notice of Change under the Management of Change program, and their review and approval status is presented in Table 4.1.

4.2.2 Development of Contractor Management Plans

The Contractor Management Framework document is part of the suite of Operational Management Plans to ensure contractors and suppliers involved in the project's operations implement OT standards and other requirements. This management plan was also updated as part of scheduled OT review and to reflect operational conditions of the Project. It was under review by the Lenders during the September audit. Observations regarding contractor management and coordination are addressed in the associated sections of this report. The supplier prequalification and audit process is designed to ensure that contractors can meet the Project standards. OT classifies contractors into exposure/risk and qualification levels, with audits scheduled annually for contractors engaged in medium to high risk activities. Qualifications questions focus on core criteria critical to OT's operations, resources, and performance history.

Contractor monitoring is performed as part of the process documented in the Contractor Management Framework, and includes conformance with Contractor HSE Management plans and OT General Conditions, preparing a monthly Performance Scorecard, and medical examinations as required. The Contractor Performance Scorecard and Improvement Plan is prepared by the OT supervisor and covers areas of health, safety, environment, management compliance and KPIs using an established scoring system which is shared with the contractor representative. Contractor Safety Forums are periodically conducted to reinforce safety initiatives and make presentations to leadership and safety officers for contractors. A contractor safety forum was held in August 2015 and included 40 contractor companies and more than 130 participants.

4.2.3 Organization and Staffing

The HSE, Security and Communities departments have recently been combined into the Health, Safety, Environment, Security and Communities (HSESC) department, with five key manager positions under the HSESC General Manager, leading the following teams: Security and Emergency Management, HSEC Systems and HSE Compliance; Health & Safety; Environment & Biodiversity; and Communities & Social Performance. ESIA coordination has been moved from HSE Compliance to Environment & Biodiversity. Each key manager position is supported by a team of professionals at a size appropriate to the team responsibilities. Continuing initiatives for building capabilities company-wide include: structured leadership skills programs, in-house training modules, and in-house coaching and mentoring. It is noteworthy that in August 2015, the leadership toolkit program completed the coaching phase for over 200 enrolled OT supervisors and superintendents. The organization is also supported by a number of high capacity consultants including Sustainability East Asia for environmental support and Groundwater Management Solutions for hydrogeological support.

The CSP department includes two key manager positions under the General Manager. One manages the Community Assistance and Partnership stream which incorporates community relations and all local level programs in target communities including cultural heritage, community health and safety, local business and economic development, herder livelihoods and pastureland improvement. The other manages the Compliance and Governance stream which covers monitoring and evaluation, social strategy, cooperation agreement and social investment. Each manager position is supported by a number of staff and the total CSP team currently comprises 39 members. In mid-2015 further restructuring at OT resulted in the CSP department now reporting directly to the Chief Executive Officer (CEO), rather than the Chief Operating Officer (COO) as this position no longer exists. The systems component of communities and social

¹⁴ Formerly known as the Regional Development and Social Performance department.

performance management is now coordinated between the CSP team and the HSEC department. The “C” element of HSEC is intended to help the CSP team manage their systems in a manner consistent with HSE teams.

Labour and industrial relations is managed by the Human Resources department. The Procurement department through the Contractor Engagement team manages contractors including on-boarding, and compliance with HSE and HR management requirements.

A key role for implementing the BMP is the role of Manager Environment and Biodiversity. The role of “Principal Advisor, Biodiversity Offsets” has been merged with this role. Lack of a dedicated senior biodiversity specialist has been identified as a non-conformance with item 20 in the Lender BAP. The IESC understood that there are ongoing discussions on this issue between the Lenders and OT and a resolution could be handled through the MoC process in place. The team is supported by external consultants and partners including: the Biodiversity Consultancy (TBC) and the Wildlife Conservation Society. Key interfaces are clearly identified in the OT BMP as well as responsibilities of all employees and contractors.

4.2.4 Management of Change

An internal OT Management of Change (MoC) process is described in the ESMP and is applicable for instances of significant changes in Project operations. To determine if an internal MoC is required OT evaluates a proposed change using an internal Change Assessment and Management Guideline. The results of this internal evaluation determine if implementation of a formal internal MoC is required, or if the proposed modification represents normal and/or minor modifications expected during routine operations. All employees and contractors are trained to identify what constitutes a change and how to initiate the internal MoC process.

For instances in which a material change to the ESIA is required, including modification to Project Standards or Management Plans, the Project Lenders will be notified and consulted in accordance with the requirements of Table 3 of the ESMP. This external communication is referred to in this audit report as the ESIA MoC process. Although the two described processes (i.e. OT MoC process and the ESIA MoC process) have similar terminology they are distinct in that the internal MoC process is internal to OT, whereas the ESIA MoC process includes notification and consultation with project financing stakeholders.

The ESIA MoC procedure has been implemented by the Project, including the requisite Lender Group change notification requirement. Each “Notice of Change” submitted by OT to the Lenders outlines the description of the proposed change, reason for change, assessments undertaken and any mitigation required. Per clause 30.18 of Common Terms of Agreement if no objection notice is received by OT within 20 days from the date of submission of a Notice of Change the MoC process is completed and the ESIA updated accordingly.

The Notice of Change requests submitted to the Lenders, to date, and their current approval status are listed in the table below.

Table 4.1: Project Notice of Change

Notice of Change No.	Notice of Change Title	Date of Submission to Senior E&S Representative	Status
2014-001	Update Descriptions for the Undai River Diversion Project	20 May 2014	Rejected. Undai River Workshop performed on November 2014 to address
2014-002	Update Water Quality Testing Parameters of Water Monitoring Plan	24 June 2014	Accepted
2014-003	Update Shaft 1 Waste Rock Dump Disposition	30 June 2014	Accepted
2014-004	Update Ongoing Underground Mine Waste Rock Dump Disposition	30 June 2014	Accepted
2014-005	Update Spill Response Procedure	11 August 2014	Accepted

Notice of Change No.	Notice of Change Title	Date of Submission to Senior E&S Representative	Status
2014-006	Update to Biodiversity Management Plan and Annex C Biodiversity Action Plan ESIA Chapter C6	19 July 2014	Some issues still remain to be resolved between OT and Lenders
2014-007	Update Lender BAP Commitment Regarding Barriers along OT Roads (Biodiversity Management Plan Annex C id 6 Off road traffic)	06 July 2014	Lenders approved removal of the measure to install barriers but alternative solutions to manage impacts of off-road driving and other traffic-related impacts are still under discussion.
2014-008	Update of Water Monitoring Plan	12 November 2014	Accepted
2014-008	Update to Air Quality Monitoring Plan	16 January 2015	Accepted
2015-001	Update of Resettlement Action Plan	13 May 2015 7 Sept. 2015	Accepted
2015-002	Update to Supplementary Memorandum: Oyu Tolgoi to Gashuun Sukhait Road	20 May 2015	Accepted
2015-003	Updated Mineral Waste MP	18 June 2015	Accepted
2015-004	Updated Emergency Preparedness and Response Plan	18 June 2015	Accepted
2015-005	Undai River Diversion Project	3 June 2015 22 September 2015	Accepted
2015-006	Update to Water Resources Management Plan	29 June 2015	Accepted
2015-007	Updated Hazardous Materials and Non-Mineral Waste MP	29 June 2015	Accepted
2015-008	Update to Labor MP	2 July 2015	Accepted
2015-009	Update to Land Use MP	8 July 2015	Rejected; to be resubmitted following technical review
2015-010	Update to Noise and Vibration Plan	29 July 2015	Accepted
2015-011	Update to Atmospheric Emissions Management Plan	29 July 2015	Accepted
2015-012	Update to Transport Management Plan	29 July 2015	Accepted
2015-013	Update of Water Monitoring Plan Documents Revision	21 August 2015	Accepted
2015-014	Update Contractor Management Framework	8 Sept. 2015	Accepted

Additional information on the submitted MoCs is contained in relevant sections of this report.

4.2.5 Monitoring and Reporting

Quarterly Environmental and Social Updates have been prepared as quarterly reports on the Project which summarize activities and progress on initiatives in each OMP. The quarterly report through August 2015 has been submitted by OT. These reports provide a valuable record on the focus of activities and will be useful for advance review in future audits. Additionally, the HSE Monthly Report summarizes incidents, including classification and descriptions, and addresses health, safety, environment, biodiversity, and risk

management activities completed in the previous month and planned for the succeeding month. The August 2015 monthly report has been submitted by OT.

4.3 RECOMMENDATIONS

1. Ensure levels of expertise and capacity to implement the Operational Management Plans commitments are maintained when key expats leave the Project.

5 ENVIRONMENT

5.1 WATER AND WASTEWATER MANAGEMENT

5.1.1 Project Strategy

Chapter C5 of the OT ESIA describes the potential surface and groundwater resources impacts related to construction and operation of the project. The general strategy for management of water resources, including the management of effluent streams, is described in the Operations Phase Water Resources Management Plan¹⁵ (WRMP). This management plan cross-links with other management plans that have water resources implications. Water resource related aspects of these associated management plans are briefly summarized below:

- the Community Health Safety and Security Management Plan, in relation to potential impacts on surface and groundwater resources used by herders or the local communities;
- the Emergency Preparedness Response Plan, in relation to accidental contamination of surface and groundwater resources;
- the Mineral Waste Management Plan, in relation to waste rock and tailings management and the protection of surface and groundwater;
- the Stakeholder Engagement Plan, in relation to potential impacts on surface and groundwater resources used by herders or the local communities;
- Hazardous Materials Management Plan, in relation to control of potential contamination of surface and ground waters;
- Biodiversity Management Plan, in relation to potential impacts on springs and shallow water resources utilized by wildlife and flora; and
- Influx Management Plan, in relation to water requirements for Khanbogd, and OT's support in the identification of a suitable groundwater supply for this community.

The intent of the WRMP is to ensure efficient, safe and sustainable management and protection of limited water resources by OT departments and their contractors. The WRMP encompasses all water used by OT from the point of abstraction through its loss from the system, either within the tailings management facility or elsewhere, and emphasises the need to maximize the recycling of water to minimize volumes abstracted from local aquifers. The principal implementation procedure of the WRMP is the OT Water Monitoring Plan¹⁶ (WMP). This WMP outlines the protocol for gathering and interpretation of data related to potential surface and groundwater impacts, as well as geomorphology impacts associated with erosion. Both the WRMP and WMP include information on the monitoring of potential impacts to the Undai River system. The WMP presents methodologies for data assessment including criteria to be used for development of any necessary mitigations or adaptive management changes.

Since finalization of the ESIA there have been modifications to the WRMP and WMP via implementation of the MoC procedure, as identified in the ESMP. The first proposed change was lodged by OT on May 20, 2014 (Notice of Change 2014-001) and was related to configuration of the Undai River Diversion system. The submitted Notice of Change 2014-001 was not accepted by the Lenders as at the time a detailed technical review of available information was pending. A detailed hydrogeology review took place in November 2014 resulting in more thorough understanding of the Undai River Diversion system. More information on the detailed hydrogeology review is contained in Section 5.1.2.3.

Other modifications to project planning include Notice of Change 2014-008, executed in December 2014, and Notice of Change 2015-013, executed on August 21, 2015. These submittals authorized changes to the WMP as a result of an annual efficiency reviews and recommendations incorporated following the November 2014 detailed technical water review.

Notice of Change 2015 – 006 was submitted by OT in June 2015. This Notice of Change was again related to the configuration of the Undai River Diversion and not accepted by the Lenders pending discussion during the September 2015 site visit. Following the site visit Notice of Change 2015-005 was submitted in

¹⁵ Water Resources Management Plan - Doc. No. OT-10-E10-PLN-0001 dated 01.09.2013.

¹⁶ OyuTolgoi Water Monitoring Plan – Doc. No. U25Z015e dated 09.09.2013.

late September 2015, this time reflecting recognition of the Tripartite Committee (TPC) role regarding ultimate final configuration of the Undai River Diversion. This Notice of Change 2015 – 005 has been accepted by the Lenders.

5.1.2 Observations

Findings in this section are based on a review of information provided in an electronic data room and correspondence with Environment department staff. No site visit was undertaken. Monitoring data related to water resources are compiled in internal quarterly Environmental Management Reports that are intended to inform management of any developing trends in environmental performance of the project, and help guide any resultant initiatives. Data from the quarterly Environmental Management reports are consolidated in an Annual Report on the Implementation of the Environmental Protection Plan. This latter report is submitted to the Mongolian Ministry for Environment, Green Development and Tourism. Results of the Annual report, in conjunction with the environmental protection and monitoring requirements derived from the DEIAs and ESIA, are used to guide the following year's Environmental Protection Plan and Monitoring Program.

5.1.2.1 Undai River Partial Adjustment and Protection Project

Of foremost concern to OT are impacts to the Undai River system, including those to both surface water and groundwater resources. Commitments from construction phase management plans included implementation of mitigation measures in the event impacts to Undai River subsurface alluvial flows were realized. Historic water level data reflect localized impacts to the Undai River system, partially as a result of open pit development and usage of construction camp water supply wells (now no longer in use). Potential impacts of operational phase open pit development were also evaluated in the Project ESIA and the Undai River Diversion Project was developed to re-route both ephemeral surface flow and continuous subsurface flow around the zone of influence of the open pit. Final engineering details of the Undai River Diversion Project were presented in the 2011 OT Project River Diversion Detailed Design Report – Final, as referenced in the ESIA. There were contradictions within the ESIA regarding the ultimate final design of the Undai River Diversion Project, as described later in this section.

OT has historically been unable to implement the entirety of the planned Undai River Diversion Project due to lack of a required Land Use Permit. The lack of the Land Use Permit prohibits construction activity from taking place outside of the Mine License Area (MLA). Due to this constraint OT completed construction activities within the MLA, including modifications to the Undai River Diversion Project to allow routing of surface and subsurface river flows around the open pit zone of influence (Phase 1 activities). OT has to date implemented a “Undai River Partial Adjustment and Protection Project”, which consists of the Undai River Diversion project separated into Phase 1 and Phase 2 (outside the MLA) activities. The Undai River Partial Adjustment and Protection Project was undertaken as an interim measure until such time as the full Undai River Diversion could be completed in its entirety.

Phase 1 of the Undai River Partial Adjustment and Protection Project was completed in September 2013. Components of Phase 1 include completion of upstream (northern) and downstream (southern) Undai River channel cut-off dams. These dams are designed to prevent groundwater and occasional flood waters from entering the open pit, and prevent any off-site migration of contamination. A surface flood diversion channel has been constructed to convey flood waters from the upgradient (northern) cut-off dam to an adjacent “Western Channel” alluvial system. From the Western Channel flood waters merge with the Brown Hill River which eventually rejoins the Undai River approximately 4 km downstream of the OT mine site.

In addition to the surface water diversion a groundwater diversion system has been constructed to capture groundwater flow upgradient of the northern cut-off dam, and to convey these waters via a buried pipeline to a location in the Undai River alluvial channel just within the MLA. Two groundwater intake bores upgradient of the north cut-off dam collect Undai River subsurface flow and are functioning as anticipated. The discharge location of diverted groundwater is to two outfall bores located just within the southern fence line of the MLA. The 2011 EISA describes the routing of subsurface flow to a “splitter box” from which flow would surface during the summer months to create an artificial spring. This spring was designed to have features that replicate the original BorOvoo spring. During the winter months the artificial spring was designed to freeze, forcing diverted subsurface flow to infiltrate Undai River sands and gravel at a lower level and below the depth of freezing (i.e., without surface expression).

It should be noted that the ESIA describes conflicting criteria for both the intake and outfall designs of the groundwater diversion system. Specifically, Chapter C5, Section 5.4.4 of the ESIA describes:

- “a perforated section of pipe extending across the width of the river at both the upstream and downstream ends of the [groundwater diversion] pipeline. The pipeline incorporates a self-flushing system, and the perforations comprise a series of 50 mm diameter inlets instead of slots to provide adequate hydraulic capacity”; and
- “a gravel zone with a cobble core (nominal 150 mm) surrounding the perforated section of pipe; the zone would have a permeability substantially greater than the 10^{-4} m/s of the alluvium”.

However, the same section also describes the aforementioned “splitter box” design, which consists of a vertical outfall bore instead of the horizontal configuration described above.

Similar contradictory language is provided in Section A4.11.2 of the ESIA which describes:

- “The inflows and outflows [of the groundwater diversion pipeline] will be through a perforated pipe extending across the width of the river with 50 mm diameter inlets. This will have a gravel packer with a higher hydraulic conductivity than the alluvial sediments and the inlet will be set into the base of the sediments to ensure it captures all flow in the sediment. The gravel pack will be encased in a filter to minimise sediment load in the pipe.”

It is important to note that the ESIA and the *OT Project River Diversion Detailed Design Report* were both completed in 2011, prior to development of a full understanding of the nature of the Undai River alluvial system and in particular the behaviour of the groundwater flow regime. A more precise understanding of the system was presented in a 2013 report entitled *Oyu Tolgoi: Hydrogeological Conditions Near the Mine Site*. Two key findings from this report are as follows:

- prior to completion of any Undai River Diversion works alluvial groundwater flow between the upstream (northern) and downstream (southern) Undai River channel cut-off dams naturally “leaked” or recharged the weathered bedrock unit that underlies the Undai River shallow alluvium unit. This connectivity between units is principally constrained to an area of the Undai River channel located near the active open pit, between the mapped Western BAT and Solongo Faults; and
- the thickness of the Undai River channel alluvial unit decreases from approximately 5 – 6 meters at the location of the northern cut-off dam location to approximately 1 - 2 meters immediately below the southern cut-off dam location. This effectively decreases the capacity of the alluvial unit below the southern cut-off dam to receive diverted groundwater and return it to the subsurface, as described in the ESIA.

Within the MLA much of the groundwater flow in the Undai River system historically “leaked” into the underlying weathered bedrock unit in the vicinity of the open pit, and therefore did not continue to flow down gradient in alluvial sediments. Current seepage to the open pit is derived primarily from remnant storage in the underlying weathered bedrock unit. Leakage from alluvial sediments, estimated at less than 1 l/s, will continue to diminish as the alluvial sediments from the reach of the river between the northern and southern cut-off dam locations have been isolated in the overall Undai River system and therefore do not receive upgradient recharge. The current Undai River Diversion Partial Adjustment and Protection Project should theoretically result in an increase in the volume of alluvial flow available south of the MLA as this flow is now not subject to leakage in the vicinity of Western BAT and Solongo Faults.

5.1.2.2 Current Undai River Partial Adjustment and Protection Project System Performance

At the groundwater discharge location the two outfall bores consist of the intended injection well (the “Undai Diversion Discharge Well”) and an adjacent well used for dewatering purposes during construction of the southern cut-off dam. The Undai Diversion Discharge Well was intended to be the sole source of recharge of diverted groundwater back to the subsurface. Instead some flow from the subsurface diversion pipeline has historically migrated up the permeable gravel packs of Undai Diversion Discharge Well and adjacent dewatering well resulting in surface flow. This is likely due to a combination of several factors:

- the presence of a thin unsaturated zone immediately below the southern cut-off dam, ranging from only 0.96 to 1.2 m below ground surface (reflecting a limited storage capacity);
- permeability of receiving alluvial sediments downgradient of the MLA; and

- the likelihood that the current rate of diverted groundwater flow at the outfall location exceeds the historical rate of groundwater flow in the alluvial channel of the Undai River at this same location.

An in-line flow meter was installed in the groundwater diversion pipeline in May 2014. Data obtained since that time is provided in Figure 5.1. These data provide an opportunity to assess performance of the groundwater diversion system as a function of the rate of diverted groundwater flow. During the relatively dry year of 2014 and first half of 2015 there was a decrease in available groundwater in the Undai River system, resulting in a declining trend in diverted groundwater flow to below 0.5 L/s. As a result of summer 2015 floods the Undai River system has been significantly recharged, leading to diverted groundwater flow rates of up to approximately 2.2 L/s.

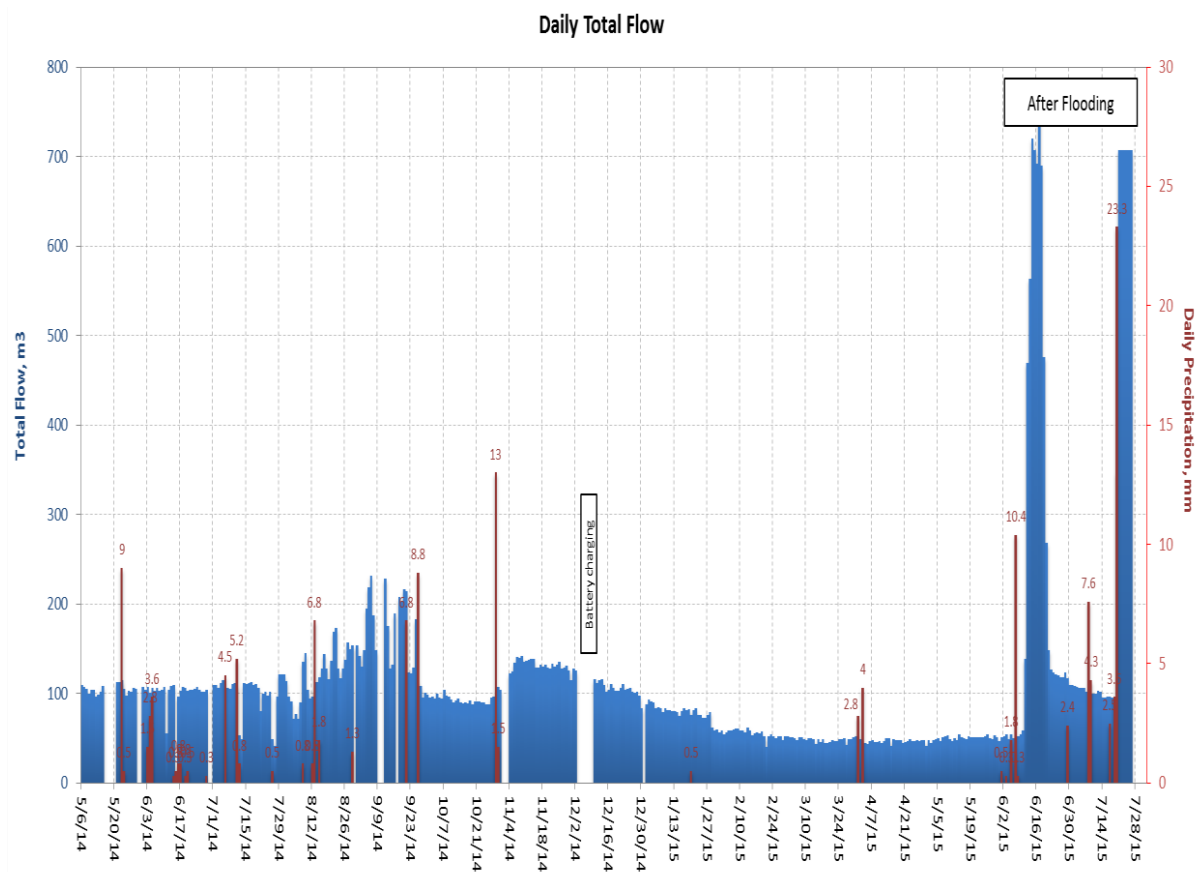


Figure 5.1: Rates of diverted Groundwater flow since May 2014. Note recent Flood Recharge

Since September 2013 OT has monitored, via a constructed V-notch, the rate of diverted groundwater flow returned as surface flow at the outfall bore location (Figure 5.2). This rate fluctuates as a function of climatic conditions. During winter months water discharged to the ground surface freezes forming an expanding ice sheet. In May 2015 there was no surface flow as there was insufficient flow in the diversion pipeline (less than 0.5 L/s). This is consistent with past observations that some percentage of diverted groundwater flow is returned to the subsurface as originally intended, with the balance of diverted groundwater manifesting as surface flow.

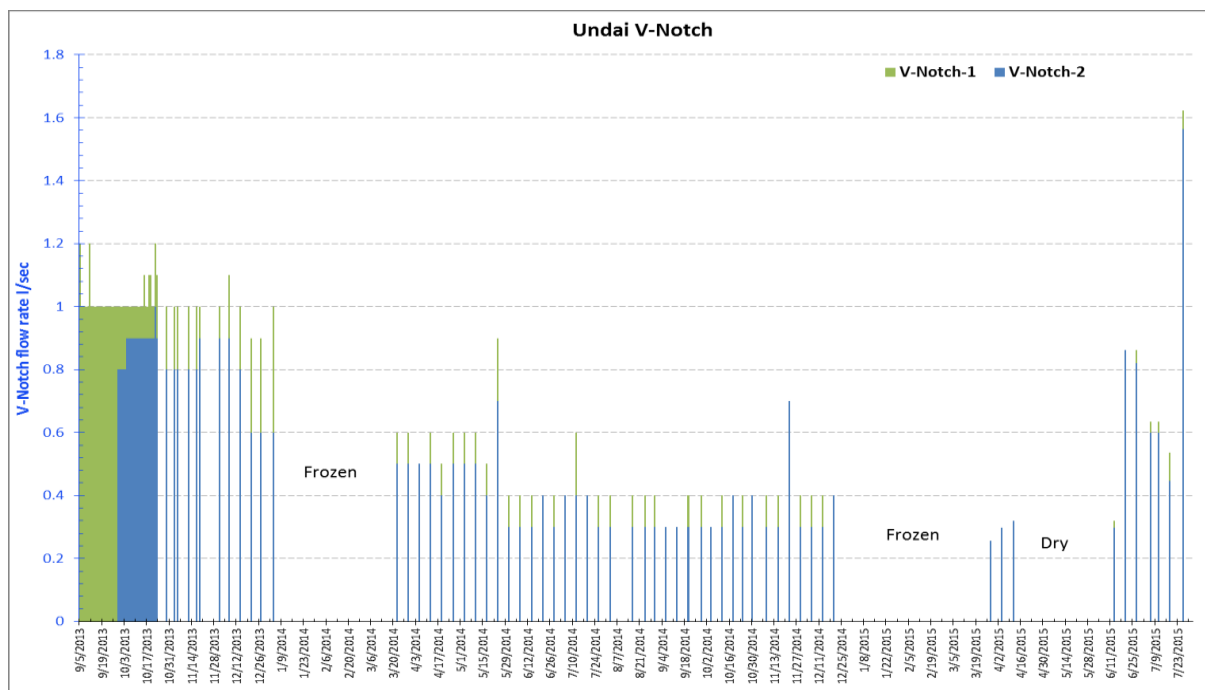


Figure 5.2: Surface Flow Measurements as Recorded at the Constructed V-Notch

Although not intended the surface flow at the MLA fence line has created an artificial spring that is used by wildlife as well as herders and their livestock. As of July 2015 the spring had a surface area of approximately 1,300 m² (Figures 5.3 and 5.4). Due to recent flood events the rate of diverted groundwater manifesting as surface flow has increased to up to an average of 1.6 L/s. This has resulted in a recent increasing trend in the area of the spring. During winter months the surface area of the ice sheet is a function of groundwater flow rates in the Undai River system. For historical context the 2011 *OT Project River Diversion Detailed Design Report – Final* estimated the surface area of the historic BorOvoo Spring at approximately 40 m².



Figure 5.3: July 2015 Extent of created Spring below the MLA

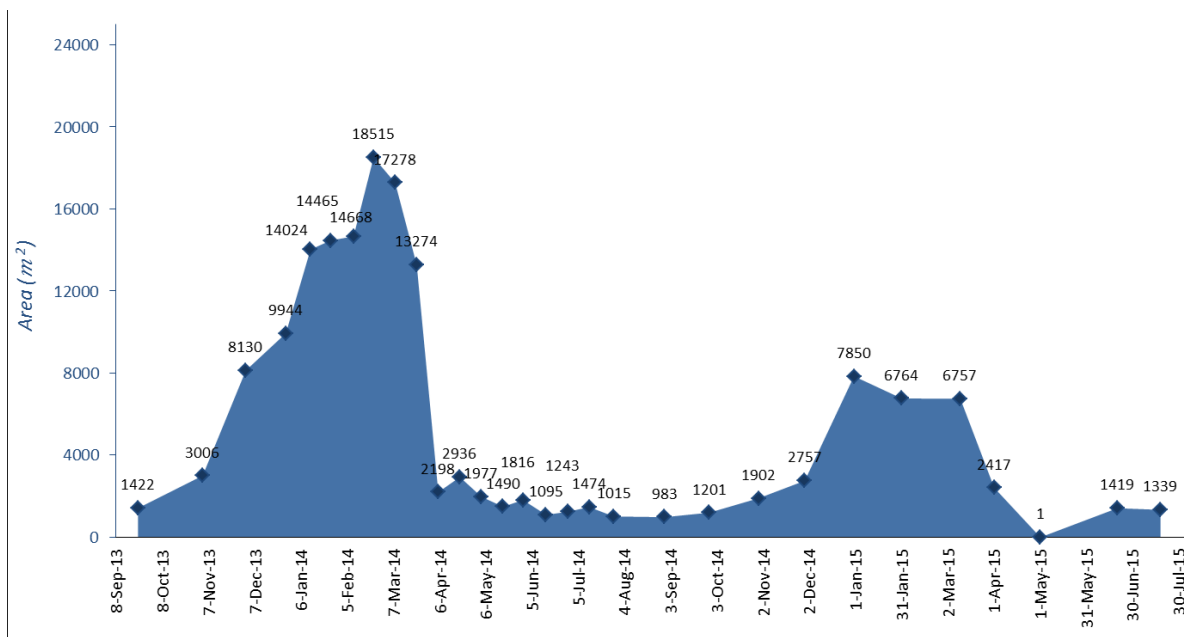


Figure 5.4: Surface Area over time of Spring created Below the MLA.

Quarterly reviews are undertaken by the Environmental department to evaluate the monthly monitoring data collected with respect to performance of the Undai River Partial Adjustment and Protection Project. A monitoring point in the Undai River channel is located approximately 400 meters to the south of the southern cut-off dam (OTMB11-45). Available monitoring data from OTMB 11-45 is presented in Figure 5.5 (from May 2012 – current).

A sharp increase in water level is observed beginning in April 2013 at the initiation of construction works. At that time subsurface flow from the Undai River alluvial channel was diverted up-gradient of the northern cut-off dam, routed through a subterranean pipeline, and ultimately discharged through an overland hose to the Undai River alluvial surface at a location just south of the MLA. Initial dewatering discharge rates during construction were approximately 6 l/s, peaking at approximately 54 l/s in May, 2013.

Spring 2014 and 2015 increases in OTMB 11-45 water levels reflect thawing of surface ice which creates a temporary slug of recharge to the alluvial aquifer. Data from post-construction monitoring reflect stabilization of groundwater levels at approximately 1 meter below ground surface. Recent flood events and resultant increased groundwater diversion flow rates may lead to a near-term rise in OTMB 11-45 groundwater levels.

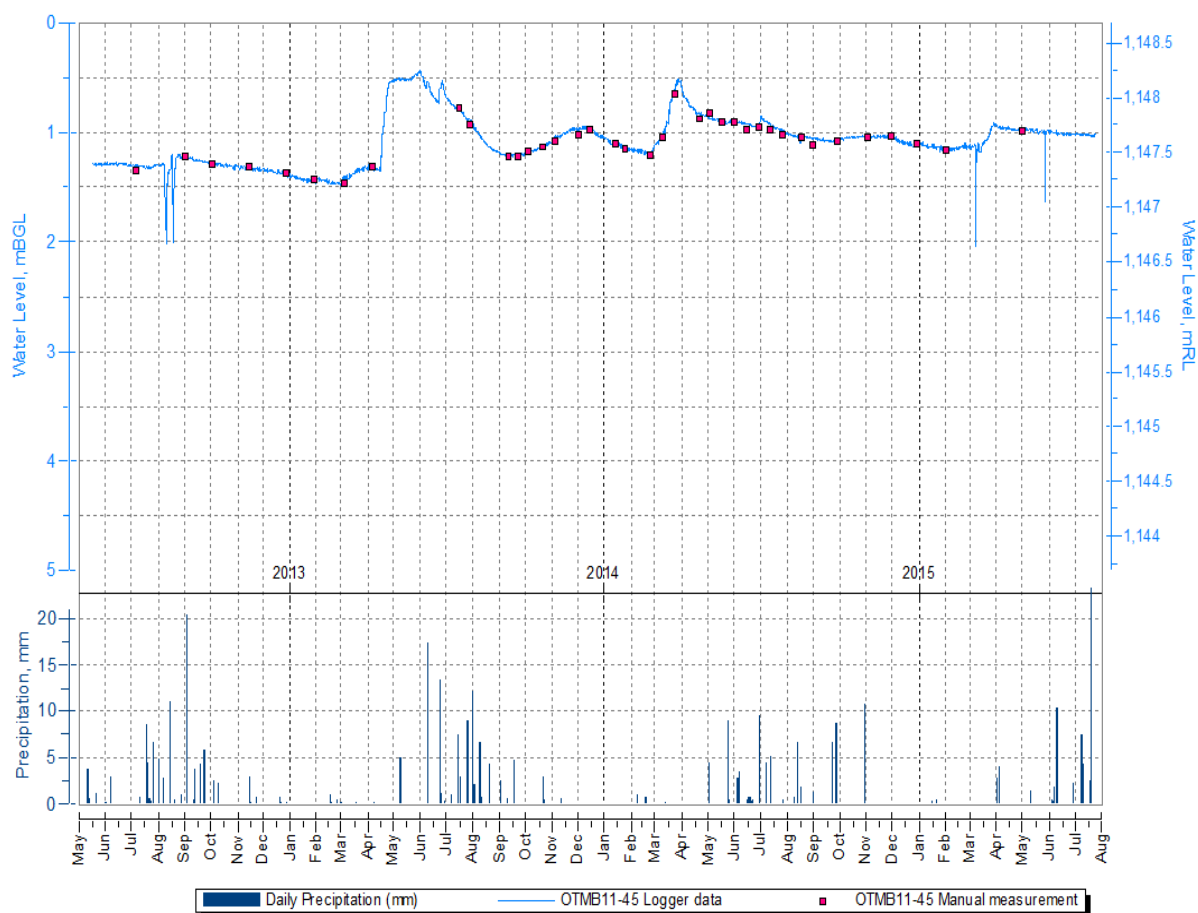


Figure 5.5: OMB11-45 - Water Level Data (May, 2012 – August, 2015)

The next established monitoring point down gradient of OMB 11-45 is the Khuhk Khad herder well, which is about 1.4 deep and located approximately 4 km south of the MLA. Available water level depth data for the herder well are shown in Figure 5.6. The well is not currently in use and water level has increased sharply as a result of this decreasing use and flood recharge.

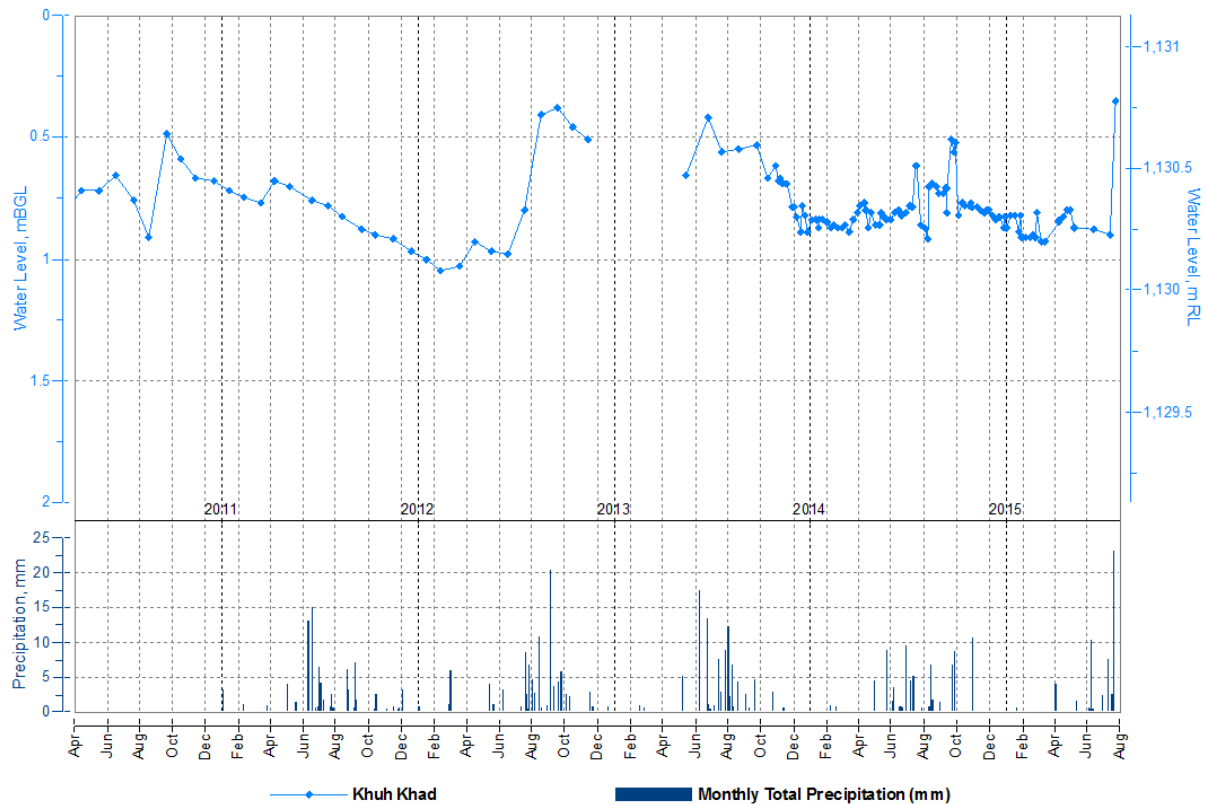


Figure 5.6: Water Level Data from KhuhKhad (May, 2012 – February, 2015)

Beyond the Khuh Khad herder well the next shallow alluvial monitoring points in the Undai River channel are OTMB 11-22/OTMB 11-23, both located approximately 5 km south of the MLA. These data points are located below the confluence of the Undai River with the Brown Hill River and are therefore subject to recharge from regional flood events. Data from the OTMB11-22 well, which exhibits a similar response trend to OTMB11-23, are shown on Figure 5.7.

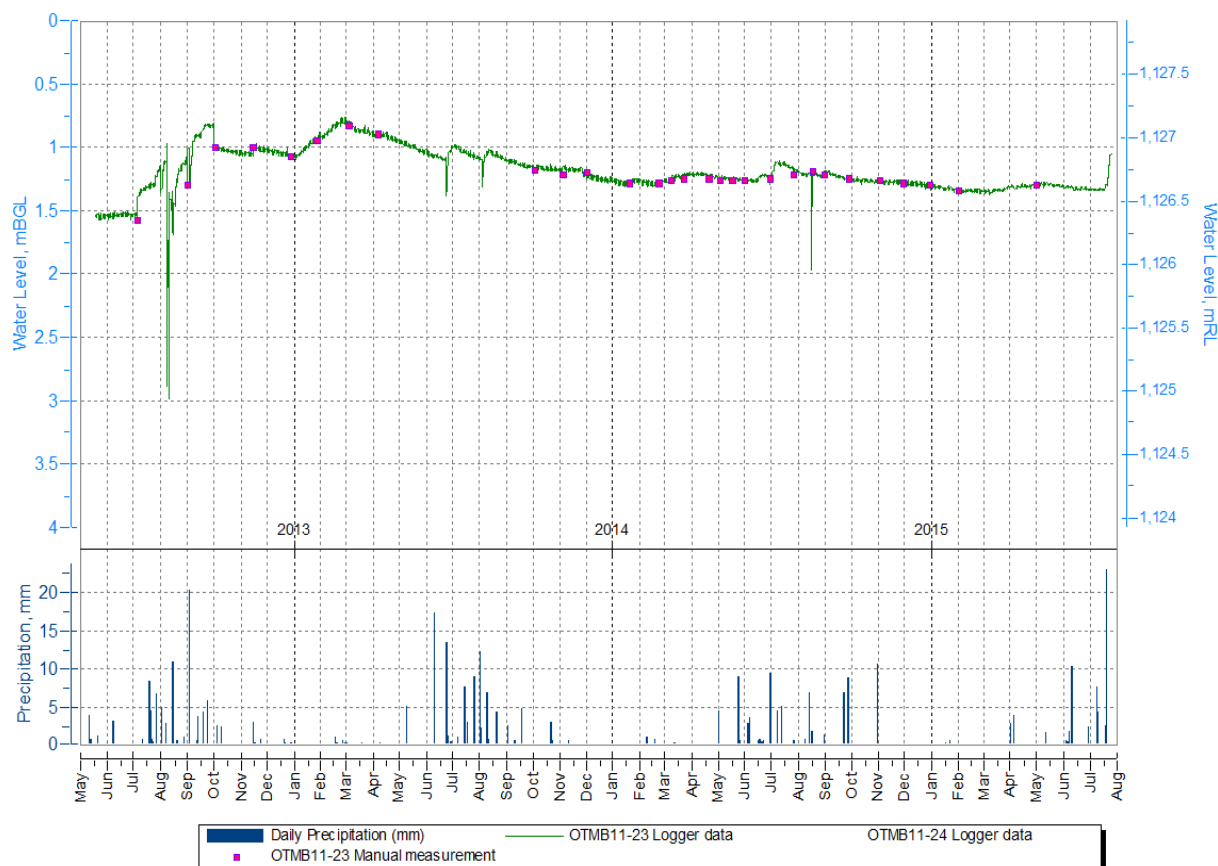


Figure 5.7: Water Level Data from OTMB 11-22 (May, 2012 – February, 2015)

OT has implemented monthly water quality monitoring at the surface spring created south of the MLA. Sampling results demonstrate general conformance with the Mongolian Drinking Water Standards (MNS 900-2010). Table 5.1 shows Total Dissolved Solid (TDS) and Electrical Conductivity (EC) values that are lower than those associated with the original Bor Ovoo spring, suggesting overall improvement in surface water quality.

Table 5.1: General WaterQuality of Original BorOvoo Spring Relative to Current Interim Spring

Parameter	Original BorOvoo spring	Current Interim Spring South of the MLA ⁽¹⁾
Total Disolved Solids (TDS) – in mg/L	470 ⁽²⁾	250
Electrical Conductivity (EC) – in mS/cm	1.5	0.4

⁽¹⁾ from 2015 sampling

⁽²⁾ Based on two laboratory results; possibly historically higher based on typical TDS/EC correlation factors in mine site groundwater and surface waters.

The pH of the current spring increases down gradient from the V-notch discharge point to the point of infiltration. Sampling of pH values through 2015 show an increase from 8.16 at the discharge point to a maximum of 9.74 at the point of infiltration. Total Dissolved Solid and EC values also showed an increase of approximately 10 percent. This geochemical behavior likely reflects significant use of the spring by livestock, especially Bactrian camel, as well as endemic species. In addition although evaporative losses during summer months are relatively low this does lead to some increase in salinity. However water quality is still higher than that of the original Bor Ovoo spring and within Mongolian Drinking Water Standards. The applicable drinking water standard (MNS 900-2010) for TDS is 1,000 mg/L, or approximately four times the current TDS concentration.

5.1.2.3 Current Undai River Partial Adjustment and Protection Project Impact Analysis

Chapter C5, Section 5.4.2 of the ESIA contains the following language:

- *“The overall objective of the design of the diversion is to minimise and manage the impact of the diversion by ensuring that the diverted flows are returned efficiently to the river bed downstream so as to maintain surface and subsurface water flows within the local ephemeral watercourse network. In particular the design of the subsurface flow ensures that there are no groundwater losses through evaporation caused by the diversion between the inlet and replacement spring.”*

The Undai River Diversion Partial Adjustment and Protection Project has been in operation for approximately two years. Due to the uncertain status of the necessary Land Use Permit the MoC procedure, as set out in the Environmental and Social Management Plan of the ESIA, was implemented by OT on May 20, 2014 (Notice of Change 2014-001). The MoC procedure was initiated by OT to (a) address inconsistencies in the ESIA with respect to design and construction of the full Undai River Diversion; and (b) address non-conformance of the Undai River Partial Adjustment and Protection Project with commitments in the ESIA (relating to works described to occur outside of the MLA).

In response on June 6, 2014 the Lenders issued a Category 1 Objection Notice to the Notice of Change 2014-001 based on technical concerns related to conformance of the existing Undai River Partial Adjustment and Protection Project with commitments of the ESIA and associated Operational Management Plans.

In November 2014 a workshop was held at site for a detailed review of water monitoring information. Technical representatives were present from OT, the Lenders, and the IESC. In particular information related to the volume of groundwater currently available in the Undai River system relative to pre-OT construction activities was critically reviewed, in recognition of the fact that the Undai River groundwater system is a very sensitive environmental resource.

The following key conclusions were established following the detailed water review:

- the groundwater diversion pipeline has consistently delivered approximately 1L/s to the outfall bore, with ~2/3 of this flow being recharged to alluvial river sediments and ~1/3 of the flow discharged to the surface;
- the Undai alluvial aquifer is being recharged at and immediately down gradient from the outfall bore. Depth to water measurements immediately down gradient of the outfall bore demonstrates that sediments are saturated from ground surface to within 1m across the active river channel;
- to date the surface area of the created spring is generally larger and more consistent than the original Bor Ovoo spring, as indicated by historical records (available since Jan 2008); and
- the created spring has lower salinity than the original Bor Ovoo spring, with minimal evapo-concentration occurring along the surface flow path.

Additional monitoring efforts were recommended to allow more detailed assessment of the Undai River Partial Adjustment and Protection Project performance. The recommendations and their respective status of implementation are provided in Table 5.2.

Table 5.2: November 2014 Detailed Water Review Recommendations and Completion Status

Recommendation	Completion Status
Install new water level monitoring points, covering the full width of the profile of the alluvial strip aquifer immediately down-gradient of the outfall bore and in the vicinity of monitoring bore OTMB11-45. Depth to bedrock to be established at each monitoring point across the profile to enable definition of alluvial thickness.	A total of 15 drive point piezometers installed in July 2015. Results show approximate average depth to bedrock (alluvial thickness) of 2.0 meters.
Install and monitor two additional alluvial monitoring bores between the southern cut-off dam and Khukh Khad spring.	Two additional alluvial monitoring bores installed in July 2015 (OTMB15-75 and OTMB15-76).

Recommendation	Completion Status
Installation of drive point or equivalent water level monitoring bores immediately above the confluence of the Undai and Brown Hill Rivers (one each on each braid of the Undai River at this location).	Two additional drive points installed in the “west stream” and “east stream” braids of Undai River (DP-16 and DP-17).
Include Budagt Spring in the spring monitoring program. In addition the spring monitoring procedure to be modified to include depth to water when surface water not visibly present.	Completed. Updated Standard Work Procedure including monitoring of Budagt spring.
Continue monthly water quality laboratory analysis at the outfall bore, and monthly field water quality tests to include the outfall bore location and the end point of infiltration when not frozen.	Completed. Undai River Diversion Reports contain results of water quality sampling.
Quarterly water quality laboratory analysis of OTMB11-45 and new monitoring points as described above.	Completed. Information provided in quarterly Undai River Diversion Reports.
Quarterly field parameters and annual laboratory analysis of water quality at Budagt, Khukh Khad spring, and Khukh Khad herder well.	Modifications incorporated into the updated Water Quality Monitoring Plan and reported on in Undai River Diversion Reports.

The ultimate success of the Undai River Diversion Partial Adjustment and Protection Project (and the ultimate fully-constructed Undai River Diversion) will be assessed based on the long-term viability of springs located down gradient of the OT site (Kkukh Khad, Budagt, Buural and Maanit), and long-term depth to groundwater data provided from Undai River monitoring points.

The implemented monitoring improvements are intended to ensure protection of Undai River groundwater resources down gradient from the OT site. In particular the monitoring improvements allow better assessment of the 4 km stretch of the Undai River south of the MLA that no longer receives flood recharge (i.e., between the MLA and the confluence of the Undai River channel and Brown Hill River). Due to the low groundwater velocities south of the MLA (estimated at approximately 30 m/year) it would likely take decades for impact, if any, to be realized at a down gradient environmental receptor. The most likely impacted receptor, Budagt Spring, is located above the confluence with the Brown Hill River and therefore does not receive any surface recharge with the exception of direct precipitation.

In December 2014 OT and the Elected Herder Team (EHT) agreed to transition the IFC’s Compliance Advisory Ombudsman (CAO) facilitated meetings into a permanent dialogue, inclusive of local stakeholders, to further the topic of final Undai River Diversion configuration. Stakeholders include OT, the EHT, and the Khanbogd government. Collectively these entities constitute the Tripartite Committee (TPC). The TPC has 15 members and first officially met in February 2015.

In September 2015 OT submitted Notice of Change 2015-005 recognizing the role of the TPC to develop the finalized Undai River Diversion project. Based on ongoing consultation this finalized project may reflect the current configuration or a different design. Notice of Change 2015-005 acknowledges that the current configuration maintains continuity of groundwater flow and is serving as a valid interim mitigation. Once the TPC has developed the final Undai River Diversion Project a subsequent Notice of Change will be filed by OT seeking approval of the decision. It is also acknowledged that any accepted final design will meet the commitments of the ESIA and requirements of the WRMP.

See also Section 5.9.3 for discussion of biodiversity and ecosystem services implications of the created spring, and Section 6.4.2.1 for discussion regarding engagement with stakeholders in relation to Undai River diversion works.

5.1.2.4 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 the development of a sustainable model for water use in the region. OT participates in a number of initiatives to further this objective and recent undertakings are briefly described below:

- 2030 Water Resources Group. OT is a member of the 2030 Water Resources Group Steering Committee, and by direction of the Mongolian Ministry of Environment and Green Development (MEGD) is supporting the 2030 Water Resources Group effort on several hydrologic and economic initiatives in the Nyala – Shivee Ovoo, Ulannbaatar and Tavantologoi regions;
- IFC South Gobi Water, Mining and Communities Industry Roundtable. OT participated in the South Gobi Water, Mining and Communities Industry Roundtable March 2015 event, including a March 24 – 28th site visit to OT. OT also participated in the June 2015 meeting of the Roundtable;
- Annual Environmental Performance Review. In January 2015 OT held an annual environmental performance review meeting in Dalanzadgad (DZ) with officials of the Province of South Gobi. OT also provided water monitoring training and discussion in DZ in July 2015;
- Cooperation Agreement. OT recently formalized the Cooperation Agreement with the Province of South Gobi and local Partner *soums* (publicly announced April 22, 2015); Mongolia Ministry of Environment and Green Development. OT hosted both the deputy Prime Minister and deputy Environmental Minister at a meeting held at the OT site on March 26, 2015; and
- OT Open Day Event. In July 2015 OT held an open event in KB to describe environmental and water monitoring activities and to receive and answer any associated questions.

5.1.2.5 OT Water Usage and Conservation

The OT Project is permitted to withdrawal water from 28 production wells installed in the regional Gunii Hooloi aquifer, which is brackish, at a rate of 870 L/s (approximately 75,000 m³/day). Total raw groundwater extraction by OT in year 2014 was 13,386,016 m³, or approximately 36,674 m³/day. Almost all of this water is sourced from the Gunii Hooloi aquifer. Target raw water usage rate is 696 L/s and the project has consistently achieved this target rate since the beginning of open pit operations. Average monthly raw water consumption rate in 2014 was 427 L/s although consumption rates vary throughout the year primarily due to freezing and thawing cycles at the TSF. Maximum monthly water raw water usage in 2015 was 565 L/s when much of available water at the TSF was locked up as ice. By far the biggest use of water by the Project is within the concentrator circuit at which water recovery efforts are undertaken to recycle a large percentage of water used.

In 2014 OT achieved an 84.73% water recycling efficiency rate which is slightly higher than the 2013 recycling efficiency rate of 83.31%. Both of these values, as well as 2015 monthly data, are above the 80% threshold minimum criteria recycling rate included as a key performance indicator (WR-KPI-03). Ongoing success has been realized in optimizing water management at the TSF, with improvement in tailings solids density from 55% to approximately 61%, and an increase in tailings beach slope from 0.3 to 0.6 percent.

In 2014 OT site-wide water consumption was 480 L/ton of ore produced, lower than the 561 L/ton of ore realized in 2013. These values are below the target of 547 L/ton-ore (WR-KPI-04), and less than half of the global average usage rate of 1,220 L/ton-ore. Recent improvements in this important metric are primarily related to more effective beaching inside the TSF and modifications in the process recycling circuit.

5.1.2.6 Water Monitoring

In December 2014 and again in August 2015 the project Water Monitoring Plan was updated via implementation of Notice of Changes 2014-008 and 2015-013. The updates were the result of annual reviews undertaken by OT as well as the installation of additional monitoring points as recommended in the November 2014 detailed water review workshop. Currently the water monitoring program encompasses a total of 478 points, including 292 boreholes, 91 surface water measurement locations, 84 herder wells, and 11 natural springs. These monitoring points include locations in the Khanbogd, Manlai and Tsogtsetsii soums of Umnugobi aimag. Within this program there a total of 109 water monitoring points along the Undai River system, including 77 boreholes, 26 herder wells and 6 springs.

No direct or indirect OT Project impacts to herder wells or natural springs have been identified in current Environment department analysis, although the department is continuously monitoring water level data to identify any possible correlation. Any prolonged water level decrease or change to water quality at a herder well triggers an OT Hydrogeological Assessment, including a physical investigation and organization of a meeting with the well owner. OT has committed to taking corrective actions should any project impacts to a herder well be realized. OT has recently completed three hydrological assessments for

locations included in the 15 km potential impact/buffer zone around the Gunii Hooloi deep aquifer (Orion Buuts herder well, exploration bore GH 1x1, and Ovoo Tsav deep well). These assessments were used in the community well restoration program to ensure no negative project impacts to existing water users, and to consider best final disposition for relic exploration bores.

Beginning in 2013 some herders have expressed concern over the condition of three shallow herder wells installed in the ephemeral Khaliv River alluvial system, which passes through the south western corner of the Gunii Hooloi aquifer. Herder wells in the Khaliv River alluvium are located upgradient of the portion of the Khaliv River that crosses the Gunii Hooloi borefield. These herder wells are highly susceptible to climatic variation as the alluvial sediments in the upper Khaliv River are thin and the drainage basin much more limited in aerial extent than other systems such as the Undai River basin. After a Hydrogeologic Assessment of the data associated with the Dund Khaliv herder well it was determined that observed water level variation is a factor of herder well use and recent dry conditions in the region. Wells in this area historically been sensitive to even moderately dry climactic conditions. As a form of assistance OT has historically delivered water to herders in this region.

The concern was investigated by the CSR team and installation of a deeper more reliable well was selected by the herders as a preferred long-term solution. This well was completed in March 2015 under the Herder Well Restoration Program. Depth to water is approximately 14 m below ground level, and overall quantity and quality are adequate and provide a stable supply to local herder families. The Dund Khaliv deep well installation is located 1.4 km from the nearest existing hand dug well; this location was identified as the most likely to have water based on a geophysical survey.



Figure 5.8: OT Staff with Herder at the recently completed Dund Khaliv Deep Well (winter, 2015)

Currently 31 herder families are involved in the Participatory Monitoring Program encompassing a total of 41 wells. Data collected through this program is evaluated in conjunction with data collected by the project, and meetings are arranged with participating herders to review and discuss the joint OT and Participatory Monitoring Program sampling results. Over the past three years the project has rehabilitated approximately 60 herder wells with plans to rehabilitate an additional 29 wells identified as priority locations in community meetings. These include wells in the Khanbogd, Bayan-Ovoo and Manlai soums. Results of the rehabilitation efforts are communicated to the public in written disclosure materials, and IESC Audit Team discussions with herders and government officials indicate positive stakeholder feedback (see Section 6.3.2.3 for more details).

The monitoring of flood events, to the extent possible, is an important part of the Water Monitoring Plan. The OT Project has installed eight flood gauge posts with automated water level measurement equipment within the MLA, outside of the MLA along the Undai River channel, and in the GunniHooloi region. Fixed concrete flood monitoring reference points have been installed at these locations. A Standard Work Procedure has been developed to ensure consistent measurements across flood events. The Standard Work

Procedure includes methodologies for the recording of flood velocities via use of floats tethered to ropes, and corresponding measurement of distance travelled over time.

Since completion of the Undai River Partial Adjustment and Protection Project (summer 2013) there had not been a significant flood event until the summer of 2015. However rainstorms at site in June and July of 2015, including an intense event on July 20, resulted in almost 60 mm of precipitation. This later event created flooding in the Undai River of sufficient magnitude to be routed to the surface diversion channel. As a result of the wet summer a pond of approximately 5 million liters in volume was created behind the northern cutoff dam. Through August this pond slowly drained via the groundwater diversion pipeline at a rate of approximately 1.8 L/s. OT is considering some modifications to the northern cut-off dam, such as additional fill upstream of the cutoff dam, that would result in smaller ponding during flood events.

Section 3.4.3 of the WMP describes the procedures that will be used to monitor natural springs that occur along the Undai River channel, and down gradient of the MLA. In June 2014 OT began implementation of a "Conduct Spring Photograph" Standard Work Procedure, stipulating monthly photographs from a fixed reference point. The Standard Work Procedure was updated in January, 2015 and now includes the Budagt Spring down gradient of the new Bor Ovoo spring and Undai River Partial Adjustment and Protection Project.

Within the springs deepest water level depths are measured using a linear ruler as the installation of a fixed reference within a spring has been discouraged by community members. On a monthly basis OT collects an estimation of spring surface area by measuring maximum length and width, as the morphology and presence of standing water and saturated sediments is highly variable. This in turn makes precise measurements difficult; however the collected data, including monthly photographs, does allow interpretation as to if a spring over time is growing or diminishing. Intense rainstorms in Q2 and Q3 of 2015 were a significant recharge event to the Undai River system. Some springs that have been dry for a long period of time now have standing water (e.g., Budagt and Khukh Khad).

5.1.2.7 Shallow and Deep Aquifer Interconnection

The implementation of mitigation measures in the event of aquifer interconnectivity is a requirement of the Water Resources Management Plan (WR-04). There is recognized cascading behaviour at a collection of exploration boreholes located in mainly in the vicinity of the Gunii Hooloi regional aquifer. Due to degradation over time of installed steel stack pipes and gravel packs following extensive community consultation regarding the method of abandonment to be employed three of the known six cascading boreholes were successfully sealed in 2013 (sealed boreholes include GHW5x1, GHW6x1, and GHEB-02). Boreholes that exhibit cascading behaviour and which remain to be sealed include GHW14x1, GHEB-08, and CGHW4x6.

In August 2014 OT contracted a camera survey to investigate the possibility of additional hydrogeologic communication in Gunii Hooloi region exploration bores. This effort was undertaken at the request of a formal Working Group established by the Khanbogd soum Governor. There are approximately 300 exploration bores in the Gunii Hooloi region, 37 of which have similar construction specifications as the recognized cascading boreholes. These 37 bores with similar construction specifications were included in the camera survey. As a result two additional cascading bores were identified, bringing the total to five outside of the MLA. These two wells include GGW 6 (cascading at 34.9 m below ground surface (bgs), water level at 35.03 m) and GGW 19 (cascading at 12 m, water level at 35.03 m).

Results of this study were submitted to the Khanbogd soum Governor in September 2014. As discussed below a Scope of Work has been developed by the project to abandon all potentially interconnecting bores both within and outside of the MLA, or otherwise convert them to productive use (e.g. for herder usage or use as piezometers). In December 2014 a request was made to OT for the boring logs of all wells included in the SOW and these boring logs were provided. In May 2015 OT submitted a formal letter again seeking to address the interconnecting bores with no subsequent decision issued. Most recently the Khanbogd soum Governor has approached the regional water Basin Administration for assistance. OT will abandon or convert all potentially interconnecting bores when governmental approval is issued.

5.1.2.8 Hydrogeology Studies

A 2013 groundwater model update for the Gunii Hooloi borefield was completed in May, 2014 (*Gunii Hooloi Aquifer Update Assessment*). The model predicts long-term aquifer impacts over a 40-year period.

Early drawdown data are roughly equal to or better than model predictions, with approximately 8 m of drawdown in the high-transmissivity northeastern section of the aquifer, and approximately 2 m of drawdown in the lower-transmissivity southwestern section. The Gunii Hooloi aquifer assessment and model will be updated in 2016.

In June 2014 an *Open Pit Hydrogeology and Pit Slope Depressurization Update* was completed as follow on to the 2011 report: *Open Pit Hydrogeology and Pit Depressurization Feasibility Study*. The more recent study updates the conceptual model for the open pit and recommends in-pit vibrating wire piezometer (VWMP) installation to refine understanding of pit inflows. These VWPs have been installed in alignment with the recommendations. Other recommendations, such as the installation of vertical and horizontal dewatering wells, have not been implemented as they have not been demonstrated to be of necessary geotechnical benefit.

Regarding development of a sustainable water supply for Khanbogd soum - in December 2013 the *Groundwater Model and Borefield Development Scenarios – Khanbogd Basin* report was finalized. This water reserve report provided the hydrogeology data and groundwater model to be used to guide borefield installation. Using this information four production wells were installed by OT. A water reserve report and an application were then submitted to the State Water Reserve Council, the entity that provides formal approval for long-term water supply. The application was reviewed in July 2015 and at that time it was verbally shared that 34 L/s of supply would be approved. However when the formal approval was released it authorized only 15 L/s of production. OT is working with the State Water Reserve Council to resolve the discrepancy.

Following this approval distribution infrastructure will require completion under a separate work stream (i.e., construction of the Khanbogd potable water distribution network will not be undertaken by OT). Groundwater in the area is naturally elevated in molybdenum, boron and arsenic. Mixing or some other form of abatement may be necessary to render provided water suitable for long-term potable consumption.

In May 2014 OT issued a SOW for an over-arching *Hydrogeology Consultancy Services* which was awarded in November 2014. The contract encompasses a number of distinct ongoing tasks including:

- general hydrogeological support and assistance, as requested;
- upgrading of the OT regional hydrogeological model;
- assistance in implementation of the WRMP, including database management, QA/QC, training and reporting requirements;
- supervision of supplementary monitoring bore installation; and
- annual review of hydrogeologic monitoring results.

Also in May 2014 a separate *Additional Water Monitoring Bore Installation – Gunii Hooloi and Oyu Tolgoi* SOW was developed for the drilling and installation of supplementary monitoring bores at locations described in the WRMP. It is estimated that a total of 37 monitoring points will be installed in the Gunii Hooloi region, within the MLA, and within the OT active mining operations footprint (i.e., at the open pit, in drainage channels, and upstream/downstream of the TSF). Supplementary monitoring bore installation began in May of 2015 with 14 monitoring points completed before work was halted due to drilling safety concerns. Remaining monitoring points will be installed in 2016 as part of the second phase of this work.

An internal *Erosion Monitoring Report* was prepared by OT in June 2014 to address WRMP erosion and sedimentation monitoring requirements. The report describes erosion/sedimentation monitoring at the following locations:

- Undai River including the Western channel;
- Undai River springs located downgradient of the MLA including Khukhkhad, Bural and Maanit;
- road crossings of drainage channels located within the MLA; and
- road crossings of drainage channels located outside of the MLA including the road to KB (OT – KB road), along the water supply pipeline road from GuniiHooloi, and the OT – GS road.

Over 470 photographs were taken at 100 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. Over 200 photographs were taken at road crossings of drainage channels located outside of the MLA (9, 46 and 4 crossings along the OT – KB, OT – GS, and GuniiHooloi water supply

pipeline roads, respectively). As these are the first photographs taken for the purpose of documenting erosion and sedimentation over time they will be considered baseline information to track any future erosion impacts. At the time of this audit the 2015 *Erosion Monitoring Report* was being updated and will be available for the next audit. The *Erosion Monitoring Report* is updated on an annual basis.

5.1.2.9 Potable Water and Treated Effluent

OT has committed to meeting Project Standards for both potable water and for treated effluent. These Project Standards are identified in Tables A1 and A2, respectively, of Annex A of the Water Management Plan. An ESIA MoC was submitted on June 24, 2014 to update the water quality testing parameters of the WRMP based on capabilities of Mongolian laboratories (Notice of Change 2014-002). The parameters that are not currently sampled for are not considered key indicators and the MoC was approved.

Most recent potable water and treated effluent sampling results indicate full conformance with identified Project standards. No pathogenic bacteria were detected in scheduled effluent testing. Improvements have been made at the wastewater treatment plant system to allow conformance with Australian Class A treatment standards (e.g., installation of new chlorine dosage equipment). OT recycles treated effluent in the process circuit, and a limited quantity of treated effluent is used for dust suppression in warmer months. Additional chlorine dosage equipment has been installed at the concentrator plant to ensure sanitary conditions.

5.1.3 Recommendations

2. It is recommended that annual reporting contain a specific subsection that discusses any identified potential impacts to herder wells, and that describes efforts undertaken to investigate any observed downward trends. These efforts are currently captured in hydrogeological assessments;
3. It is recommended that quarterly reviews of Undai River Partial Adjustment and Protection Project performance include evaluation of rates of diverted groundwater measured as surface flow relative to the rate presumed to be returned to the subsurface. Causes of seasonal variation in the surface area of the created surface spring should also be discussed. For example the ice sheet is smaller for the winter of 2014 relative to the winter of 2013 – this was likely the result of less water discharged through the groundwater diversion pipeline;
4. It is recommended that the “coal road” and “railroad extraction well” (both located in the Undai River channel north of the MLA) be included in project monitoring efforts, as much as information on their potential impacts to the Undai River system can be ascertained. These features are not part of the project area of influence, but do have the potential to impact surface and subsurface flow in the Undai River system.

5.2 MINERAL WASTE MANAGEMENT

5.2.1 Project Strategy

The Mineral Waste Management Plan¹⁷ (MWMP) addresses environmental conditions associated with the waste rock, overburden, tailings and combustion ash, and was updated as reported in the MoC 2015-3 notice dated 18 June, 2015. Key elements of the project strategy include the determination of potentially acid forming (PAF) mineral waste, and proper handling and disposal of these materials, which will be encapsulated with mineral waste determined to be non-acid forming (NAF) material. Mineral waste management structures include Waste Rock Dumps (WRDs) designated for PAF and NAF materials located adjacent the Open Pit, and the Tailings Storage Facility (TSF). Additionally, transitional materials and ore are stockpiled during mining at the Open Pit in separate stockpiles, including: Segregated Oxide Material (SOM), Low Grade Ore. These materials are handled and segregated consistent with PAF materials requirements. The MWMP update includes changes to reflect the operational phase of the project, including the key roles and responsibilities, and updates to applicable standards, management controls, and monitoring measures. The changes in Management Controls include previously approved MoC 2014-003 and MoC 2014-004 relating to underground shaft development rock as described in MW05 and MW06. Additionally, Management Control MW08 now cites that fly ash from the CHP will be

¹⁷ Mineral Waste Management Plan- Doc. No.OT-10-E8-PLN-0001 dated 01.09.2013

managed as Potentially Acid Forming (PAF) material rather than Non Acid Forming (NAF) material, and MW14 clarifies the intent of the TSF design and construction to minimize contact of seepage water with PAF materials used in its construction.

The overarching Acid Rock Drainage (ARD) control strategies for the WRDs and stockpiles include: 1) segregation and separate handling of NAF from PAF; 2) containment of contact water within the operation footprint; and 3) construction of NAF waste rock store and release covers over final PAF waste rock surface. NAF and acid neutralizing materials will be used in post-mining landforms for cover materials, physical stability and acid buffering capabilities. Progressive rehabilitation and cover of the WRDs will be undertaken as often as reasonably practicable, with the objective of creating a safe and sustainable landform which resembles, in as far as feasible, the terrain in the surrounding landscape.

The implementation of the MWMP is the responsibility of the HSESC General Manager, and also requires participation by the Environment and Bio-diversity Manager, Open Pit and Underground Department for segregation and handling of PAF; and Water and Waste Team Leader. The Mine Engineering Department and the Tailings Management Team will provide support associated with structural stability and protection of groundwater resources. Mineral waste management is implemented by the following: OT Integrated Mineral Waste, Acid Rock Drainage and Dump Management Implementation Plan (portions of which make up the OT Dump and Stockpile Management Implementation Plan); Topsoil Handling Procedure; TSF Operation, Maintenance and Surveillance Manual; and Water Monitoring Plan. OT also conducts hazard identification and risk management under the ESMP, which applies to Mineral Waste Management activities.

WRD Design and MWMP

The WRD and Stockpile design and water management is documented in the Integrated Mineral Waste Management Implementation Plan, and consists of the West Dump for NAF materials, the South Dump for PAF materials, Low Grade Ore Stockpile, SOM Dump, TSF Clay Stockpile, and TSF Waste Rock Stockpile. Following topsoil and alluvial material removal and stockpiling, the dumps and stockpiles have been established by end dumping with angle-of-repose slopes. A surface water collection system is provided to collect runoff that contacts the rock dumps and stockpiles, and contains it within a lined pond, for recovery and reuse on the Project. Ultimately, the dumps and remaining stockpiles will be grades to designed slopes which provide for stability, erosion control, and reclamation.

The WRD and Stockpile design and water management are consistent with the IFC Environmental, Health and Safety Guidelines for Mining (2007), as summarized herein. The rock dumps and stockpiles provide for terraces and lift height specifications based on materials and as necessary to reduce erosion and maintain stability. Potential changes in geotechnical properties of the waste rock are considered, which can affect dump geometry and tentative cover systems. A comprehensive system for testing and managing PAF materials has been implemented, to limit exposure, isolate, and dispose of the materials.

TSF Design and MWMP

The TSF design and MWMP are consistent with the IFC Environmental, Health and Safety Guidelines for Mining (2007), as summarized in the following paragraphs. In the absence of specific Mongolian design criteria, Canadian standards (CDA, 2007) were adopted for guidance in selecting design criteria for the TSF, as documented in the Klohn Crippen Berger, Ltd (KCB) 2010 TSF Design report. Upon initial start-up and operation, modifications to the design were implemented to address observed tailings deposition conditions, including: (1) elimination of upstream and centerline embankment raising along the north, west and south perimeters of Cell 1, and employment of downstream embankment raising along all sides (similar to the original design for the east perimeter along the reclaim pond); and (2) designation of multiple filter zones within the TSF embankment dam along all perimeters.

The original design and modifications include a number of provisions to ensure TSF integrity and seepage control. Liner, filter and embankment drainage zones provide for managing the tailings and reclaim pond and seepage, and the monitoring program include observations of piezometric levels as well as seepage from the facility. Seepage collection is provided by a system of channels and a collection pond downstream of the impoundment, and collected water is recovered by pumping to the reclaim pond for recovery to the concentrator.

The design criteria for future development of the TSF have been updated and will adhere to the 2015 Rio Tinto Standard D5 – Management of Tailings and Water Storage Facilities, and apply Australian National Committee on Large Dams (ANCOLD) guidelines. To conform with RT requirements, the TSF will be designed to meet structures classified as Very High Hazard. The primary affect will be that additional freeboard (about 1 meter) will be maintained within the reclaim pond area for the Probable Maximum Flood storage, relative to the KCB design under the CDA guidelines. Elsewhere, the freeboard between the tailings level and TSF crest is reduced. Use of ANCOLD guidelines is consistent with IFC Guidelines for Mining (2007 and 2012). The government of Mongolia is considering new standards for tailings impoundments that could affect the selection of a liner system for the impoundment and the required post-seismic factor of safety, if implemented as drafted. OT and the TSF Design Engineer are considering the required modifications for future cell design if required.

The OT Open Pit and TSF Geotechnical Risk Assessment was updated in January 2015. Additionally, TSF risks and potential failure modes were evaluated as part of a workshop on the TSF conducted in May 2015. The Independent Technical Review Team participated in the workshop, and continue to perform regular reviews of design and construction of the TSF expansion stages for Cell 1, and design for Cell 2. Golder Associates is the design engineer for the stage plans and is performing construction quality control (CQC) services for the TSF, including evaluation of the deposition of tailings within the facility. KCB is performing independent verification of TSF construction relative to design intent.

The Site Emergency Response Plan has been updated (see Section 5.7) and identifies a draft procedure developed for the tailings dam failure scenario, including a map of the emergency response cover area, and addresses emergency response steps. The Mine Closure Plan was updated (April 2014) to reflect ore processing rate adjustments and mine life, and includes measures to implement reclamation upon permanent closure and in response to temporary closure, post closure monitoring, and financial feasibility with updated closure cost estimates. The Mine Closure Plan is designed for future public health and safety protection, post-closure beneficial use and sustainability, and socio-economic impact mitigation with objectives of demonstrating financial feasibility and physical, chemical and ecological habitat integrity. The plan is assessed by OT on an annual basis as part of closure cost estimate reporting, and reviewed and updated once every five years in order to reflect changes in mine planning or closure strategies, and changes in costs.

5.2.2 Observations

With the underground mine status in Care and Maintenance, no materials are being added to the waste rock stockpiles for the shafts and underground mine development. The Shaft 1 and Shaft 2 development rock stockpiles which contain PAF materials will ultimately be used in TSF construction, placed in the appropriate WRD, or incorporated in a planned integrated (servicing all shafts/incline) permanent waste rock dump in accordance with PAF management and monitoring requirements. In the interim, Management Control MW05 and MW06 indicate that they will be managed as a PAF stockpile until final disposition, which includes monitoring plans for rock spillage, stability, erosion, and drainage. PAF standards include containment of drainage and monitoring, and surface water and groundwater monitoring for Waste Rock Disposal are addressed within the Water Monitoring Plan (WMP). The NAF rock from resumption of underground development may be placed in temporary stockpiles for other use or placed in the proposed integrated underground mine rock dump. Timing for implementation is aligned with re-commencement of the underground mine development.

Waste rock (PAF and NAF), unconsolidated overburden and low grade ore are segregated during open pit mining, and placed in prescribed dumps or stockpiles in accordance with the Integrated Mineral Waste Management Implementation Plan, and tracked in the quarterly mineral waste inventory. The open pit management system integrates classification of ore grades, overburden and waste rock material based on sampling of cores from the blast drill holes, with a real-time tacking system for disposition of materials to stockpiles and rock dumps. Analyses on the 2014 samples (50 samples) supports the material segregation criteria established for the site based on total sulphur, total carbon and acid neutralization potential. In addition to waste rock samples, tailings samples (three monthly composite samples between September and November 2014) were also analysed indicating moderate sulphur concentrations and moderate acid neutralization values, indicating that these materials are expected to be NAF. Kinetic net acid generation testing suggest that the rate of pyrite oxidation in the tailings samples is slow and is matched by the rate of carbonate dissolution. The Integrated Mineral Waste Management Implementation Plan cites the need to continue geochemical testing on a suite of 50 waste rock samples per year to ensure that representative

lithologies, alteration types and locations are represented in the geochemical database established for segregation and monitoring, along with quarterly composite or grab samples of tailings. Additional rock samples were collected in June 2015.

Combustion ash from the Central Heating Plant (CHP) is managed as PAF material, and isolated in the inert waste pit which will eventually be integrated within the WRD South Dump planned for PAF rock. An elevated hopper within partial enclosure deposits ash into trucks for haulage to the inert waste pit. The IESC observed ash materials around enclosure, suggesting spills from positioning trucks beneath the hopper, substantial dust, and/or poor maintenance and housekeeping. Measures including improvements to the discharge chute and addition of a dust collection system should be considered, which could potentially benefit air quality. Ash is hauled from the CHP using trucks, and deposited in the inert waste pit. Other construction debris may also be deposited into the pit as well.

Monitoring of stockpiles and mineral waste rock dumps is managed under the Geotech Open Pit Key Performance Indicator Program. Should drainage be detected from stockpiles or rock dumps, the checklist includes contact of the Environment Department for sampling and testing. Monitoring of the stockpiles and rock dumps is documented in the Quarterly Ex-Pit Monitoring Report; no drainage has been observed for testing in the first and second quarter, 2015 reports.

Tentative concepts for reclamation of the Waste Rock Dumps (WRDs) is addressed in the Integrated Mineral Waste, Acid Rock Drainage and Dump Management Implementation Plan. The establishment of trial cover plots to evaluate cover materials and thickness is cited in the plan, and while recognized has not advanced beyond recognition of the commitment. Monitoring of the trial plot over several years will be necessary to obtain guidance in establishing reclamation procedures, and thus warrants implementation at an early stage. The timing for reclamation of completed surfaces of the WRD would be dependent on establishment of final dump limits, which may not occur until Open Pit development progresses into Phase 4. Considering the contribution that early trial cover plots will provide, and the ensuing multiyear monitoring period, locating suitable areas and planning for trial cover plots should receive attention.

Cell 1 of the TSF is being raised to accommodate continuing tailings disposal under a quality control inspection and testing program conducted by Golder Associates, and subject to quarterly quality assurance review and reporting by KCB. The July 2015 KCB review resolved 5 of 16 open QC and QA issues from the April 2015 site visit, and identified 4 new items. Defined actions to resolve open issues are documented in the KCB report, and commitments by OT and Golder Associates were made to resolve remaining priority issues associated with material acceptance criteria, consolidation of specifications and QC requirements into a construction package, and foundation preparation procedures. Actions to resolve past issues associated with threshold levels for piezometer monitoring, and geochemical compliance testing of Open Pit rock fill to confirm NAF classification are progressing. Incorporation of threshold values for piezometer monitoring into the Operations, Maintenance and Surveillance Manual is planned as the feasibility study update is completed and the manual update finalized. OT is assessing acceptance criteria for rock placed in NAF material zones of the TSF. Quality assurance issues raised in the July KCB report relate to construction specification details and documentation. Suggestions for improvement are also identified within the KCB report which aid in facility operation and management, including dam safety. Golder as the Engineer of Record and QC Engineer does monitoring TSF operations and report on results associated with freeboard and instrumentation. Geochemical testing of the rock fill and tailings, and compliance with NAF/PAF material zones in the TSF embankment is managed solely by OT.

Monitoring and reporting of tailings deposition in the TSF is continuing, and tailings slurry density has been maintained above 60-percent solids since November 2014. The August 22, 2015 TSF Weekly Report cite beach slopes between 0.63 (cell 1B) and 0.77-percent (cell 1C). The tailings density will affect the TSF capacity requirements, and the beach slope will affect the drainage from the tailings and freeboard and dike raising requirements of the perimeter embankment dam. The freeboard reported in August 2015 within the subcells exceeded 6 meters, and at the reclaim pond exceeded 7 meters, significantly greater than the design requirement of 3.5 meters. The TSF Feasibility Study is being updated and the 2015 Design Report has been prepared for TSF Embankment Construction through the coming year. As indicated previously, planning and design for future stages include consideration of maintaining sufficient freeboard for the design flood (PMF) plus 1-meter, or about 4.2 meters of freeboard.

The TSF Operations, Maintenance and Surveillance Manual provides guidance for monitoring, and is in the process of being updated. In addition to incorporating recommendations that KCB provide in the April 2015 QC Engineer Report, the manual should reflect design modification by Golder that are being

implemented as well as Operations (Section 9) hydrologic and freeboard criteria, Table 9 Triggers and Actions under Adaptive Management for Tailings Management, and thresholds levels for piezometers and underdrains/seepage flow measurement based on design analyses. In mid-2014, seepage was observed emanating from the toe of the TSF in the northeast corner, in the vicinity of the reclaim pond, and these conditions are being monitored and reported under a quarterly program, including flow rate, water quality and approximate extent of area impacted. The TSF Seepage Monitoring Report (July 25, 2015) indicates flows, as measured at two separate weir locations downstream of the main seepage area on the east side, averaging about 1.6 liters per second, which is a small increase compared to measurements in 2014. A smaller seepage area on the northeast side exhibits considerably less flow. These seepage rates are within design estimates, and are being controlled within drainage systems constructed or planned for the TSF. Monitoring including seepage rates and water quality along with piezometer levels within the TSF embankment must be continued to support interpretation of the seepage sources and pathways and protection of PAF embankment zones. During the IESC site visits, water fowl have been observed on the tailings pond water and seepage area, and other wildlife have been reported in the seepage areas. Water quality within the tailings reclaim pond and seepage contains generally high concentrations of TDS and salts, and low levels of metals, with the exception of selenium. Discussion of wildlife and exposure to the TSF water is included in Section 5.9.2.3 on Biodiversity and Ecological Management.

As part of the Water Monitoring Plan, the annual surface geophysical survey employing Electrical Resistivity Tomography was performed in April 2015 outside the east and south perimeter of the TSF with the intent of indirectly monitoring subsurface water flow and quality conditions relative to baseline measurements performed in April 2014. Changes in electrical resistivity relative to baseline conditions could infer information about TSF seepage and groundwater quality changes. The general results of the 2015 survey are reported to be nearly identical to those from 2014. Some resistivity variations are indicated in localized areas, such as near the southeast corner of Cell 1 where reduced resistivity values are interpreted as the greater presence of water, potential reflecting water table variation. No visible seepage is reported in this area. The survey performed along the east perimeter does not extend as far north as the observed seepage adjacent the reclaim pond.

As the Engineer of Record, Golder prepared design modifications to the TSF to accommodate lower density and flatter beach slopes observed at start-up and into 2014, by employing downstream construction in embankment areas which were previously planned for upstream or centreline construction, as documented in their 23 May 2014 report. These design modifications were incorporated in the stage construction plans for 2015 as documented in the Golder 30 April 2015 report, that confirmed the TSF raise to meet tailings projections and maintain established freeboard requirements to meet the design flood. Seepage analyses were subsequently performed to estimate phreatic levels within the embankment zones, confirming that the filter and drainage zones generally control seepage waters and isolate the PAF materials designated for downstream zones. Additionally, an update is currently being completed for the TSF Feasibility Study, addressing continued design and expansion of the TSF facility.

The Independent Technical Review Team (ITRT) has remained involved in the Open Pit, WRD, and TSF design, construction, and updating of the TSF Feasibility Study. They were represented at the TSF workshop in May and met at the site in August to review design criteria and progress on the update of the TSF Feasibility Study. The ITRT provided input on technical details associated with the TSF expansion and planned optimization of the facility configuration and filter system. In addition to the ITRT review, the TSF was also subject to an independent review by Hawcroft Consulting International Group for RT as part of a companywide assessment, which evaluated the TSF in six areas with very good to excellent ratings, and no recommendations.

5.2.3 Recommendations

5. With the pending resumption of the underground mine development, the proposed integrated, permanent PAF underground development rock dump plans should be prepared to demonstrate consistency with the OT Dump and Stockpile Management Implementation Plan, and groundwater monitoring requirements within the Water Monitoring Plan should be reviewed and updated as necessary (MW04, MW13, MWM5). Timing for implementation is aligned with re-commencement of the underground mine development.
6. Develop implementation strategy, as part of the plan for implementation of a trial reclamation plot, for progressive reclamation of rock dumps, establishing final slopes and cover in response to drainage and seepage conditions when observed. The strategy should address the

basis for determining the timing and tentative procedures for reclaiming areas of the WRD during operations to protect water runoff quality, minimize infiltration, control wind erosion and allow vegetation establishment (MW12). Early establishment of trial reclamation plots are necessary, considering the period of monitoring required to yield input to the reclamation process; suitable areas and planning should receive attention to establish early opportunities for trial plots.

7. Combustion ash at the CHP may be spilled during truck loading, or creating substantial dust and accumulating near the loadout hopper. Measures including improvements to the discharge chute and addition of a dust collection system are recommended.
8. TSF construction QA issues raised in quarterly reports need to be addressed, in support of meeting design criteria (MW14). OT, the QC Engineer and the QA Engineer have identified actions to address the issues, made progress, and identified priority issues for resolution in advance of the next QA review.
9. Implement planned actions from the updated Open Pit and TSF Geotechnical Risk Assessment, including finalization of the draft TSF Emergency Response Procedure. (MWMP Section 5.3 with reference to Element 3 - OT Hazard Identification and Risk Management; MWMP Section 4.4 – Reference to IFC Environmental, Health, and Safety Guidelines for Mining, Section 1.1 Tailings).
10. Complete the updating of the TSF Operations, Maintenance and Surveillance Manual with respect to design modifications which are being implemented, as well as Operations (Section 9) hydrologic and freeboard criteria, and Table 9 Triggers and Actions under Adaptive Management for Tailings Management (clarify or insert parameter values) (MWMP Section 5.3). Develop threshold levels for piezometers and underdrain/seepage flow measurements based on design analyses and tied to response actions (MWM2, MWM3).
11. Implement ITRT technical review input on the design modifications for the TSF (MWMP Section 4.4; Section 5.3 with reference to OT Integrated, Mineral Waste, Acid Rock Drainage and Dump Management Implementation Plan).
12. Continue TSF seepage monitoring program including flow measurements, incorporating new seepage areas as they develop, and interpret the sources and pathways of observed seepage. Prepare regular reports presenting seepage, groundwater, and piezometer monitoring data and interpretations (MWM4). Consider the feasibility of adding additional traverses to the Electrical Resistivity Tomography survey, located downstream of seepage collection pond.

5.3 NON-MINERAL WASTE MANAGEMENT

5.3.1 Project Strategy

The overall Project strategy for the management and disposal of non-mineral waste generated by the Project is outlined in the Non-Mineral Waste Management Plan¹⁸ developed by OT, which sits under the overarching OT ESMP Framework and outlines the general strategy to ensure the effective management of non-mineral waste generated throughout the OT Project operation lifecycle. The Plan defines the general requirements for the management of waste to ensure the effective management of non-mineral waste at OT in compliance with international standards.

The Non-Waste Management Plan has been supplemented by a General Waste Collection and Transfer Procedure and a Waste Management Center (WMC) Operating Procedure which provides details on specific aspects of the day-to-day waste management activities at OT including indications on how waste should be managed from initial collection, segregation, and temporary storage up to final disposal.

5.3.2 Observations

The Project continues to work towards the implementation of the waste management strategy defined in the Non-Mineral Waste Management Plan. Despite the challenges such as the remote location of project areas, the effort to identify reliable recyclers for specific waste is an ongoing process. Selected waste categories

¹⁸ *Non-Mineral Waste Management Plan - Doc. No. OT-10-E7-PLN-0001 dated 01.09.2013.*

including plastic bottles, scrap metal and barrels, waste oil/coolants, and waste timber are recycled either through local vendors or reused as construction material by local communities. The option to dispose of used tires from heavy mining vehicles in the waste rock dump area has been approved and should start soon.

According to the information provided, in the period January-August 2015 about 764,000 liters of waste oil have been sent to an authorized recycler in UB and about 700 tons of waste metal have been removed from the Interim Waste Recycling Center (IWRC) and transferred to the Darkhan iron facility. Progresses in the segregation and removal of plastic bottles are continuing with plastic bottles almost entirely removed from the IWRC and sent to UB for recycling. Following the open tender process that was ongoing at the time of the previous IESC report, a new waste oil recycling contractor has been selected which is now also responsible for recycling of grease and waste coolants.

The process to remove the residual waste accumulated during the construction phase at the IWRC is progressing with only scrap metal, empty metal drums and some bins containing chemicals that were left at site. Two water monitoring bores down-gradient of the facility have been installed and water quality monitoring is ongoing as part of the IWRC decommissioning, decontamination and rehabilitation plan.

All wastes generated are currently disposed at the new Waste Management Center (WMC) where they are either incinerated, buried in the disposal pits or temporarily stored before recycling. According to the information provided during the visit, the volume of waste disposed in the first cell is greater than originally forecast and the cell is progressively filling up. Although at the moment this does not represent an issue as there is another cell available, OT should consider the possible impacts from underground operation on the WMC capacity, especially for those wastes that cannot be recycled. An option could be a composting machine to treat organic waste including food residual from the kitchen to reduce the volume of waste to be landfilled.

During the visit at the WMC the IESC observed that some oily drums were improperly accumulated on a geomembrane liner with holes and evidence of leaks. Although in the IESC view this is not a situation that represents a potential environmental concern given the remoteness of the site, these drums should not have been sent to the WMC as the facility is not designed to receive used oil. Rather, the drums should have been sent to the designated collecting areas at the truck or the Gobi shops. If there are plans to send this type of waste to the WMC, even as a temporary solution, a properly designed storage area should be built.

5.3.3 Recommendations

13. Consider the potential impacts from underground operation on the WMC capacity, especially for those waste type that cannot be recycled/reused.
14. If there are plans to use the WMC for the disposal of waste oily drums or other chemicals, even as a temporary solution, a properly designed storage area should be built, in line with the requirements of the Non-Mineral Waste Management Plan (WM 03).

5.4 HAZARDOUS MATERIALS MANAGEMENT AND POLLUTION PREVENTION

5.4.1 Project Strategy

The general Project strategy for the management of hazardous material throughout the Project is outlined in the Hazardous Materials Management Plan¹⁹ developed by OT, which sits under the overarching OT ESMP Framework. The plan provides general instructions to OT personnel and contractors (through the Contractor Management Framework) on the management of bulk hazardous materials to prevent/contain spillages and environmental contamination, and to ensure secure materials temporary storage and transport. The plan is supported by a number of procedures which provide specific details regarding the day-to-day hazardous materials management activities at OT. These include a Hazardous Materials Management Procedure to guide handling, transport, and storage of hazardous materials and a Spill Response Procedure which focuses on response actions to properly manage spills of hazardous material.

¹⁹ *Hazardous Material Management Plan - Doc. No. OT-10-E5-PLN-0001 dated 01.09.2013.*

5.4.2 Observations

From the information provided during the visit and what was observed in the field, the main hazardous materials currently used at the different project locations are fuel and lubricants for light and heavy vehicles and other related chemicals. Overall, hazardous materials are generally managed adequately and stored in designated warehouses. The Project continues to use the Chem Alert system that combines records of all the chemicals used throughout the project and relevant Material Data Safety Sheets. The system is progressively updated to reflect the chemicals substances currently used at site. Standard safety procedures and rules are posted on the OT's internal OTPORTAL network and specific training sessions are organized at the different workplaces. Compliance with relevant requirements and procedures is reportedly ensured through random inspections at the warehouses and workplaces.

The mobilization and distribution of fuels used at the different project areas continues to be managed by M-Oil through a main fuel depot to supply heavy trucks working at the mine site and a storage/fuel station for light vehicles and buses. The depot has a storage capacity of 2,8 million of litres with a target to store at least 80% of the maximum capacity as a contingency for possible fuel delivery interruptions. The M-Oil main depot was visited by the IESC and found well managed. The process of refuelling heavy equipment is managed either directly at the depot or via smaller special-equipped tankers that supply diesel to heavy equipment working at the open pit or in other remote locations throughout the mining area. The fuel is supplied daily at the OT site by M-Oil and Shankhlai from UB or the Chinese boarder via tankers.

Lube oil, lubricants and chemicals are stored at the operation warehouses. Storage areas are provided with concrete pads, with either bunds or grading to collect drainage into sumps. As noted during the previous visits and in line with continuous improvement, the IESC reiterates its observation to consider sheltering areas where drums are likely to be stored for an extended period to reduce sun and rainfall exposure.

5.4.3 Recommendations

15. Consider sheltering some of the areas where oils and chemicals drums are likely to be stored for long periods to reduce sun and rainfall exposure.

5.5 AIR QUALITY

5.5.1 Project Strategy

Chapter C2 of the OT ESIA describes the potential environmental and social impacts related to air quality that could result from the construction and operation of the project. The general strategy for management of particulate and gaseous emissions is described in the Operations Phase Atmospheric Emissions Management Plan²⁰ (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 Use Management Plan.

The intent of the AEMP is to outline applicable Project Standards, define commitments, define monitoring and reporting procedures, and state key performance indicators (KPIs). The principal implementation procedure of the AEMP is the OT Air Quality Monitoring Plan²¹ (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 January 2015 via Notice of Change 2014-008. The AEMP was updated in July 2015 via Notice of Change 2015-011.

5.5.2 Observations

Findings in this section are based on a review of information provided in an electronic data room and correspondence with Environment department staff. Monitoring data related to air quality are consolidated in an Annual Report on the Implementation of the Environmental Protection Monitoring Plan as part of the Annual environmental management plan. This report is submitted to the Mongolian Ministry of Nature, Environment and Green Development. Results of the Annual Report are used to guide the following year's Environmental Protection Plan and Monitoring Program.

²⁰ Atmospheric Emissions Management Plan- Doc.No.OT-10-E2-PLN-0001 dated 01.09.2013.

²¹ Air Quality Monitoring Plan – Doc.No.OT-10-E2-PLN-0002.

5.5.2.1 Ambient Air Quality

The dry and barren conditions the project site result in frequent dust storms during windy conditions, which impacts ambient air quality and especially particulate matter concentrations. An Atmospheric Dispersion Modeling Report was prepared by a third party contractor in September 2014. The purpose of the report was to evaluate ambient air quality monitoring results and their potential impacts to sensitive receptors. The report presents cumulative dust monitoring results as summarized in Table 5.3.

Table 5.3: 2013 Ambient Dust (PM10 Concentrations)

	Onsite	Offsite to within 10 km	Project Standard	% Exceedence Onsite	% Exceedence Offsite
Short Term Maximum (ug/m ³)	564	540	50	1,129	1,076
Long Term Average (ug/m ³)	135	81	40	337	202

As shown both on and offsite long-term average results exceed Project Standards for PM₁₀. Onsite mitigation of dust emissions includes watering of on-site roads and recent efforts in re-vegetating long-term topsoil stockpiles. Important operational mitigations include use of reasonable speed limits and temporary halting of earthworks during high wind conditions. However the number of non-compliances exceeds the five per year threshold identified in key performance indicator AQ-KPI02 of the AEMP.

The Atmospheric Dispersion Modeling Report evaluated ground level concentrations of ambient gaseous pollutants at key environmental receptors including the construction camp, Manlai camp, and locations of Shaft 1 and 2. During normal operating conditions ground level concentrations of ambient pollutants were below the Project Standard (EU Ambient Air Quality Standard); however during use of diesel generators there is a short-term exceedence for NO₂ at/beyond the MLA and within the MLA at the Manlai camp. It should be noted that diesel generators would only be used during times of interruption to the existing transmission line service, and it predicted that ground level concentrations of gaseous pollutants would be less than the Project Standard for 99% of the five-year modeled time frame.

OT maintains a Monitoring Exceedence Action Plan that describes efforts undertaken to improve ambient air quality, in particular with respect to controlling particulates in the dry and windy environment. In general this plan does an adequate job of communicating these efforts, such as mitigations employed at the Coarse Ore Storage (COS), improved surface watering, and speed limitations at particularly susceptible locations.

As noted in prior audits the ambient air monitoring network available on site requires improvement to monitor ambient air quality relative to Project Standards, and to assess the overall efficacy of implemented mitigation measures. The AQMP was revised in January 2015 after an annual internal review of the program. The review resulted in refinement of monitoring locations, parameters and frequencies. In addition modifications were made to the required specifications of monitoring equipment, resulting in removal of High Volume Air Samplers. None of the changes to the AQMP resulted in material changes to the commitments or intent of the Atmospheric Emissions Management Plan original language.

An equipment list has been prepared by a third-party contractor to ensure purchased materials are capable of meeting requirements of the revised AQMP. A Capital Expenditure Authorization (CEA) to purchase the ambient air quality monitoring equipment was initially presented to the OT Investment Committee (OTIC) in December 2014. The expenditure request was denied in March 2015 for the planned equipment. The equipment requirements have been reviewed and requirements and cost adjusted with revised AQMP specifications and are included in 2016 capital plan.

Once the CEA is approved procurement for the equipment can then be put to bid. Once equipment is available ambient monitoring can occur as described in the AQMP. Information provided during the August 2014 Audit suggested that necessary equipment would be available on site and ready for installation by November 2014. November 2014 estimates were for installation of the equipment by mid-2015. Current estimates are for 2016 procurement. As such this item remains a persistent non-conformance.

As noted in prior audits there has historically been significant dust (particulate) generation at the coarse ore stockpile (COS) facility. In June 2013 the Environment department prepared a summary report quantifying these conditions and suggesting possible causes. A detailed engineering study of mitigations was subsequently prepared, with the use of a foam dust suppressant identified as the best mitigation. The dust

foam system was initially commissioned in November 2014 but stopped shortly thereafter due to freezing of the foam suppressant with wet ore. The system remained inoperable through mid-March 2015 when thawing temperatures allowed restart.

Since operations resumed in March 2015 the foam dust suppressant has been effective at reducing particulate generation. Monthly monitoring is carried out at two locations (DMP-COS01 and DMP-COS2). Recent results show improvement in Total Suspended Particulate (TSP) concentrations as shown in Figure 5.9.

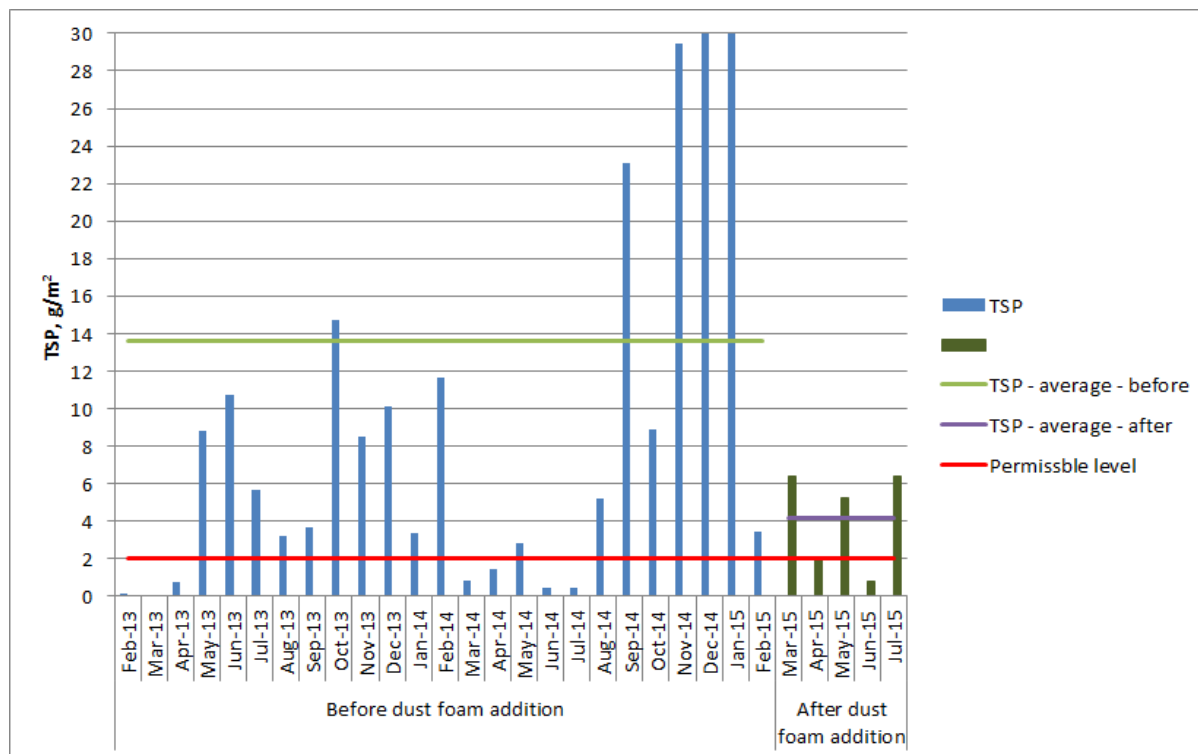


Figure 5.9: Ambient Total Suspended Particulate Monitoring – Coarse Ore Storage Facility

As shown in Figure 5.10 the concentration of TSPs in the ambient environment have been reduced from an average of 13.6 g/m^3 to 4.1 g/m^3 although monitoring results continue to exceed the Project Standard of 2 g/m^3 . Similar exceedences exist for measured concentrations of PM_{10} and $\text{PM}_{2.5}$. The OT Concentrator Operations department is contracting with the supplier of the dust foam suppressant to identify further mitigations that can be implemented. It is anticipated that the supplier will visit the site in Q3 or Q4 of 2015. Under consideration is the use of a polymer to create a “crust” on areas near the ore stockpile. This could be applied before the winter freezing season and may help reduce dust generation. Optimizations already undertaken include appropriate metering of foam dust suppressant as a function of crushing rate.

5.5.2.2 Stack Emission Quality

Since October of 2013 most generators in use on site have been turned off and are on stand-by. As a result most of the sources of gaseous emissions have been removed from use. There are two remaining boilers in operation – the most significant of these is at the Central Heating Plant (CHP) with a much smaller boiler used at the airport. OT has contracted the Mongolian University of Science and Technology (MUST) to perform monthly stack testing at the CHP, incinerator, and coal-fired boilers at the Khanbumbat (OT) airport. Monthly sampling is in accordance with the periodicity identified in the AQMP.

The Research and Experiment Center for Boilers (RECB) of MUST has since October 2014 performed monthly stack emission sampling at the CHP and airport boiler. The CHP has two 29-MW and two 7-MW boilers, with a combined capacity of 72 MW. Table 5.4 shows data for 2015 monthly sampling relative to Project Standards as identified in Appendix B of the AQMP. These data show NO_x , SO_2 , and TSP concentrations in exceedence of relative Project Standards. Boilers are operated at differing times based on demand.

Table 5.4: Stack Emission Sampling Results – CHP and KB Airport

Boiler	Parameter (in mg/m ³)	2015								Project Standard
		Jan	Feb	March	April	May	June	July	August	
Boiler #1 (7 MW)	Particulates	-	-	-	-	5	2	34		20
	NO _x	-	-	-	-	757	2823		1836	200
	SO ₂	-	-	-	-	222	66		1994	200
Boiler #2 (7 MW)	Particulates	-	-	-	636	-	-			20
	NO _x	-	-	-	2010	-	-	-	-	200
	SO ₂	-	-	-	1616	-	-	-	-	200
Boiler #4 (29 MW)	Particulates	676	717	775.3	-	-	-	-	-	200
	NO _x	798	433	517.4	-	-	-	-	-	20
	SO ₂	147	1127	810.5	-	-	-	-	-	200
KB Airport Boiler	Particulates	167	351	1220	-	-	-	-	-	20
	NO _x	909	1115	1314	-	-	-	-	-	200
	SO ₂	1120	1828	1542	-	-	-	-	-	200

In early 2014 extensive testing and study of water boiler performance at the CHP was undertaken by the National Agency of Meteorology and Environmental Monitoring (NAMEM). The study resulted in recommendations for improvements to the system. Bag filters have been replaced and coated with lime. Addition of varying percentages of limestone to the feed mix has been tried with some success in lowering SO₂ emissions.

Emissions quality of the CHP has been a persistent issue and OT is planning an internal review of the whole system by the Asset Management Group, including monitoring procedures. After the internal review OT may seek to directly add limestone to the coal supply within combustion chambers (instead of pre-mixing the material in the coal yard). Other options for improvement to emissions quality include boiler “tune out” for the light summer load (the summer average is 1.3 MW) and modifications to boiler air flows. Additional monitoring equipment may be procured. In summary it is expected that the OT internal review will provide solid information to address stack emission quality.

5.5.2.3 Incinerator

An incinerator procured to Project Standard design criteria is operating at site. The manufacturer of the unit visited the site in January and October of 2014 to assess overall condition/performance of the unit. The January inspection found the overall condition of the incinerator to be very poor, with lack of general maintenance and servicing. The unit showed signs of frost damage to the air blast cooler and heat exchanger, and inappropriate after-market modifications. The manufacturer’s assessment concluded that the incinerator was being used outside of its specification and that the quantities of hazardous materials produced on site and processed through the incinerator were greater than the machine could successfully handle.

During the October 2014 site visit the manufacturer noted that the continuance of inappropriate after-market modifications (e.g., removal of sealed maintenance access hatches and removal of the ash grate), as well as inappropriate operational practices (e.g., the covering of the gas filter house with tarpaulin and removal of electrical wiring from the damper motor). A number of repairs were made to address these aspects that limit successful incinerator performance. Upon completion of repairs a full system test was performed, with burn tests completed to ensure adequate operations. In addition OT operators were provided with training in how to correctly mix and load waste in the loading bins.

OT now diverts used oil filters to the lined waste management facility which has resulted in a significant decrease in load at the incinerator. In the past the incinerator has been used in excess of its design capacity; however OT information suggests the current process rate is approximately 300 – 500 kg of material per day.

OT has retained a third party (MUST) to perform monthly stack emission sampling at the incinerator. Results of this sampling are provided in Table 5.5.

Table 5.5: Stack Emission Testing Results of Incinerator

Parameter (in mg/nm ³)	2015							Project Standard
	Jan	Feb	March	April	May	June	July	
Particulates	3	15	6	17	17	10	20	10
NO _x	506	1030	514	910	191	692	654	400
SO ₂	16	85.1	131	163	50	82	305	50
CO	2003	5272	1352	3310	633	3012	4447	200

In general emissions are assessed against the requirements of EU Directive 2000/76/EC on the Incineration of Waste. The sampling suite from the incinerator has been modified in the revised AQMP and now does not include dioxins and furans. Sampling for heavy metals does not take place due to a lack of domestic laboratory capacity to sample these parameters; however it should be noted that when operable the incinerator was designed to meet all applicable EU Directive 2000/76/EC standards.

As shown in Table 5.5 monitoring results often exceed Project Standards for the parameters that can be sampled. A key operational component of the incinerator is the Continuous Emissions Monitoring System (CEMS) which has never been operational. The CEMS allows operators to perform real-time tracking of system performance. It is likely the incinerator is not achieving the designed combustion temperature of 1000 degrees Celsius. The unit manufacturer has been scheduled to visit the OT site in October 2015. It is expected that this visit will lead to recommendations for modifications to the unit including repair to the CEMS and cooling system, which would lead to higher combustion temperatures.

5.5.2.4 Greenhouse Gas Accounting and Energy Efficiency

OT records greenhouse gas emissions (GHGs) and reports a total of 1,353,805 tonnes CO₂ (eq) generation in 2014, and 821,895 CO₂ (eq) through August 2015. Of the 2014 total over 80% of GHGs generated were related to the purchase of electricity with Scope 2²² emissions of 1,115,115 CO₂ (eq). Scope 1 direct emissions were 229,349 CO₂ (eq) and indirect Scope 3 emissions were 9,341 CO₂ (eq).

GHG reduction and energy efficiency improvement opportunities were identified in an internal 2014 memo. OT has already implemented some measures including connecting heating supply of various site facilities with the CHP. The centralization of heating source provides for a single location at which to implement operational and engineering controls to improve emissions quality. Electrical heating is now provided to previously coal-heated gers. Based on equipment type the Environment department engages on the purchase of new equipment for the mine site to ensure emissions controls are included in design specifications.

A third party *Review of Oyu Tolgoi's Greenhouse Gas Emissions* report was prepared in September 2015. This report describes current GHG tracking efforts undertaken to comply with RT's Greenhouse and Energy Usage workbook requirements; however recommendations are made to improve and coordinate accounting practices with Lender guidelines. For example the current emission factor used by OT for Scope 2 emissions is 1.129 kg CO₂ (eq) per KWh of electricity purchased from China. However the IFC's carbon emissions estimation calculator uses a lesser estimate of 0.949 kg CO₂ (eq) per KWh of electricity purchased from coal-sourced generation. This leads to variation in GHG estimations.

²² Emissions associated with the generation of purchased electricity.

GHG reduction/energy efficiency improvements have been implemented by OT with other measures under consideration. In June 2015 all flood lights were replaced with more energy efficient LED lighting. A feasibility study is in progress to connect the airport to the central electric supply, thereby eliminating the inefficient use of existing 500 kW generators. Also under consideration is the use of electric heating at the airport to eliminate the need for use of the existing coal-fired boiler. A metering system is also under evaluation to allow better tracking of electricity usage across the site, thereby allowing more targeted energy efficiency improvements.

5.5.3 Recommendations

16. The IESC recommends that ambient monitoring coverage be expanded in the Coarse Ore Storage (COS) area to provide a more fulsome representation of the efficacy of the foam suppressant system.

5.6 NOISE AND VIBRATION

5.6.1 Project Strategy

There were no exceedances of Project Standards in 2015 monitoring. The Noise and Vibration Monitoring Plan has been updated in July 2015 via Notice of Change 2015-010 to reflect RT guidelines and other program modifications since the original management plan which was finalized in 2013. Noise monitoring is conducted at 37 locations for both on-site (five points) and off-site (32 points) receptors; this number will likely be reduced in future monitoring efforts. In December May 2015 a ground vibration annual survey was completed by the Mongolian Academy of Sciences Research Center of Astronomy and Geophysics with no negative impacts identified.

5.6.2 Recommendations

Nil.

5.7 EMERGENCY PREPAREDNESS & RESPONSE

5.7.1 Project Strategy

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)²³ that provides a high-level overview of the procedures and commitments to emergency response and preparedness in place at OT during the operations phase. The document was updated in May 2015 to reflect the current operational phase of the project, with changes in the plan review, training and inspection components. It is supplemented by response plans and procedures developed by OT which define specific response actions to be undertaken in the event of an emergency situation. Organizationally, the Emergency Response Team (ERT) now report to the Security Manager.

The EPRP sits under the broader RT Business Resilience and Recovery Programme (BRRP) which is a requirement under Element 12 of the Rio Tinto HSE Management System Standard. The Business Resilience Management Plan (BRMP) is the overarching plan for Business Resilience and Recovery and covers all areas where OT operations are on-going and that are considered under OT responsibility. The BRMP for OT operations was updated in July 2015 and covers Emergency Response, Business Continuity, and IT Disaster Recovery, all managed through specific plans. Emergency Response is addressed in separate plans for the site (updated Version 3.0 August 2015) and Ulaanbaatar operations (updated Version 3.0 August 2015), and is supported by specific Emergency Response Procedures for different major areas with risk scenarios based on Hazop studies, risk assessments, historic incidents, and benchmarking with other facilities. Fifteen procedures are being developed for the site that cover General Emergency Response Team (ERT), Security, Medical, Geology, and Community Requests for Assistance, along with twelve work areas: Open Pit; Underground; Concentrator; Khanbumbat Airport; Manlai Camp; Copper Concentrate Convoys; Central Heating Plant; Warehouse Areas; Truck Shop; Explosives Facilities; and TSF. When these procedures are completed (anticipated by the end of the year), they will document work-area specific emergency scenarios, resources and strategies for immediate response to incidents.

²³ *Emergency Preparedness and Response Plan- Doc. No. OT-12-PLN-0011 Version 1.2.*

5.7.2 Observations

The Site Emergency Response Procedures (v.1.2) include identified risk scenarios based on potential hazards and identified incident scenarios that warrant emergency response procedures for the surface and underground mine conditions, airport, and operations that may impact the communities. These procedures are being updated and reformatted to more specifically address general site activities and twelve specific work areas. As the updated procedures for specific work areas are completed, they will replace the Site Emergency Response Procedures (v.1.2). A separate Underground Emergency Response Plan for care and maintenance activities is required for submittal to the Mongolian Ministry of Mines semi-annually. This separate plan has been updated (July 2015) for ongoing inspection and maintenance of fixed and mobile equipment. Another site operation that warrants a specific emergency response procedure is the Tailings Storage Facility (TSF), which as it is developed to significant height, a potential failure scenario could impact mine facilities, infrastructure, adjacent areas and communities. As part of updates to all emergency response procedures, OT has revised the January 2015 draft TSF Emergency Response Plan to incorporate input from the ERT and Communities teams and reformatted the document to be consistent with the set of procedures documents being prepared for all work areas. As part of the review and finalization of the draft procedure, the rationale for the breach severity and downstream inundation within the emergency response coverage area should be documented. Other aspects of the draft procedure that should be considered include: responsibilities with designation of position responsible for administration and maintenance of the procedure; exercises/training activities and plan maintenance, establishing review and update requirements including public notices and interactions; and resource requirements and maintenance to ensure serviceability of communication and other equipment necessary to respond to an emergency. While the Emergency Response Plan OT Site (Version 3.0) covers some of these aspects such as ERT training, additional details should describe exercises that are specific to the TSF (such details on responsibility and scheduling of desk top, functional, and full scale exercises could be described in an Appendix to the draft TSF Procedure). Sources for guidance and suggestions relative to emergency response plan components include the UN APELL Guidance(1) and Good Practice in Emergency Preparedness and Response (2), as well as other dam safety organizations.

The OT protocol drafted for responding to incidents in the community has been fashioned into the Emergency Response Procedure – Authorizing Community Request for Emergency Assistance. This procedure includes a flow chart and assessment table to aid in the decision to respond to a request for emergency assistance with an incident from outside the MLA, along with some example scenarios to help guide the decision for responding to incidents that do not involve OT operations. The procedure references the Emergency Response Plan OT Site, which in turn cites general ERT procedures for vehicle accidents, flood, fire, etc. A full scale Business Resilience Team exercise and training was performed in December 2014 that included the emergency response service responding to a fire incident at the Concentrator Cyclone as a result of welding activities. The ERT quickly responded to the incident, with isolation of energy sources, application of internal fire water system and mobile equipment, extinguishing the fire promptly. The BRT effectively addressed communications and reporting, and valuable lessons learned relate to communications requirements in adverse weather, security and limiting access, and fire hose requirements.

Emergency response training and exercises since April 2015 have included: emergency evacuation drill at the Admin Office Block (April 7, 2015); medical emergency rescue from heights drill at the Truck Shop (May 30, 2015); MCAA aircraft rescue and fire training, as well as first aid training (June 29-July 3, 2015); aircraft crash mock scenario (July 3, 2015). Post activity reports on these emergency response drills include a description of the exercise, outcomes, lessons learnt/areas for improvement, and action plans. The updated procedures being prepared for work areas provide a direct opportunity for some of the action items. Planned training activities for the fourth quarter of 2015 include underground mine rescue training, water rescue training, mock scenarios involving the BRT participation.

With the anticipated resumption of underground mine development next year, the ERT will be expanded substantially and be responsible for underground response and rescue. A series of underground emergency response training programs have been initiated, including: Underground Awareness; Breathing Apparatus; Mobile equipment and pedestrian interaction; emergency readiness; self rescuer and refuge station. An underground emergency response exercise to evaluate underground casualty rescue was conducted in February 2015, and additional underground training is planned in the fourth quarter of this year. An underground mine rescue superintendent (Expat) is being brought on board and staffing of the ERT is expected to increase from approximately 27 to 54 personnel.

The central ERT database for tracking and recording incidents provides summary information on incidents/activities ranging from a truck accident to noise complaints. Call-outs and responses pertaining to fires and related incidents are the most common excluding false smoke and fire alarms. The database provides an effective tool to scan for incident types (e.g., fire incident at concentrator), although inquiries to the RTBS is necessary to obtain details and follow-up action. Since April 2015, the primarily fire and risk-related incidents have been registered that were not related to false alarms. One incident reported off-site related to report of a fire at the well field, that was apparently a false alarm. No incidents have triggered activation of the Business Resilience Team since the 2014 fire incident at the concentrator.

The ERT and the Communities Team recently hosted the Mongolian National Emergency Management Agency head from Dalandzadgad, visiting the firehouse, and discussing emergency action planning for high risk areas. Another initiative of the ERT includes periodic meetings of the Emergency Response Committee, made up of representatives of ERT, Security, Medical Clinic, and Communities Team, to discuss emergency response topics and incidents. One of the values recognized from the meetings is familiarization of departments with upcoming scheduled activities, including maintenance and contractor activities on site.

The surface emergency response team is composed of four teams working on rotation basis, and operates emergency trucks from a fire house which houses ERT support equipment, and at the airport.

5.7.3 Recommendations

17. With the implementation of the BRMP, the response procedures at work areas are being redrafted for identified scenarios. The review should confirm that they meet the associated management controls and intent of the Project Standards (EPRP Section 4.4 and 5.1; ERP02, ERP02b, ERP02c; Site Emergency Response Plan). As part of completion of the emergency response procedures, review contractor-prepared plans for consistency and upgrades.
18. With review and finalizing of the TSF Emergency Response Plan, evaluate emergency response team and other department's capabilities and resources to fulfil responsibilities (Site Emergency Response Plan; EPRP Section 4.4 and 4.6, IFC Guidelines and EBRD Performance Requirements, and UNEP APELL Guidance).

5.8 TRANSPORT MANAGEMENT

5.8.1 Project Strategy

The Transport Management Plan²⁴ (TMP) addresses safety conditions associated with OT operations, including contractors, as applicable. Aviation safety is addressed in a separate document outside the scope of the plan. The TMP identifies management controls covering road design and safety, and include measures in support of wildlife protection. The TMP was updated in June 2015, to reflect the establishment of routine operations and includes changes in roles and responsibilities as well as updates to standards, management controls and monitoring measures. The following procedure documents are referenced within the TMP: Road Construction and Maintenance Procedures; Heavy Vehicle Operating Procedures; Light and Medium Vehicle Operating Procedures; Tyre and Rim Procedure; and OT Site Wide Traffic Management Plan. 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. Contractors are also responsible for exercising some controls regarding road safety.

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. The associated management controls in the TMP have been updated to reflect the current situation with roads (TMP04 - herder crossings will be installed in consultation with local herders for bitumen roads), off-road driving (TMP05 - distribute communication and education materials on impacts of off-road driving), and dust suppression (TMP16 - dust management strategies will be implemented if potential problems are identified through participatory monitoring programs or as deemed necessary by OT). Other duplicative management controls or key performance indicators were consolidated. OT and lender representatives participated in a meeting on November 16, 2014 to discuss the range of options that can be

²⁴ *Transport Management Plan - Doc. No. OT-10-C3-PLN-0001 Version 1.3.*

implemented to mitigate wildlife habitat fragmentation and maintain landscape-level connectivity. These options are still under review.

A system of records, inspections and monitoring, and in some cases specific plans are or will be used to achieve the controls. For example, a draft Emergency Response Procedure – Outbound Logistics is being developed for emergency situations, including scenarios of fire, rescue, vehicle collision, emergency spillage, injury, and public road blockade. The response procedures generally reflect ERT protocols, while the public road blockade procedure is specific to convoys. Contractors are required to have Emergency Response Plan for off-site activities.

5.8.2 Observations

Export of concentrate through August 2015 achieved 952 convoys, with monthly rates during the past few months ranging between 129 and 159 convoys. OT is forecasting approximately 150 convoys per month for the remainder of 2015.

Transport Service Providers are contracted for trucking of the concentrate, and the contractors supervise the drivers and are responsible for maintenance, HSE monitoring, customs brokerage, and other responsibilities. 2015 Induction and Outbound Logistics Training includes content on: truck condition and road worthiness; safe work procedures; load safety; convoy driving protocols; safe driving behaviours; legal obligations; and incident management and reporting. E Class Truck Safe Operations training and permit is required of drivers to reduce potential injury, and equipment and load damage. The training program includes review of the TRACK program, truck pre-start checklist, trailer inspection, safe loading and off-loading, roadway checks, safe driving systems, and fatigue awareness. An Outbound Logistics assessment is administered as part of tracking training and induction programs.

Traffic monitoring was implemented in 2014 to track the amount, type (based on length of vehicle), hours, and speed of traffic on the OT-GS roadway. The monitoring station is approximately 32 km from OT, and can detect light (short) and heavy (long) vehicles based on electromagnetic coils embedded in the roadway. Based on reports for December 2014 through June 2015, large truck traffic predominates other size vehicles, and generally greatest in morning and late afternoon. Approximately 90 percent of the traffic monitored are OT contractor or OT vehicles, and detection of excessive speed is almost entirely non-OT related vehicles.

5.8.3 Recommendations

19. Complete Communities Induction program for all drivers (TMP13). Implement participation of Communities Team in scheduled monthly meetings to ensure ongoing awareness of safety and community issues.

5.9 BIODIVERSITY AND ECOLOGICAL MANAGEMENT

5.9.1 Project Strategy

As described in previous audit reports, OT implements its biodiversity mitigation and monitoring measures through the Project's Operational Biodiversity Management Plan (BMP) and OT Environment Management System so that all biodiversity-related actions can be planned, implemented and tracked in an integrated manner. Several other management plans also include biodiversity-related commitments and requirements. OT's Environment and Biodiversity Team has now taken over the role of ESIA coordination from the HSE Compliance Team.

The BMP was reviewed and updated during 2014 in a joint activity involving OT, Lenders and supporting biodiversity consultants. A comprehensive review of the new version was then carried out by the IESC as an associated activity in parallel with the November 2014 IESC audit. Notices of Change 2014-006 and 2014-007 were agreed in April 2015 subject to further revisions to the BMP and its supporting documentation. Some of these revisions were made as discussed in July 2015 but others remain under review by the lenders and OT.

During the September IESC visit, Lenders and OT agreed that the Lender Biodiversity Action Plan would be reviewed, updated and removed from the BMP to become a stand-alone document, to be disclosed annually.

Implementation of BMP actions is through a commitment register and associated tracking system with clear control descriptions. The Biodiversity Monitoring and Evaluation Plan (BMEP) is the main basis for

assessing progress in implementation and achievement of required outcomes for biodiversity and ecosystems. OT's "Core Biodiversity Monitoring and Evaluation Plan" (CBMP) addresses specific commitments in relation to Critical Habitat and is now in its second phase, following a two-year pilot. The same team of contractors was retained for a five-year period and a revised set of indicators and thresholds to trigger corrective action by OT is in place. OT's comprehensive BMEP and Offset Management Plan (OMP) are not yet in place.

OT's Ecosystem Services Group has developed a stakeholder engagement framework for biodiversity-related consultation and communication. This needs to be taken forward in the form of a programme of planned engagement events, but provides a strong basis for effective engagement, based on a comprehensive stakeholder mapping exercise.

5.9.2 Observations

Findings in this section are based on observations made as a result of reviewing documentation provided by the Project as well as discussions with staff during the IESC visit and in subsequent phone calls.

5.9.2.1 Managing Impacts Associated with Power Lines

One of the BMP key management controls is the use of bird Flight Diverters on power lines to minimize mortality due to collisions with power transmission lines (B10 and LBAP). Diverters must be "maintained as necessary to minimize wildlife mortality throughout operations". There have been on-going problems with functioning of some of the "flapper" type bird flight diverters.

Given the challenge of correcting or re-fitting diverters, combined with the potential for on-going impacts of unknown significance on species of conservation concern, OT agreed to work with its consultants to develop potential alternative approaches and options for implementing conservation measures to demonstrate a net positive impact (NPI) on priority biodiversity features in line with its corporate commitment. Accordingly, a "Powerline Options" paper was submitted in June 2015. Review of collision data for the purposes of this paper showed that, despite some mitigation, residual direct impacts of the Project from collision with powerlines comprise the mortality of approximately 24 Houbara Bustards, 12 Great Bustard and 372 Pallas's Sandgrouse per year (following the application of a preliminary correction factor to powerline collision data). A significant residual impact may also exist for Houbara Bustard owing to avoidance of habitat use around powerlines. This residual impact equates to approximately 37 Houbara Bustards per year. There has been one incidence of mortality to a Saker Falcon. Saker falcon is now listed as Endangered by IUCN and should therefore be considered as a priority species and incorporated in OT's ongoing monitoring of the raptor assemblage affected by the Project.

Recommended options for achieving NPI despite ongoing collisions include:

- a captive breed and release programme, considered the only certain way to achieve NPI for Houbara Bustard because it would actually increase populations. The consultants estimate that around 61 birds would have to be recruited into the population each year for the duration of Project-impacts to achieve NPI; and
- engagement with the Government of Mongolia to develop and implement national powerline standards through measures such as insulation, bird flight diverters and horizontal powerline arrays.

Measures to reduce Saker Falcon electrocutions on non-OT powerlines are also identified as a possibility.

OT needs to review the financial and political feasibility of these options, decide which it will pursue as part of its efforts towards NPI and develop a costed implementation plan. Research on population size, distribution and ecology of Houbara Bustard in Mongolia, and its response to human influences in the landscape might help to establish whether levels of Houbara mortality are sustainable and make sure that mitigation and compensation actions target the most effective powerline offset activities in future. Insulation of medium-voltage power line poles and dead ends has not yet commenced, but OT has identified an opportunity to install insulation on a rolling basis in association with planned maintenance activities, when power has to be shut down anyway. This seems to be an acceptable, pragmatic approach and should be completed in 2016.

5.9.2.2 Managing Impacts related to Traffic and Transport

The ESIA identified potential impacts on khulan and other ungulates due to the avoidance of the mine site and access roads, but also from induced increases in levels of hunting and disturbance caused away from roads by vehicles driven off-road.

Introduction of barriers to the regional landscape is increasing, both as a result of OT's infrastructure and activities and as a result of other development in the Region. This will inevitably reduce the availability of undisturbed and un-fragmented habitat over time. OT's monitoring data show frequent crossing of the OT - Gashun Sukhait road, but collaring data also give some indication of potential avoidance behaviour at levels of traffic considerably lower than those projected in future. As part of its NPI commitment, OT therefore needs to make provision for wildlife to access habitat and cross roads in future if increased traffic levels mean that roads become a barrier to free movement through the landscape.

At a meeting with lenders in November 2014 in Ulaanbaatar it was agreed that the under or overpasses included as a BAP commitment may not be the best or most cost-effective solution in the near term. OT plans to follow an adaptive management process in which mitigation measures are triggered by exceedance of certain thresholds, established through monitoring. To develop suitable thresholds for triggering mitigation action, comprehensive monitoring data are needed for traffic levels and ungulate populations, distribution patterns and behaviour. Traffic monitoring will be required on more roads in the area (not just OT roads).. A further aerial survey will also be needed, anticipated in 2019. Monitoring proposals should be described in detail in the mitigation strategy as well as the Comprehensive Biodiversity Monitoring and Evaluation Plan.

OT now needs to detail the actions that will be taken to maintain landscape connectivity for ungulates and ensure that necessary finance will be in place to implement measures when needed. OT and the Lender Group are continuing to explore solutions with specialists. It is acknowledged that it is challenging for OT to finalise its approach without consultation with government and other developers in the region and that it will not be possible for OT to develop effective solutions in isolation, due to the large distances over which wild ungulates range and the escalation of development of linear infrastructure in Mongolia as a whole. However ongoing delays mean that potential opportunities to achieve gains through measures addressing impacts of other developments in the region could be lost. The need for regional engagement focusing on mitigation of linear infrastructure in the South Gobi therefore remains a high priority and OT needs to take a proactive approach.

Impacts of off-road driving

The BMP requires measures to control disturbance of animals caused by off-road driving and any associated increases in mortality from hunting and collecting. As well as the BMP, references are made to this issue in the Transport Management Plan OT-10-C3-PLN-0001 and the OT Site Wide Traffic Management Plan OT-10-C3-PRC-0005-E, particularly in relation to road safety and wildlife.

In October 2013, in response to Notice of Change (2014-7), Lenders approved the removal of a proposed measure to install structures or barriers at sensitive areas to prevent vehicles from leaving the OT-GS, OT-KB and OT-airport roads from the BMP (and the Lender BAP). This was on the basis of advice received from the Western Transportation Institute (WTI) hired to review OT's commitments and alternatives for road mitigation as well as objections to the proposed mitigation measure from communities. WTI concluded that the proposed structures could actually increase barrier effects of the road for wild ungulates and were therefore not recommended as a mitigation measure. As part of an alternative mitigation strategy for road barrier effects that is not yet finalised, OT undertook to develop and distribute communication materials on the impacts of off-road driving and its implications for livelihoods and wildlife conservation as part of its information and education outreach, linked to ongoing stakeholder engagement efforts. Some initial efforts have been made locally. Establishing the contribution made by the Project to overall levels of disturbance due to off-road driving in the region requires OT to establish a baseline in the Project-affected area through some proxy for actual levels of off-road driving (not considered possible), for example by monitoring changes in the physical footprint of off-road tracks as interpreted from satellite imagery or aerial photographs.. Lack of such information will make it difficult to attribute impacts or establish thresholds for adaptive management in line with management of other impacts on critical habitat. Due to the potential role of off-road driving and disturbance in affecting responses of ungulates to traffic impacts, this analysis is seen as an essential component of OT's overall approach to management of traffic-related impacts on Tier 1 Critical Habitat.

5.9.2.3 Managing Pollution Impacts

Elevated levels of selenium have been noted following OT's monitoring of the TSF, as reported in the quarterly TSF seepage monitoring reports. The data indicate levels of selenium between 0.001 and 0.18 mg/l in the water in the TSF, and levels of 0.01 and 0.117 mg/l in the TSF seepage collected immediately downstream. Previous IESC reports (under the Mineral Waste section) have identified the presence and potential exposure of waterbirds stopping on the TSF while on migration.

Selenium bio-accumulates and elevated levels can affect viability of bird eggs and cause embryo deformation, depending on the timing and level of exposure. Available evidence suggests that the risks of this hazard being realized occur following ingestion of high levels of Selenium that has been bio-accumulated in the aquatic food chain and which is quickly followed by egg laying.

Bio-accumulation of selenium in the aquatic food chain does not occur at OT's TSF due to the lack of an aquatic food chain in which selenium in sediment would accumulate in algae, then into invertebrate prey and/or fish to be consumed by birds. The birds observed on the TSF are on migration through the Gobi to nesting and breeding grounds further north and are considered to be resting. Opportunity to feed is limited due to lack of invertebrate or fish prey. Furthermore, their potential exposure to selenium in TSF water is brief and some time elapses before they breed. Selenium is rapidly metabolized and excreted, it is thought to be highly unlikely that breeding success would be affected even if selenium was ingested. In conclusion, while a potential hazard exists, this is not considered to represent a risk to breeding success of birds on migration.

Levels of selenium should continue to be monitored and if larger numbers of birds are observed or if birds extend the time spent on water bodies with elevated levels of Selenium, the need for further mitigating action should be reviewed. Monitoring should also capture potential risks to any other receptors via open pathways, for example through seepage into the ground, uptake by vegetation and potential ingestion by grazing animals. No such risks have been identified at this stage.

5.9.2.4 Stakeholder Engagement

Integration of biodiversity-related commitments and requirements with OT's stakeholder engagement planning process is a Lender requirement (BMP Annex C ID 24). OT committed to develop a "targeted Stakeholder Engagement Plan" to underpin critical engagement with external stakeholders regarding biodiversity offsets (BMP Annex C ID25) and regional-scale sustainable development (BMP Annex C ID26). LBAP items 24, 25, 26 largely focus on consultation needed to develop effective biodiversity offset strategies, but also emphasise the need for good internal engagement to support mitigation actions. There is an expectation of a high level of engagement with a range of external stakeholders, including other companies, all levels of government and organisations working towards sustainable development in the region. OT's consultants have indicated the need for proactive internal and external stakeholder engagement regarding:

- Power line mitigation;
- Road and Rail barriers;
- Outcomes and completion indicators for biological rehabilitation;
- Monitoring, including participatory monitoring; and
- National Biodiversity Offset Policy and removal of fencing from railways as an urgent priority.

OT has now developed a draft biodiversity-related stakeholder engagement plan through the auspices of the Ecosystem Services Group. The Group has completed a stakeholder mapping exercise and identified broad priorities for engagement as a basis for developing the initial plan. The draft plan represents good progress in the right direction. A more detailed programme of specific engagement activities and events is now required to take it forward. Stakeholder engagement has been identified as a key component of consultant recommendations regarding participatory monitoring, implementing biological rehabilitation and finalising OT's Offset Management Plan and a proactive approach is needed to capitalise on opportunities to contribute to development of national policies and develop necessary partnerships with NGOs and other companies.

5.9.2.5 Land Disturbance Control and Land Rehabilitation

Plans and Procedures

OT submitted a request for approval of revised procedures for land disturbance control and rehabilitation through the Notice of Change process but this was rejected pending development of an over-arching Land Disturbance Control and Rehabilitation Plan (OT-10-E14-PLN-00) to replace the Land Use Management Plan. A draft Land Disturbance Control and Rehabilitation Management Plan (LDCRMP) has now been produced and this has four accompanying procedures:

- Revised Land Disturbance Permit Procedure OT-10-E9-PRC-0003;
- Revised Technical Rehabilitation Procedure OT-10-E9-PRC-0002-E;
- New Biological Rehabilitation Procedure OT-10-E14-PRC-0010; and
- Revised Topsoil Handling Procedure OT-10-E9-PRC-0001.

The Rare Plants Protection Procedure (OT-10-E9-0007-M) should also be updated to align with the LDCRMP, bearing in mind the need for greater emphasis on mapping locations of priority plants and avoiding them when land disturbance is planned.

OT's work to develop "completion criteria" for rehabilitated vegetation is welcomed. Draft criteria have been recommended by consultants. These require review and discussion with internal and external stakeholders as recommended by the Consultants in order to finalise them before they are incorporated in the LDCRMP. Reference communities may need to be defined for specific plant communities and vegetation monitoring protocols need to incorporate reference samples as discussed in previous IESC reports. This is important to provide a dynamic baseline against which to compare outcomes from biological rehabilitation and account for changes due to environmental conditions that are outside OT's control.

The proposed package of plan and procedures is in line with lender expectations from previous discussions and, when complete, should provide the basis for effective management of land disturbance permitting and rehabilitation. However, revisions are needed to ensure that the Plan and Procedures can be relied upon to deliver required outcomes for compliance with Lender Standards and GoM requirements.

The OT Project has a large infrastructure footprint on natural and critical habitat and is required to comply with national and local government requirements for rehabilitation as well as Lender requirements for No Net Loss outcomes in natural habitat. The current package suggests suitable Management Controls to meet these requirements in the draft LDCRMP and its draft completion indicators have been developed with them in mind. However, a clearly stated over-arching commitment is lacking. OT needs to give a clear indication of the extent to which rehabilitation is intended to result in like for like outcomes for different vegetation communities and also of the intended timeframe for achievement of target outcomes, accepting that this will be heavily contingent on environmental conditions. The required sequencing and timing of technical and biological rehabilitation needs to be addressed, if only because the Rehabilitation Act tends to stipulate completion within specified time periods and Mongolian State Inspections regularly pick up on delayed completion.

It is therefore suggested that, as part of its LDCRMP, OT should suggest a set of objectives or intended outcomes for biological rehabilitation that is carried out to comply with applicable legislation and standards and for the following purposes:

- to re-vegetate and stabilize landforms, slopes and soils and return land to viable post-disturbance uses while protecting public health and safety;
- to ensure No Net Loss of characteristic, native ("natural") vegetation and plant communities; and
- to maintain population size / availability of suitable habitat for priority plant species affected by land disturbance and operations.

To achieve this, the following issues need to be addressed:

- ecologically sensitive areas / locations of priority or sensitive receptors on OT site need to be identified and mapped to support land disturbance permitting and appropriate avoidance;

- evidence is needed to demonstrate that impacts on natural habitat (per IFC PS6 and EBRD PR6) and priority plants are being avoided to the extent possible, as the Flora Team reports that some priority plants have already died due to being translocated to the NPPC at an inappropriate time of year; and
- if impacts are not possible to be avoided, a robust evidence base is needed to show that priority plants can be a) translocated, b) propagated and grown in green house conditions and c) reintroduced to suitable conditions in the landscape. This requires understanding of ecological requirements for all the priority plants potentially affected and, if this is not available at this time, an initial review of available literature and scientific knowledge regarding these species should be undertaken.

Biological Rehabilitation Progress and Outcomes

In 2011, Oyu Tolgoi project Environmental Department established a Native Plant Propagation Centre (NPPC) in Khanbogd *soum*, Umnugobi *aimag*. This has been developing stocks of native plant seedlings and seed for use in rehabilitation of land disturbed by mining and construction phase activities. The Centre also provides plants for landscaping and horticultural purposes in the lease area and Khanbogd *soum* centre, where the project operates, and its neighbouring Manlai, Bayan–Ovoo *soums* also Dalanzadgad, Tsogt-ovoo and Khurmen *soums* as well. Total of 53675 pcs of saplings were supplied 2012-2015 for landscaping and horticultural purposes. Recent rainfall, after a run of dry years, has improved seed availability for harvest. Combined with purchase of additional seed from commercial suppliers, this means that OT's stocks of seed and seedlings are now sufficient to support a programme of re-vegetation if resources allow. Following initial propagation of seeds and cuttings in 2012, a total of 283,450 Gobi and desert region saplings of 1-3 years old were over-wintered in the Centre and in 2015, a total of 81762 saplings of trees, bushes and perennial grasses of 20 species were planted in the NPPC, of which 10.3% were cuttings and the remainder seeds.

OT's Native Plant Propagation Centre, its efforts to develop stocks of propagules for biological rehabilitation and its rehabilitation programme are examples of OT's commitment to effective biological rehabilitation in sensitive desert environments. There was little experience or information to build on and OT has worked hard to address key gaps in knowledge of South Gobi vegetation and associated challenges for rehabilitation. It is important that best use is made of these efforts by ensuring resources are available for both rehabilitation and the research and follow-up needed to ensure that efforts are channelled into the most effective methods.



OT has undertaken biological rehabilitation on 20.82% or 298.34 hectares of the 1432.9 hectares that have been technically rehabilitated (as of the end of Oct, 2015). The deficit is due, in part, to the very challenging nature of desert environments and the fact that sufficient stocks of propagules had to be accumulated, but there are other important contributory factors that could hamper efforts to narrow the implementation gap. Availability of manpower and other resources is one issue (also addressed in section 5.9.2.10) and the current process for planning and authorising land disturbance is another.

Resources currently allocated are below the levels requested by staff and this is reflected in delays in rehabilitation of some key areas as well as a reduced research programme. The number of staff available to carry out practical rehabilitation means it is not always possible to accelerate planting rates to capitalise on environmental conditions conducive to success, following recent rainfall, for example.

Based on observations during the September 2015 audit, the current process for planning and authorising land disturbance does not appear to allow sufficient lead-time for the teams managing technical and biological rehabilitation to plan their resources and rehabilitation schedules efficiently. Their involvement is triggered by receipt of a land disturbance permit and there does not appear to be a sufficiently detailed forecast of areas likely to be used, for example 6 months in advance. In 2015, 130ha of biological rehabilitation were targeted and completed, but two large additional requirements then emerged (rehabilitation of the old airport and of land around the New Emulsion Plant) which require additional large areas to be rehabilitated. There are also areas within Gunii-khooloi that have had to be rehabilitated again due to poor establishment of plants (22.6 ha in 2015). These have placed additional demands on limited resources.

Re-vegetation is needed to stabilise topsoil and prevent formation of a hard crust at the soil surface. Delay between completion of technical rehabilitation and start of biological rehabilitation reduces chances of success and sometimes means that additional technical rehabilitation is needed, despite good standards of initial work. Restoring desert vegetation is a slow-process, with desert perennials taking many years to grow to maturity; however increased investment in follow-up and carefully designed field-trials could support improved techniques and make it possible to plan more efficient approaches. The specialists report that natural regeneration from the soil seed bank and other vegetation appears to be more effective in hollows and depressions where soil is less likely to be blown away, or collects, resulting in better topsoil depth and water retention. Other landscape contexts do not re-vegetate so readily without intervention. The technical rehabilitation specialists report that it is not always possible to restore a concave landform: they are required to rehabilitate in sympathy with the surrounding landscape and may also have surplus material that doesn't allow creation of depressions. However a carefully designed follow-up programme could compare initial success rates from natural regeneration in different landscape contexts and provide a basis for improved integration of technical and biological rehabilitation, by identifying areas where it is more important for biological rehabilitation to follow technical with minimal delay. The results could be used as the basis for discussion with GoM authorities regarding expectations and requirements under the Rehabilitation Act, and the need to tailor these to the Gobi Desert context.

The need to ensure timely intervention is reinforced by OT's "Completion Criteria Project: Rehabilitation Completion Criteria Review Report" which states that failure to start rehabilitation early "may create an obstacle to building the knowledge and capacity necessary to deliver a sustainable outcome that meets agreed completion criteria. Successful rehabilitation requires a continuous improvement focus, based on site- specific knowledge, implementation of good or leading practice rehabilitation techniques, conducting research and monitoring, and using the findings to improve rehabilitation procedures or management. Opportunities and threats should be identified early so that mining operations do not reduce rehabilitation options. Thus, delayed investment in rehabilitation can lead to delayed relinquishment beyond the operational life of a mine, adding to cost and, in some cases, the retention of a liability for years longer than necessary".

A specific example of delay is rehabilitation of the WRD. The Mine Closure Plan includes a discussion of progressive reclamation, and the MWMP includes the control measure of capping the WRDs with NAF cover material when they are closed or during operations in order to protect runoff water quality, minimize infiltration, control wind erosion and allow vegetation establishment (MW12). The cover design includes the slope configuration and thickness of the cover and the use of topsoil. OT had planned on establishing trial plots, perhaps on final slopes along the interior of the WRD near the pit, considering that the exterior slopes had not been established. The cover includes a proposed thickness of NAF material and topsoil, with the use of native species. Results of trials would inform future efforts for reclamation of exterior WRD final slopes and surfaces, recognizing that several years may be required to accumulate sufficient monitoring data on the success of the planned cover and reclamation. The risk of delaying or canceling the trial plots is that the viability of the proposed slopes, cover thickness, and vegetation may not be substantiated within the next decade, and if changes in these parameters should be made, there may be less flexibility later in the mine life. For example, controlling erosion may be a challenge in this environment, and modified slopes may be a consideration that could be lost or more difficult when the final exterior toe has been established.

Additionally, the visual effect of un-reclaimed slopes will ultimately become a concern and they may generate visible dust clouds in windy conditions. By preparing a strategy for implementation of reclamation, and monitoring of trial plots to help validate the ultimate slope and cover, the mine can better

respond to criticism about the extensive rock dumps being established without active biological rehabilitation.

Priority Plants

To implement plant protection in accordance with Mongolia's laws, regulations and orders and to meet its own commitment to net positive outcomes for priority species, OT is required to safeguard certain rare plant species affected by its operations. A list of such species was drawn up as part of the ESIA process and subsequently revised following review of the Mongolian Red Book to identify species that are particularly rare or threatened nationally and in a Gobi context. The Flora Team reviewed the list and identified those species that are considered to be particularly threatened and potentially sensitive to impacts, as well as being poorly understood in terms of ecological requirements. There are 14 species of concern, 10 being confirmed as priority species and 4 as critical habitat triggers requiring a net positive outcome. However the ability to safeguard these species is hampered by lack of knowledge of their distributions.

OT has taken several actions to limit damage to priority plant species, including a requirement to document their presence as part of the Land Disturbance Permitting process and to translocate them out of harm's way. In addition, OT has been engaged in vegetation monitoring across Khanbogd *soum* and is establishing a flora registry at the *soum* level. This holds 269 plant species of 129 genera and 42 families, including 17 plant species that are included on the Mongolian Red List of Plants and Protection Plan (2012), 16 belonging to the list of endangered plants as detailed in the annex to the Law of Native Plants, 15 belonging to the list of rare plants as detailed in the annex to the Government Resolution #153/1995 and 13 plant species belong to the Red Book.

However, as discussed, the land disturbance permitting process is essentially reactive. This is reflected in the Rare Plant Protection Procedure which requires translocation of plants when they are encountered during the permit application process, but doesn't allow for avoidance of impact as an important preceding step in the mitigation hierarchy. This is compounded by the fact that not all priority plant species are included in NPPC programmes: of 10 species considered to be particularly important and vulnerable only 5 are currently being grown or investigated in the NPPC (in 4 years of work). There is therefore a risk that they could be translocated at inappropriate times of year and then die before it is possible to develop effective propagation techniques. This places the ability to achieve NPI at risk.

Saxaul Forest Offset Programme

OT cleared approximately 65ha of saxaul for its water transmission pipeline from Gunii Khooloi to OT, a loss of 8112 individual plants. A rehabilitation programme was initiated with saxaul grown from seed in the NPPC being planted out as 2-year old saplings (at least 32742 saxaul saplings). By October 2015 about 61 of 65ha had been planted and planting has continued during 2015 to "enrich" 15ha of degraded forest at two sites in Khanbogd *soum*. Survival rates vary depending on soil depth and proximity to herder camps. However in some places survival rate has been around 80% and excellent results have been achieved. Ability to use temporary protection from grazing could improve outcomes in locations nearer to herder camps. Similarly, dialogue with communities is essential to agree temporary fencing of areas where grazing-sensitive plants need to be established at the Bor Ovoo Spring.

Bor Ovoo Spring

Proposed approaches for establishing suitable "analogue" or reference vegetation communities (e.g., in terms of type, species composition and structure) were discussed in the previous IESC visit, at which time plans were being developed to develop field trials to research rehabilitation techniques for the target community for the replacement BorOvoo spring. This was needed to ensure that it would be possible to "mimic" the characteristics of the BorOvoo spring as closely as practicable - taking into consideration the extent of inundation and catchment size, establishing vegetation and rocky outcrop habitats" with priority plants (ESIA Ch B7a Table 7.1). These remain important to underpin design of a new spring in its final location (see Section 5.1.2.1).

5.9.2.6 Managing Illegal Hunting

A list of priority species was identified by OT in its Environmental and Social Impact Assessment and priority ungulate species were considered to be threatened by increases in poaching due to population influx, improved access, and increase in off-road driving. OT therefore committed to undertake research

on effective actions to address illegal hunting and plant/animal collecting and, based on the results, to facilitate actions to reduce levels and impacts of illegal hunting and plant/animal collecting to baseline levels. Reduction in poaching impacts is seen as a potential measure for OT to deliver conservation gain towards NPI in the South Gobi Region and OT's initial NPI Forecast suggested that reducing poaching levels on ungulates could account for a large proportion of the gains needed. A pilot "Anti-Poaching Offset Programme" was established by Sustainability East Asia LLC (SEA) and the Wildlife Conservation Society (WCS) on behalf of OT, building on a successful history of implementing effective and coordinated law enforcement initiatives in other parts of Mongolia, and around the world, and working in partnership with local enforcement agencies. This is ongoing.

Another important mechanism for controlling illegal hunting is inspection of vehicles and accommodation for illegal wildlife or wild plant products. The Lender BAP (18d, BMP Annex C) states that OT will develop procedures for the implementation of its Illegal Wild Plants and Animal Products Policy. OT's revised "Illegal Wild Plant and Animal Procedure" (OT-10-E9-PRC-0005-E) is now approved with controls and key performance indicators included in the BMP. Vehicle checking procedures are in place and regular reports submitted to the Biodiversity Team. OT communicates its policy on illegal activities related to wild plants and animals in its training for employees.

5.9.2.7 Planning for Biodiversity Offsets

OT has revised its NPI forecast and its consultants have developed an interim biodiversity OMP, based on monitoring data. The latter presents a range of options for OT to consider. Based on these options, OT is developing a workplan that details actions to be taken in the near and medium term (1 to 5 years). The final OMP is now overdue and the latest interim report does not provide a detailed account of specific management actions, indicate how they would be resourced or provide approximate time horizons for implementation.

In the ESIA, quantifiable biodiversity gains were anticipated through reductions in illegal hunting, improving rangeland management and reducing impacts caused by non-project powerlines. OT's anti-poaching pilot programme (Report to OT by Sustainability East Asia LLC & Wildlife Conservation Society, 2015) confirms that current rates of poaching may be suppressing populations of ungulates. OT's anti-poaching programme has been very effective; expanding it could bring significant benefits and is something that could be considered as a near-term option. On the other hand, as expected, improved rangeland management seems unlikely to deliver significant gain over large areas in the short or medium term. Engagement of communities in Pastureland User Groups has been trialled by OT's Rural Development and Social Performance Department with positive results, but these remain at a relatively small scale and specific management interventions have not yet been piloted.

Specific measures to address impacts of powerlines on populations of bird species of conservation concern are required as part of the overall biodiversity offset strategy (see Section 5.9.2.1). Another important requirement is to offset residual impacts on landscape connectivity for ungulates that are now predicted due to removal of proposed underpasses from the OT-Gashu Sukhait road. Scope to remove sections of fence from the Ulaanbaatar-Beijing railway is an alternative option being considered. The current fence along both sides of the railway creates an impassable barrier to large ungulates. OT's data have confirmed that habitat fragmentation is a serious threat to the long-distance movement of Mongolian ungulates (GBC, 2015, Interim Offset Management Plan). Increasing permeability of the railway through fence removal would not only likely assist khulan, but also increase connectivity between subpopulations of Mongolian gazelle, and perhaps benefit goitered gazelle and argali sheep. OT needs to have a proactive approach to engagement with the Ministry of Environment and Green Development, the Ministry of Transportation and other stakeholders to ensure that it is in a position to capitalise on opportunities when they arise.

A consolidated plan is essential so that appropriate finance mechanisms can be established. As stated in the Interim Biodiversity Offset Report interventions need to be planned and located so they are cost effective and also biodiversity-effective. The need for further trials and field-testing is recognised, but this should not delay near-term efforts to achieve gains for proven interventions, such as strengthening protected area capacity, something that has a proven track record of success elsewhere in Mongolia. The anti-poaching work provides a good model for how such interventions could be piloted and then rolled out if they prove to be effective.

As identified in previous IESC reports, it is possible that establishment of an independent body or “Offsets Steering Committee” with membership from Mongolian and international experts could assist with stakeholder engagement on this issue.

5.9.2.8 Ecosystem Services

Following training activities and workshops on ecosystem services held in mid to late 2014, OT has focused on improving the working relationship between the Environment and Social Performance Teams through the Ecosystem Services Working Group. The group is operating under new terms of reference and holds regular fortnightly meetings to address the planning, implementation and monitoring of programs and actions related to ecosystem services benefits and other matters that cut across SP and environment. Members report that the Group is operating efficiently with full attendance and has become an effective forum for developing shared workplans.

The Ecosystem Services Working Group is responsible for implementing OT’s Monitoring and Evaluation Program for critical ecosystem services and has made efforts to develop a robust framework for monitoring OT’s impacts on ecosystem services. While this is incomplete, good progress has been made in identifying suitable indicators and improvements in participatory rangeland monitoring, understanding of OT’s impacts on surface water and stakeholder engagement activities taking place through the Cooperation Agreement mean that OT is now well placed to finalise a robust monitoring programme. Completing this remains a priority, but many of the essential building blocks are now in place. What is now required is a set of monitoring indicators and thresholds that reflect the uses and benefits derived from critical ecosystem services and link these with supply across the landscape affected by OT’s activities.

5.9.2.9 Monitoring

OT issued its final “Core biodiversity Monitoring Report” in March 2015 following completion of a pilot monitoring programme in 2013 and 2014 that focused on collecting baseline data for rangeland quality in the southern Gobi, poaching rates in the region, and the status of priority biodiversity features identified in the ESIA. The results were reviewed and evaluated by OT’s biodiversity consultants and advisors, OT’s fauna and flora teams and national specialists and researchers, and were presented, at a workshop, to government of Mongolia ministries, other mining sector company representatives, and national and international biodiversity experts. Based on their findings and advice, specific pressure, state and response indicators were identified, together with associated thresholds, beyond which adaptive management responses are triggered. Objectives of monitoring are to:

- assess, as much as possible, impacts (positive and negative) of development, mitigation, and offset actions in order to allow for adaptive management and to minimize biodiversity impacts; and
- demonstrate that the project has a net positive impact on priority species and habitats.

A comprehensive Biodiversity Monitoring and Evaluation Plan should have been in place prior to the start of the monitoring season in 2015 and is overdue. Meanwhile monitoring activities have continued on the basis of an annual monitoring programme carried out by OT’s flora and fauna teams and a consortium of consultants coordinated by SEA and WCS.

As indicated in its Environmental and Social Update for the period May to August 2015, OT and its biodiversity contractors have completed a range of monitoring activities, including:

- tree health monitoring;
- monitoring of wildlife mortality associated with project activities, completed with bi-monthly frequency during peak period of Houbara Bustard arrival at breeding sites and otherwise monthly;
- ground-based ungulate survey;
- traffic monitoring;
- raptor community monitoring;
- carcass monitoring for Asiatic wild ass;
- khulan collaring and movement monitoring;
- black-tailed gazelle collaring and movement monitoring;
- small mammals and reptile populations.

Tree-health monitoring revealed signs of canopy death in riverine elms at the confluence of the Budaa and Undai rivers. OT needs to confirm that its water-monitoring programme includes sufficient monitoring bores to assess changes in water quality and availability at this location and others where riverine elms occur. Specific follow-up on underlying causes will need to be included in the monitoring programme.

As indicated in the previous IESC report, monitoring frequency has changed for some priority biodiversity features, notably Short-toed Snake-eagle (*Circaetus gallicus*) and some priority plant species. Short-toed snake eagle is now included as part of a wider assemblage of raptor species, as specialists concluded that individual monitoring was not necessary or efficient due to low numbers. Argali (*Ovis ammon*) also has low population density, and small sample size means that it is not possible to estimate populations from ground-based survey-data. Nevertheless ongoing monitoring will be necessary and OT is engaged in discussion with lenders regarding an appropriate approach. This may include aerial survey (currently expected 2019), perhaps combined with monitoring of “pressure” indicators and availability of suitable habitat. A further survey in 2019 is anticipated. Further analysis of existing results from the aerial survey might help in identifying an effective approach. Similarly, while granite floral outcrops do not necessarily require annual survey, it is important to confirm indicators suitable for assessing levels of induced disturbance and damage associated with population growth in Khanbogd Soum and the potential for increased levels of physical damage and collection.

OT has installed equipment to monitor traffic on the OT-GS Road and produces monthly traffic monitoring updates. The Core Biodiversity Monitoring Report suggested a wider programme of monitoring traffic levels and ungulate behaviour to include other transportation corridors and mine sites. The Khulan Study (Appendix C to CBM 3rd Progress Report) suggested that physical characteristics of road crossing points should be mapped so that reasons for use versus random crossing / nonuse can be investigated. As indicated in previous IESC reports, more detailed investigation of the potential factors favouring or preventing road crossings would facilitate planning for effective measures to maintain habitat connectivity throughout the *khulan* range. This is seen as essential to underpin OT’s adaptive management approach to mitigation for barrier effects. Inclusion of other mining roads such as the ER and TT roads was suggested to provide deeper insight into the barrier effects of transportation corridors. This is borne out by recommendations in the Final Core Biodiversity Monitoring Report, which suggests that “A better understanding of khulan behaviour near roads and other infrastructure is needed and all analysis would benefit from the inclusion of other transportation corridors and mine sites within the study scope to increase the sample size and identify more general patterns of behavior”.

The Core Biodiversity Monitoring Report also recommended additional capture and collaring of Goitered gazelle near the OT site, to better understand impacts of mining and paved roads on their distribution and habitat use and this is now underway, the first time this has been done for this species. The data will be used to quantify survival rates, evaluate cause-specific mortality (e.g. predation, poaching, etc.) and identify differences in survival rate and mortality causes between impact (OT) and control areas.

Resource-constraints on monitoring scope are recognized, but it is important for the final Biodiversity Monitoring and Evaluation Plan to support comprehensive accounting for all species with critical habitat affected by the Project and for priority species identified in the ESIA. Annual monitoring reports should also cover all these features. This means demonstrating what actions have already been taken through the mitigation hierarchy to minimize impacts in line with predictions and indicating what provision is in place for adaptive management measures to be triggered if monitoring reveals that thresholds have been crossed. The BMEP must include clear statements regarding assumptions, uncertainties and potential limitations associated with recommended survey methods, their frequency and the interpretation of results.

There are gaps in baseline data for priority plants within the OT site. The current approach to remedying this gap is to record species encountered through the land disturbance permit procedure and associated surveys. This is not sufficiently robust or proactive to ensure that impacts from land disturbance can be appropriately avoided, as discussed in Section 5.9.2.5.

5.9.2.10 Resources and Staffing

The OT Biodiversity Team has a fauna and flora team coordinated by the Biodiversity Manager, now also appointed as overall Manager of the Environment & Biodiversity Team. The BMP outlines key roles and responsibilities for implementation: the fauna team is responsible for a range of biodiversity monitoring activities as well as development of offset proposals while responsibility for biological rehabilitation and

achieving NPI for conservation priority plant species lies with the flora team. The Native Plant Propagation Centre remains under OT management.

OT continues to work with several external organizations, partners and consultants. Coordination of internal and external partnerships has been improving, with signs of stronger collaboration being evident in this visit. The Ecosystem Services Working Group has become an effective platform for aligning and integrating work carried out by the Biodiversity and Social Performance Teams under chairmanship of the Manager Environment & Biodiversity. The group meets regularly and has been instrumental in strengthening OT's approach to biodiversity-related stakeholder engagement.

Developing a biodiversity offset policy that meets ESIA commitments, aligns with Government policy and delivers NPI, together with the demands of managing OT's mitigation strategy on- and off-site, demands a high level of technical input and significant stakeholder engagement. Removing the full-time position of Biodiversity Offset advisor by merging it with that of Manager Environment and Biodiversity is believed to place OT in non-compliance with item 20 of the BAP. This relates to engagement of "a full time senior level specialist" with "demonstrated experience in international best practices to provide support, capability and leadership to OT's biodiversity team in the implementation of biodiversity commitments". The fact that some key components of the offset strategy are behind schedule makes it premature to reduce capacity by removing this full time role at this stage. The IESC understood that there are ongoing discussions on this issue between the Lenders and OT that could be addressed through the MoC process in place.

Although OT invests considerable financial resources in biological rehabilitation, these are not sufficient to achieve required rates of implementation. Improved allocation of resources to review rehabilitation techniques and their relative success in different landscape contexts could result in a more cost-effective programme in the long-term.

5.9.3 Recommendations

20. Investigate scope and potential costs of carrying out targeted research on Houbara in Mongolia and its responses to human influences in the landscape. This is recommended as it would help to establish whether levels of Houbara mortality are sustainable and enable OT to target future mitigation and compensation actions on the most effective powerline offset activities.
21. Develop an accounting framework that includes all priority species and all species with critical habitat affected by OT. This will help to ensure that the programme is flexible to emerging issues and data.
22. Tree-health monitoring revealed signs of canopy death in riverine elms at the confluence of the Budaa and Undai rivers. OT needs to confirm that its water-monitoring programme includes sufficient monitoring bores to assess changes in water quality and availability at this location and others where riverine elms occur. Specific follow-up on underlying causes will need to be included in the monitoring programme.
23. Build on the experience gained through the pilot anti-poaching activities and explore scope to enhance conservation management capacity in the South Gobi Protected Area, whether through biodiversity offset plans or as additional conservation actions.
24. Explore scope to provide access to water for khulan in the Border exclusion zone, where there could be less conflict with herder livestock.
25. Achieving tangible gains in rangeland quality over the large areas for which NPI must be demonstrated appears likely to be very challenging on the basis of progress to date and should therefore be considered as a longer-term option when finalizing the biodiversity OMP.
26. Conduct a community engagement exercise on temporary fencing needed to protect plants from grazing during their sensitive establishment phase. This is important for saxaul planting and for the rehabilitation of the Bor Ovoo spring.
27. Levels of Selenium at the TSF should continue to be monitored. The fauna team should maintain their programme of general observations of birds on site and if larger numbers of birds are observed or if birds extend the time spent on water bodies with elevated levels of Selenium, the need for further mitigating action should be reviewed. Monitoring should also be open to other potential pathways, for example via ingestion by grazing animals.

28. Identify indicators suitable for assessing levels of induced disturbance and damage on granite outcrop flora due to increased levels of physical damage and collection associated with population growth in Khanbogd Soum.
29. Finalise monitoring indicators and thresholds for critical ecosystem services that link uses and benefits with supply across the landscape affected by OT's activities.
30. Give consideration to establishment of an independent "Offsets Steering Committee" with input from Mongolian and international biodiversity specialists to provide assistance with essential stakeholder engagement on national offset policy.
31. Carry out internal review of completion indicators for biological rehabilitation that have been recommended by consultants and develop specific indicators for target plant communities. Revise the vegetation monitoring approach to include reference samples or controls as discussed in previous IESC reports.
32. Provide an update on which priority plant species have been successfully propagated or are being grown in the Native Plants Propagation Centre and on likely propagation success for all priority plant species occurring on OT site or potentially exposed to land disturbance due to OT activities off-site.
33. Confirm that the borrow pits planned to be located in the SSPA buffer area for the final section of OT-GS road construction are 1) permitted by national law, ii) consistent with the SGSPA management plan and iii) were discussed with the protected area's management authority and other local stakeholders. Also confirm that they are not located on good examples of natural habitat and do not require removal of trees.
34. Consider establishment of an independent body or "Offsets Steering Committee" with input from Mongolian and international biodiversity specialists. This could potentially provide assistance with essential stakeholder engagement on national offset policy.

6 SOCIAL

6.1 SCOPE OF SOCIAL REVIEW FOR THIS AUDIT

The September 2015 audit was conducted at a time of steady state operations at OT. This coincides with a recent natural reduction in the total OT workforce by around 600 since the April 2015 desk-top audit (mostly as a result of the end of fixed term contracts with a range of contractors). As a result of this reduction, further rationalisation of worker accommodation and facilities has occurred on site (e.g., only one mess is now operational). The announcement that agreement had been reached with the Government of Mongolia on the underground mine was made just before the audit. Although the UG planning process is not yet in the scope of this audit, it will be a focus for future IESC monitoring activities.

In the period since the last site visit considerable progress has been made by OT and several key stakeholders to develop long-term agreements for mutual cooperation and benefits sharing. Most significant is the signing of the Cooperation Agreement between OT, Omnogovi *aimag* and Khanbogd *soum*, as well as the establishment of a Tripartite Council with elected herders, the Khanbogd *soum* government and OT. The Tripartite Council in particular, will be responsible for managing the activities and programs to monitor and improve herder livelihoods and promote sustainable rangeland management.

The focus of this audit has therefore been on managing steady state labour relations within OT, contractor engagement and auditing of HR/labour practices including accommodation standards, herder livelihoods and livelihood restoration projects (including herder cooperative establishment), and community engagement and development including Undai River engagement, the Tripartite Council and the Cooperation Agreement. To a lesser extent evaluation of community health and safety and cultural heritage were also assessed as part of this audit.

6.2 LABOUR & WORKING CONDITIONS

6.2.1 Project Strategy

As of the 31 August 2015, according to the OT workforce ratio report there were 6,044 workers at the OT operation, including those employed by OT LLC and contractor companies. These include workers at the mine site and in the various offices in Ulaanbaatar, Dalanzadgad and Khanbogd.²⁵ A total of 2,537 workers are OT LLC employees with the remainder of workers employed by contractors and sub-contractors. The total workforce comprises 95% Mongolian nationals.

The Labour Management Plan²⁶ (LMP) was revised in September 2015. The LMP sets out the general requirements for recruitment, labour relations and working conditions at the mining operation (as well as for any ongoing construction or expansion works), in accordance with the Mongolian Labour Law and international standards including IFC PS2 and EBRD PR2. This plan is applicable to OT LLC and contractors. A range of HR policies and procedures are in place to operationalise this plan. The revised plan is not significantly different, however, there were some commitments around contractor management including auditing and redundancies that have been modified. It is important that these commitments are recaptured in the contractor engagement plan which is currently being developed. The OT Investment Agreement (IA) also contains a number of commitments related to national content, training and health and safety of the workforce during operations. OT monitors against the requirements of the IA.

A two-year collective agreement is due for renewal in early 2016 for OT LLC employees as agreed with the Oyu Tolgoi Trade Union Committee. Negotiations for the new agreement are expected to commence around November. The Procurement department manages contractor pre-qualification and auditing of contractor performance. A Contractor Engagement team was established in 2014 to oversee the relationship with contractors in terms of on-boarding workers to the operation and relevant training, HSE and other provisions. The Contractor Engagement, Procurement, and HR teams of OT have collaborated recently to develop an HR/IR audit schedule of contractors and conduct the process of periodic auditing of contractors on these specific requirements.²⁷

²⁵ The satellite offices in Bayan Ovoo and Manlai *soum* centres were closed in mid-2014.

²⁶ Labour Management Plan– Doc. No. OT-10-PLN-0005 dated 01.09.2013.

²⁷ It is noted that auditing of contractor performance in the areas of HSE, business integrity and other elements was already being conducted on a regular basis.

6.2.2 Observations

6.2.2.1 Recruitment and Manpower

The OT workforce continues to be focused on open pit mining, production and transport of concentrate and activities supporting this. It was recently announced that the Feasibility Study (FS) for construction of the UG mine has been approved and OT is now in the early planning phase of that process. Recruitment of UG planning personnel has begun within Rio Tinto and OT. Approximately 50 personnel will be recruited for Rio Tinto and 140 within OT LLC by March 2016. The new organisation for the UG will take some time to be finalised, but it will be important for OT to provide the IESC/Lenders with manpower forecasts and the organisation structure for the UG as soon as they are available.

With a national content ratio of 95% the key metrics set out in the IA continue to be met. There has been a reduction in the number of non-employee workers within contractor companies in the past 6 months. This has been due to the end of fixed term contracts and the consolidation of catering and services into one mess at the OT site; requiring fewer service personnel. Local employment numbers in OT LLC remain steady with 382 employees from Umnogovi recorded in July 2015 compared with 387 in March 2015.²⁸ Overall there are 1,199 employees from Umnogovi at OT including both OT LLC and contractors. This means that almost 20% of the workforce continues to come from the South Gobi. The number of workers from Khanbogd *soum* has reduced a little to 650 (down from 703 in March 2015) due to a reduction in the number of catering and cleaning personnel. The total workers from Khanbogd comprise 215 OT LLC employees and 435 contractors. This is still the highest number of workers from any South Gobi *soum* and is a considerable proportion of the Khanbogd working age population.²⁹ Dalanzadgad *soum* employment figures have also reduced in the past few months from 481 personnel down to 400 at end July 2015.

Although the local employment figures are slightly reduced overall, there continues to be good evidence that preferential local employment policies are being implemented by OT and contractors. One specific example of this is that SCC, a labour hire firm used by OT, currently has 171 workers at OT and has recently established a branch office of their company in Khanbogd *soum* centre, called “Gobi Rocks”. This office registers people from Khanbogd and neighbouring *soums* as well those from Dalanzadgad. A number of other contractors have established offices in the *soum* centre. Another example of preferential recruitment practices is the hiring of 15 Khanbogd residents as a result of the Contractor’s Fair held in July (See Section 6.4.2). The UG planning teams will need to adopt the existing preferential local recruitment policies and practices; this should be readily achievable as OT already has a good system in place. Construction workers should be informed of the temporary nature of these non-permanent positions.

Further progress has been made in the past few months on disclosing local recruitment, training and employment metrics and information to local communities. Relevant information and data is being disclosed in the monthly community newsletter. As suggested by the IESC previously, OT has recently disclosed data on the number of workers from OT LLC and contractors from the Umnogovi *aimag* and each of the *soums*. Frequently asked questions on recruitment, employment and training are also being answered in the newsletters; which demonstrates to the community that their questions are being heard and responded too by OT. This is best practice and demonstrates the operation’s willingness to report relevant metrics to local stakeholders in a transparent manner and respond to their queries and concerns. We encourage OT to continue this approach including by showing performance over time on key metrics for local employment, training and skills enhancement.

6.2.2.2 Management of Worker Relationship

All OT national employees workers are on the 14 days on/7 days off roster (unless they are local/daily workers). The roster change is reported to have been implemented smoothly without any significant issues. The Trade Union representatives met by the IESC indicated that their members did not have any significant challenges with the new roster. However, there is some ongoing concern from some national workers who have to travel significant distances on their week off. The IESC heard anecdotal evidence to suggest that some workers who have to overnight in UB or similar stay in the airport rather than in other accommodation due to the cost (which is apparently not covered by OT although this was not verified by

²⁸ This includes apprentices under training schemes.

²⁹ The total population in Khanbogd in 2014 was 5,057 including children and the elderly.

the IESC). The IESC understands from OT that this concern is limited to a small number of workers, but nevertheless we encourage the company to investigate this further and determine if any additional measures/support might be appropriate in certain circumstances to ensure safe and affordable transition between home place and OT site.

In the period from 15 April 2015 to 10 September a total of 9 employee complaints have been raised through the Speak Out system. Five of these are under investigation and resolution, one is pending and the others have been closed. This is a similar level to previous periods and overall levels are low for the size of the workforce.

The Procurement department together with support from the HR department have made significant progress in auditing the HR/Employee Relations (ER) performance of contractors. The audit protocol has been revised to include relevant HR/ER questions and checks. A detailed audit schedule is being actively implemented for 2015 and a number of audits of contractors have already occurred using the enhanced audit protocol. Sample reports from several contractor audits were reviewed by the IESC. This is significant progress in a short time period and a good example of how OT was readily able to incorporate these recommendations because the system of regular audits of contractors was already in place. A few minor opportunities for improvement were observed by the IESC. These include having a more robust 'summary of corrective actions' so they can be tracked and closed out. We also suggest corrective actions are ranked so that priority matters can be closed out before the next annual audit. For example, a non-compliance with Mongolian Labour Law should be followed up rapidly, e.g., within 2-3 months. It is recommended that OT also reviews the audit schedule to ensure that physical rather than desk-top audits are scheduled for major contractors or contractors where more HR/ER risks might exist, e.g., large workforce, labour hire companies³⁰, and so on.

An issue of concern was raised by the Trade Union about the non-delivery of a commitment in the collective agreement. This relates to recognition of long service (e.g., 5-year, 10-year and so on). In the collective agreement there is a commitment to provide some sort of "gift" of monetary value (but not necessarily cash). Upon discussion with OT during the site visit it was evident that management was aware of this issue and had been working to rectify the situation. OT reported to the IESC that an internal decision had been made to approve in-kind gifts of monetary value for long service. These will be provided retrospectively to all eligible employees who reached long-service milestones during the term of the current collective agreement. It is important that this situation is expediently addressed by OT.

6.2.2.3 Worker Accommodation

No known issues were reported to the IESC about worker accommodation at this site visit. There were formerly two mess facilities being used at OT site and these services have now been consolidated into one (for more efficient provision of catering and related services given the reduced workforce on site).

A medium sized temporary camp was recently established alongside the OT-GS Road Zone 3 area. This is a temporary camp for approximately 5 months per year to house road construction workers from Ochir Tuv Road LLC. The camp is run by Ochir Tuv and therefore it is called the Ochir Tuv camp. This year the camp commenced operation with a limited number of workers in September and will shut-down in November before reopening next year after winter. The camp lease area is 5.92 ha and the land permit was granted by the *soum* government prior to establishment of the camp. The camp has capacity for 340-350 workers including 200 men, 48 women, 48 catering staff and 36 engineers). The CSP team has consulted with herder households in the area and no significant issues have been raised by local stakeholders to date. The Construction and Engineering Group (CEG) at OT is conducting periodic audits of the camp to assess accommodation standards and other OT requirements. At the time of the site visit an issue had been identified with running water. As a result, OT closed the camp and moved all of the current residents to OT site. Ochir Tuv were instructed to fix the issues before it could be reopened. The IESC will check on the status of this and ongoing operation of the camp at the next audit.

It will be important for OT to fully assess accommodation needs for the UG both at OT site and potentially outside the site (e.g., in Khanbogd or elsewhere). Similarly high standards for accommodation conditions

³⁰ OT has recently started to utilise more labour hire companies including from Khanbogd. These should be prioritised in the audit process as they are likely to have less capacity to implement similar HR/ER standards to OT LLC.

and worker behavior applied at OT site need to be replicated at any other camps. We also reiterate the need to advise Lenders/IESC in advance of implementing these plans. Accommodation conditions and worker attitudes at OT site should also continue to be monitored and employees kept informed of current and longer-term housing plans. It is understood that a working group for development of a long term housing strategy has been established between OT and the *soum* government. This should enable collaborative decisions to be made and the IESC/Lenders looks forward to seeing the plans being made by this group for long-term housing at the appropriate time.

The company has continued efforts to investigate conditions at the Jiayou managed warehouse and accommodation facilities in Huafang, China. The contract with Jiayou has now been renewed and the IESC confirmed there is a clause for regular auditing by OT of the accommodation facilities. The first site audit has not yet been scheduled and this now needs to be expedited. The IESC were also able to review the 'accommodation standards' content of the new contract and commend the company for including these more detailed requirements for the transport contractor. However, we note that these requirements focus more on hygiene and cleanliness and do not specify a number of other important accommodation standards including those related to: No. of beds per room, bed spacing, privacy, No. of ablutions per head count and others.³¹ Monitoring of these requirements also needs to be incorporated into the auditing of this facility.

6.2.3 Recommendations

35. Expedite the periodic auditing of the accommodation conditions at the Jiayou camp in China. Ensure that all relevant standards are assessed at these audits (L03, L08).³²
36. Provide the IESC/Lenders with manpower forecasts and the organisation structure for the UG once finalised;
37. Ensure UG planning teams adopt preferential local recruitment policies and practices and that construction workers are informed of the temporary nature of these non-permanent positions (LMP Section 5.1.2, L02);
38. Continue disclosure of employment and training metrics locally and consider showing performance over time on key metrics (LMP Section 5.1.2, IMPm21);
39. Advise Lenders in advance of any new accommodation plans as they arise, e.g., for road construction, UG planning and construction etc;
40. Continue to monitor accommodation conditions and worker attitudes at OT site and ensure staff are kept informed of current and longer-term housing plans (LMP Section 5.1.5, IMP, Table 2, IMP15);
41. Investigate further the issue of some workers living far from UB and overnighing at the airport on their weekly journey home. Determine if any additional measures/support might be appropriate in certain circumstances to ensure safe and affordable transition between home place and OT site;
42. Implement improvements to the HR/ER audit process for contractors including: a more robust 'summary of corrective actions' and a mechanism to ensure more priority actions are closed out before the next annual audit (e.g., a simple ranking system or similar);
43. Review the audit schedule in terms of HR/ER auditing to ensure that physical rather than desk-top audits are scheduled for all major contractors or contractors where more HR/ER risks might exist, e.g., large workforce, labour hire companies, and so on; and
44. Consider how preferential local recruitment procedures can be assessed as part of the contractor audits as this is a key commitment of OT to the Government of Mongolia; and
45. Work with Ochir Tuv LLC to resolve the issues at the road construction camp.

³¹ See the OT internal standards and the IFC/EBRD Guidance Note on "Worker Accommodation: Processes and Standards" as per LMP, Key Management Control, L08.

³² These items refer to the previous Labour Management Plan. In future some of these commitments may be in the Contractor Engagement Plan.

6.3 RESETTLEMENT, COMPENSATION AND LIVELIHOODS IMPROVEMENT

6.3.1 Project Strategy

A Resettlement Action Plan³³ (RAP) has been in place since 2012 to manage physical and economic displacement. This was updated once in 2013 to reflect the start of the operations phase activities. Now that operations are in a steady state and compensation and livelihood restoration for affected herders are well advanced, OT has substantially revised the RAP in 2015. Significant work has been done with Khanbogd herders in the previous 2 years and this update reflects the progress made. The latest revision provides a summary of some key results and outcomes achieved to date and defines the actions still required to fulfil the commitments that remain. It also continues to act as the framework for any future displacement that might occur due to new activities or associated facilities.

The focus of the resettlement program remains on implementing livelihood restoration activities. In the past a range of strategies, plans and programs have been in place to deliver livelihood restoration opportunities and other entitlements to affected herders. Now that the great majority of entitlements have been delivered to directly affected herder households, the focus is shifting to a more holistic support program for Khanbogd-wide herders (directly and indirectly affected) that will be administered under the Cooperation Agreement. This “Khanbogd Herder Program” is not a new set of commitments but rather a re-focusing of the existing pastureland improvement and livelihood activities under one umbrella that will be overseen by the new “Tripartite Council”³⁴ between OT, Khanbogd *soum* herders and Khanbogd authorities. This re-focusing of support for Khanbogd herders is also as a direct result the South Gobi herder workshops at the *aimag* level in 2015 which was sponsored by OT. At this forum it was agreed with the Khanbogd *soum* governor to align with the South Gobi animal husbandry strategy for all work supported by OT involving herders, livelihoods and pastures. At present the Pastureland and Livelihood Improvement Strategy³⁵ is still applicable but will likely be updated to reflect these recent outcomes.

The Completion Audit for herders resettled in 2004 has now been finalised and corrective actions implemented. The Outcome Evaluation of households economically displaced in 2011 has advanced to tender stage under the Multi-Disciplinary Team (MDT) study being overseen by the Tripartite Council (as initiated through the CAO process). The study/evaluation itself is expected to start in later 2015 or early 2016 once the preferred team has been engaged.

The Land Use Management Plan³⁶ (LUMP) and Land Disturbance Permit (LDP) continue to be implemented where required, to minimise disturbance to land and ensure that local permits and approvals are acquired. The Grazing Access Protocol is still being implemented to allow herders to graze at certain times each year in the OT mine licence area which is administered under the supervision of the *bagh* authorities.

An Undai River specific engagement plan has now been finalised by OT. This plan guides all engagement activities with herders and *soum* authorities on the Undai River diversion project and the Bor Ovoo Spring relocation activities.

6.3.2 Observations

6.3.2.1 Resettlement

The action plan to implement recommendations from the Completion Audit for resettled herders was revised slightly in accordance with IESC recommendations. This plan has been implemented by OT over the past 6 months. Actions have included more active engagement of resettled herder households to offer them opportunities to participate in pre-employment and other training, the participatory environmental monitoring program and herder cooperatives. Efforts were also made to ensure households were shown the completion audit results and the socio-economic monitoring data for their families over-time so that they could see the changes recorded. There are only minor actions still to be implemented by end 2015 with

³³ *Resettlement Action Plan - Doc. No. OT-10-PLN-0006 dated 01.09.2013.*

³⁴ *The Tripartite Council is a formal consultative body established in 2015 to oversee herder engagement and activities in Khanbogd soum between OT, herder representatives and the Khanbogd soum government.*

³⁵ *Pastureland and Livelihood Improvement Strategy - Doc. No. OT-10-E2-PLN-0001 dated 01.09.2013.*

³⁶ *Land Use Management Plan - OT-10-E9-PLN-0001-E dated 01.09.2013.*

some families. With the exception of one household that is included in the vulnerable people program, the resettled households are considered to have restored or improved their livelihoods and standard of living. Although the 2004 resettlement program is essentially complete, all of these families will continue to be part of the Khanbogd-wide herder program being administered through the Cooperation Agreement. They will continue to have access to the various herder cooperative, pastureland improvement and other projects being supported by OT.

6.3.2.2 Economically Displaced Herders

All “one-off” entitlements including compensation have been delivered to the directly affected herder households under the economic displacement program. The only household-level entitlements still being delivered are the ongoing education support and scholarships for school children. The transition of herders employed as road maintenance workers (RMW’s) to other economic activities continues. This strategy from “entitlement to economic independence” for displaced herder families focuses on several options including long-term employment with OT LLC or contractors, small business development either directly or through herder cooperatives, and training and skills enhancement. More than 70% of directly displaced families continue to participate in at least one of OT’s community programs and all have participated in training activities and been the beneficiary of donations by OT. Employment support training was recently provided to 12 displaced herder family members (this included 8- pre-employment training, 3- apprenticeships, and 1- internship at OT site). It was evident at this site visit that OT has increased its efforts to actively target directly and indirectly displaced herders in Khanbogd to participate in the range of livelihood improvement and other community programs available. The geo-referencing of socio-economic data for the directly affected herder families has helped OT to monitor the directly affected herder population and target them for ongoing assistance. Ideally this process would be extended to indirectly affected Khanbogd *soum* herders in the next phase of implementation if possible.

Two complaints from herders about compensation were received since the previous audit. These are understood to have been readily resolved by additional engagement and providing opportunity for the household to participate in OT programs. Previous outstanding complaints from herders are intended to be dealt with through the MDT study and addressed therefore, through the Tripartite Council. All three stakeholder groups have agreed that there is no need to now reconvene the Compensation Working Group and the council will assume the role of investigating and addressing herder complaints and issues in the future (See Section 6.4.2). The IESC supports this approach for managing the engagement with and support for Khanbogd *soum* herders in the long-term.

The outcome evaluation of economically displaced herders from the 2011 program has progressed since the previous audit. It is still planned as part of the MDT study agreed by herders, OT and the Khanbogd government with the facilitation of the CAO. It has been agreed that it will now be overseen by the new Tripartite Council. At the time of the site visit the council had identified a shortlist of four organisations/teams to conduct the study and was in the process of reviewing proposals from these teams. The council reported to the IESC that they expect the work to be awarded in Q4, 2015.

The IESC was able to review the scope of work for the MDT study in detail at this audit. The MDT study if implemented properly, should provide some useful data and information to help evaluate the current status of affected herders. However, the scope also has the potential to present significant risks to OT. For example, there are some elements of the MDT study scope that are open to considerable interpretation. We strongly recommend that the Tripartite Council carefully manages the study. It should be focused on evaluating the status of affected herders (directly and indirectly affected) and the adequacy of livelihood restoration and other support measures. The key objective of any outcome evaluation process for a land acquisition program is to assess if livelihoods are being/have been restored/improved. Although there is some need to reflect on past compensation and address past complaints that are deemed valid, the IESC encourages the council and study team to agree on resolutions with tangible corrective actions. The most important aim is to ensure that the intended “outcomes” of the compensation and livelihood restoration programs by OT are achieved for affected herder families. There would be little value in posthumously trying to re-assess impacts or compliance with particular standards.

The IESC notes that it is common in resettlement and livelihood restoration programs to need to revisit some compensation and livelihood restoration activities that may not have worked as fully as intended and then modify them as appropriate. It is the purpose of the outcome evaluation process to identify any weaknesses and suggest corrective actions. This is important for all stakeholders to keep in mind during the MDT study; otherwise there could be undue negativity and uncertainty which would not serve the

interests of the key stakeholders, most particularly the affected herders themselves. The IESC is available to review the study methodologies and execution plans if requested.

Phase 1 recommendations from the IEP study on the Undai continue to be implemented and are now under the guidance of the Tripartite Council. Out of the 14 recommendations there remain 2-3 that may be difficult to implement, but dialogue is continuing within the council to agree a way forward. It has been agreed by the Tripartite Council that Phase 2 of the IEP study will be combined with the MDT study. This is a sensible approach to ensure that there is alignment between the work and that there are no unnecessary overlaps or areas for potential contradictions.

6.3.2.3 Pastureland and Livelihood Improvement

The participatory vegetation monitoring (rangeland monitoring) by Nutaag Partners was restructured in early 2015 to build on the previous year's results and align it more closely with other vegetation monitoring activities at OT. There are now 5 formal and 6 informal team members and more than 30 field plots being monitored. Monitoring and data collection is ongoing. OT and Nutaag Partners organised a rangeland management plan development workshop with the Khanbogd *soum* government on 13 August 2015. This was an outcome of the first phase of participatory rangeland monitoring program. The workshop was designed to start dialogue with the *soum* on preparation of their rangeland management plan. The aim of OT is to have a series of discussions with the *soum* (facilitated by Nutaag Partners) to define how to implement recommendations from the participatory rangeland monitoring program and identify how OT can support the *soum* to prepare their plan.

For the first time this year environmental rehabilitation activities were awarded to two cooperatives in Khanbogd with a total value of 40.6 million MNT. The total area to be rehabilitated under these contracts is 15 ha. This is a good example of how environmental rehabilitation work can be a catalyst to provide herders and other residents with economic development opportunities.

The first phase of an animal health and disinfection service was implemented in Khanbogd *soum* in 2015. It was decided that this service should be offered under the herder cooperative model to allow some families income diversification opportunities in addition to the animal health improvements for a wide range of herders. Several cooperatives expressed interest in the service in response to the invitation to tender by OT and the *soum* government; and three were awarded the project. OT funded the Mongolian Cooperative Training and Information Center (MCTIC) to support these three groups to successfully implement the animal health service project (Figure 6.1). This is a good example of how OT has translated outcomes from the animal health study into tangible benefits at the community and household level. This action closes out the finding by the IESC on animal health implementation projects from the last site visit.



Figure 6.1: Cooperative Member Conducting Animal Disinfection Service

The Grazing Access Protocol continues to be implemented with *bagh* authorities managing the process. This year to date, a total of 3 herder households have been allowed access to the grazing area (around 1,600 hectares) within the mine license. However, due to good vegetation across Khanbogd this year none of them actually entered the OT grazing area. No known issues have been raised about the access process and it is well received by local communities.

One of the main contributions by OT to herder livelihoods is through the Local Business and Economic Development (LBED) program. Because the focus of livelihood improvements at present remains on directly and indirectly displaced herders, the discussion on LBED has been moved to this section of the IESC report.

6.3.2.4 Local Business and Economic Development

There has been a real shift in the focus of the Local Business and Economic Development (LBED) program since the last site visit. This shift is towards herder business development as the predominant target population for livelihood support from OT. Broad local economic development is important, but the focus on herder families is essential to fulfil OT's commitment to livelihood improvement of displaced people. There has also been more emphasis by the CSP team on improved evaluation of interventions by OT and reporting on activities and results. This benefits both the IESC review process OT senior management understanding of the important contribution of the LBED program in supporting herder livelihood improvements.

There are currently 20 collaborating herder businesses across 8 business types and 9 new start-up herder cooperatives in the past 6 months across 7 business types.

Table 6.1 shows the herder businesses and cooperatives that have been/are being supported by OT through their partners as at September 2015.

Table 6.1: Herder Business / Cooperatives with OT Support

Collaborating herder businesses:	New Start-up business – herder cooperatives
Business types: 8 / Total number: 20	Business types: 7 / Total number: 9.
✓ Camel milk processing - 1	✓ Sausage production - 1
✓ Felt and crafts - 3	✓ Tea packaging/bagging -1
✓ Cattle farming - 1	✓ Cattle (meat) farming - 1
✓ Concrete block producing - 2	✓ Wool primary processing – 2
✓ Veterinary service - 2	✓ Veterinary service – 2
✓ Retail shop - 5	✓ Felt and crafts – 1
✓ Boots making – 1	✓ Camel poll gland processing -1
✓ Tourism – 5 herder groups	

The new start-up cooperatives include sausage production, tea packaging/bagging, cattle (meat) farming, wool processing, veterinary service, felt and crafts, and camel gland processing. The company's support for herder cooperatives/economic development is delivered through their funding of cooperative development partners the MCITC and Centre for Policy Research (CPR). Their remit is to help develop and support effective cooperatives in Khanbogd, Manlai and Bayan Ovoo.

Since May 2015 a total of 8 different trainings have been held with cooperatives (Table 6.2). During the site visit a number of herder businesses and cooperatives were met by the IESC. All members/participants engaged described the benefits and importance of the support they have received from OT to develop their small and medium-sized enterprises (SME's). Figure 6.2 shows some of the herder business/cooperative training activities and products.

Table 6.2: Summary of Recent Herder Cooperative Trainings

№	Names of training	Soum	Benefit accrued to herders	Date
1	Benefits of combing baby camel wool, new standards, value adding, potential price premiums	Khanbogd soum	Goviin Bayan Erdenes Cooperative 87 herders, soum officials	May 2015
2	Developing proposal for wool washing plant	Manlai, Khanbogd soum	Members of the Manlain shuteen and Galba evsel cooperatives	June 2015
3	Sausage processing, standard requirements	Khanbogd soum	Turliin Myangan Taij cooperatives	Monthly
4	Felt processing and wool handicrafts making	Khanbogd soum	Women from 10 households	Jun-Jul 2015
5	Developing business proposal on printing house	Khanbogd soum	Mr. Ganbayar- relocated household head, Ms. Battsetseg vulnerable	July 2015
6	Europe style shoes production training	Manlai soum	Local Uran khiits bat holboo cooperative	Aug 2015
7	Developing business plan	Khanbogd soum	21 participants from herder cooperatives and other local businesses	Aug -Sep 2015
8	Animal washing and disinfection	Khanbogd soum	11 herders from 3 cooperatives	Sep 2015



Figure 6.2: Herder Business/Cooperative Support Activities – Progress Photos

Notable recent achievements with herder economic development include two projects related to wool (camel/sheep shearing and baby camel wool combing). The Gobiin Bayan Erdenes cooperative was established as a “shearing team” comprising two local shearers trained by international experts in the original demonstration project in 2014. This cooperative was established in 2015 to provide camel and sheep shearing services for interested herders in Khanbogd and neighbouring *soums*. The number of herders involved was modest in this first year but it is a tangible step forward for this important livelihood improvement project. Through the support given to Gobiin Bayan Erdenes it is evident that this has been given high priority by OT. The IESC hopes to see continued support for this cooperative/initiative so that it can become a sustainable service and business.

A torom wool combing project was piloted in collaboration with the CPR, Gobi LLC and the Gobiin Bayan Erdenes cooperative (Figure 6.3). This pilot included two day classroom and practical training sessions, sampling of 72 camel wools from 1 and 2-3 year old camels and combing of more than 500kg of Galba Gobi Red 1 year old camel wool. This pilot involved 12 herder households and a combing team of 10 individuals (8 from the Gobiin Bayan Erdenes cooperative and 2 from CPR). According to the initial results and laboratory testing by Gobi LLC, the “Mongolian Noble Brand” criteria have been satisfied to create a new standard of 1 year old camel wool. This provides an excellent opportunity to improve the quality and value of camel wool so that the income of herders can be increased. A camel wool combing video is being created to prepare training materials and handouts so other herders and wool procurement entities can better understand wool combing methods and technologies.



Figure 6.3: Photographs from the Baby Camel Wool Combing Pilot Project 2015

A cooperative especially targeted at women was established in mid-2015 in Khanbogd to produce felt handicrafts (this includes women from vulnerable herder households). This group has been trained in the production of felt shoes, toys and other handicrafts (Figure 6.4). They have been provided training and

regular technical support, as well as additional assistance such as provision of initial materials and equipment for handicraft production. The IESC met some of this group during the site visit and it was evident that members involved were empowered by the opportunity to participate in making these products and hopeful at the prospect of obtaining income from them in the future. There are still some challenges to ensure this group can access appropriate markets and be self-sustaining, but this is a well-intentioned program and the IESC encourages OT to continue to support it to hopefully become a viable small business for these women.



Figure 6.4: Felt and Handicraft Production Cooperative

There are now 43 people running a vegetable growing business covering 18 varieties of vegetables in Khanbogd. Recently OT supported these individuals/families to expand their market access to include OT, Khunnu Coal, Energy Resources and local shops. The weekly supply of vegetables to OT from these businesses is currently 200 kg of cucumbers and 100kg of tomatoes. Another project benefiting herder livelihoods is the Bayangobi Institute and Galba Daichin cooperative who were awarded the saxual tree planting offset program for OT covering 15 ha of land in Khanbogd. Lastly, several more cooperatives have started a micro-credit scheme with their members and this is expected to offer more and improved options for herders and others to access small scale loans from non-institutional micro-finance schemes. OT is providing support through the MCTIC to these savings and loan groups.

Overall there was considerable further progress observed by the IESC in terms of supporting herder income diversification and generation opportunities since the last site visit. This is in part due to additional efforts by OT and their cooperative training partners, but also due to improved evaluation and reporting by the CSP team on the full extent of activities to support herder economic development. As suggested in the previous report, OT has begun reporting more fully on the specific contributions to each cooperative including by disaggregating data by location, type of support, business/cooperative type and so on. Detailed evaluations of the outcomes from different projects with cooperatives are also being well conducted and this should be continued, e.g., for the fodder distribution program, the torom wool combing pilot project and others. This is a comprehensive approach that allows OT to see where successes are being achieved and where additional interventions/supports may still be required.

Based on the evaluation of several herder cooperatives and pilot projects conducted by OT to date, as well as discussions by the IESC with some cooperative members, it is our opinion that the support program for herder cooperatives and economic development through the MCITC and CPR should be extended for at least a further 12 months. Whilst there are a number of cooperatives already operating successfully, many are still in the phase of paying off loans needed to start-up the business and are not generating profits from their activities yet. Furthermore, there are a number of herder households that indicated they were part of a cooperative and interested in business development opportunities but had not yet decided which small business they want to pursue.

Finally, it will be important for the MDT study team to evaluate the “outcomes” of different herder groups involved in the various cooperatives and businesses supported by OT as part of their work. This is essential for the company to be able to assess the real extent to which herder livelihoods as a whole are on the way to being improved. This will then enable OT and the Tripartite Council to agree what further measures are still required and when a completion audit should be scheduled.

6.3.2.5 Vulnerable Displaced People

Significant progress has been made since the last IESC site visit on the vulnerable herder program and overall support for vulnerable people in the host community. A time bound and costed plan is in place and delivery of support measures on the ground is well advanced. OT has collaborated closely with the soum welfare office and part of the program includes a joint plan of support measures.

The vulnerable households met by the IESC all expressed their gratitude to OT in their recent efforts to provide livelihood and other supports to their families. Although some measures are still being implemented, the previous non-conformance regarding vulnerable herder households can now be closed.

Some of the most notable recent support measures for vulnerable people include:

- the disabled children’s fitness/therapy room in Khanbogd *soum* hospital was equipped by OT (See Section 7.2.2);
- the “ Bayan -Arvijikh” group was established – producer of felt crafts (OT procured machinery, equipment and basic supplies) and provided space in the Community Interaction Centre;
- several vulnerable families were funded to buy livestock (restocking) – 3 families (those with very low levels of livestock considered to be insufficient to maintain income above poverty line);
- the payment of cooperative admission fees was funded by OT – 3 families; and
- some families were assisted to prepare proposals for a small business and then supported to obtain financing – 2 families.

Other recent vulnerable herder support activities include engaging members of vulnerable families in job readiness and apprenticeship training, provision of fuel wood from OT waste point, spent tyres for animal shelters and transportation of vulnerable individuals for medical treatment.

One vulnerable household is a formerly resettled household (now a widow). This person was identified as still being vulnerable at the time of the completion audit and is therefore included in this vulnerable people program. However, this vulnerable person is currently living in Ulaanbaatar due to health issues. OT has been in contact with this woman and she has expressed interest in being in the program in 2016 upon return to Khanbogd.

Figure 6.5 shows some of the vulnerable herder support activities recently provided by OT in collaboration with the *soum*.



Figure 6.5: Selection of Recent Vulnerable People Support Activities by OT with the *Soum*

It will be important for OT to assess the effectiveness of this program through regular monitoring and evaluation of vulnerable herder households. Vulnerable herder households should be specifically assessed in the outcome evaluation process. Assessing the livelihood and standard of living changes for vulnerable families over-time should enable OT to understand which support measures have been successful and if additional measures are required for some families. The IESC looks forward to seeing further progress at the next audit.

6.3.2.6 Update of the Resettlement Action Plan

The update of the RAP has now been finalised by OT. The IESC and Lenders reviewed the latest revision and provided comments through the Notice of Change process. OT has addressed the comments received

and the updated RAP is final. This revised RAP is substantially different from the original RAP to reflect the post-construction and early operations phase. The updated RAP has been well prepared and the IESC believes it accurately captures the progress to date and the actions still required for the remainder of the program. This addresses the commitment to have a RAP update as per the ESAP with Lenders.

The IESC that OT engages the Tripartite Council on the RAP update and agrees an appropriate disclosure process to be implemented.

6.3.3 Recommendations

46. Implement the minor actions still to be implemented from the Completion Audit corrective action plan as intended.
47. Extend the geo-referencing and monitoring of herder families to indirectly affected Khanbogd *soum* herders in the next phase of implementation if possible;
48. Conduct as planned, a series of discussions with the *soum* (facilitated by Nutaag Partners) to define how to implement recommendations from the participatory rangeland monitoring program and agree the division of responsibilities for developing a rangeland management plan in Khanbogd;
49. Continue to support the animal health disinfection service cooperatives for a reasonable time period with a view to having these services become a sustainable local business/cooperative;
50. Consider if vulnerable herder households should be initially subsidised to access this animal health service;
51. Define how OT intends to support the *soums* to implement the recommendations from the participatory vegetation/rangeland monitoring report by Nutaag Partners. Ensure there is a clear division of responsibilities between the *soum*, other stakeholders and OT;
52. Continue to implement the vulnerable herder households action plan in collaboration with the Khanbogd *soum* authorities;
53. Assess the effectiveness of the vulnerable people program through regular monitoring and evaluation of vulnerable herder households. Ensure vulnerable herder households are specifically assessed in the outcome evaluation process. Use the results to define if any additional support measures are required for some families;
54. The IESC recommends the Tripartite Council carefully manages the MDT. It is focused on evaluating the status of affected herders (directly and indirectly affected) and the adequacy of livelihood restoration and other support measures. Although there is some need to reflect on past compensation and address past complaints, the IESC encourages the council and study team to agree on resolutions with tangible corrective actions. The most important aim is to ensure that the intended “outcomes” of the compensation and livelihood restoration programs are being met, rather than on posthumously trying to re-assess impacts or ‘compliance’ with a particular standard.
55. Engage the Tripartite Council on the RAP update and define and implement an appropriate disclosure process;
56. Continue to support cooperatives and in particular those with herder membership. Develop a clear plan as part of the CA for ongoing support for livelihood improvement projects through cooperatives. For example, this might include ongoing funding of the MCITC and CPR for at least the next year;
57. Continue to conduct detailed evaluations of the outcomes from different livelihood projects with herder cooperatives/businesses and prepare relevant reports. Ensure sufficient detail so that decisions can be made about ongoing support and monitoring for these projects; and
58. Ensure the MDT study team evaluates the “outcomes” of all categories of affected herder groups (e.g., herders in different categories of displacement (A to F from the RAP) and those involved in different livelihood support activities, e.g., cooperatives and businesses supported by OT as part of their work).

6.4 STAKEHOLDER ENGAGEMENT

6.4.1 Project Strategy

Community engagement is the responsibility of the SP team while national government and other national-level stakeholders are managed by the Government Relations and Communications team. Relevant elements of the RT-wide Community and Stakeholder Engagement Tracking System ('CSETS')³⁷ are being implemented by the SP team. CSETS is used to also record, track and manage resolution of community grievances.

The SP department has now finalised a Community and Stakeholder Engagement (CSE) Guideline for OT site and engagement with communities and other local stakeholders. This guideline has replaced the draft plan that the SP was originally developing.

The CSE Guideline is complementary to the SEP OMP. The SEP is the overarching plan that sets out the approach to stakeholder engagement, whereas the CSE Guideline is designed to help OT teams drill down to a deeper level of analysis and planning for community engagement. Discipline specific action plans are then intended to be developed for key thematic areas or activities. The SEP operational management plan is also due for revision in OT's annual review process. The IESC understands it will be revised in late 2015 to reflect the current operational activities and the more recent methods and tools of engagement being used with stakeholders, e.g., Tripartite Council, Community Interaction Centre (CIC) and so on.

Community relations staff members continue to be present at OT site, Khanbogd, Dalanzadgad, Manlai and Ulaanbaatar. The Community Interaction Centre has now been opened in Khanbogd *soum* and provides an improved opportunity for information disclosure from OT to the host community. CSP team members in Khanbogd are now situated in the CIC.

6.4.2 Observations

The IESC observations from the September 2015 audit are focused on community engagement with local authorities and residents in Khanbogd *soum*. The findings are based on review of documentation, interviews with CSP department staff and meetings with selected stakeholders including the Speaker of the Khanbogd Citizens Khural, several herder households involved in the 2011 compensation program, herders involved in a range of cooperatives and other activities with OT including participatory environmental monitoring, as well as other residents of Khanbogd. The IESC also met with two vulnerable herder households, the key members of the Tripartite Council including the current chairperson, and two local sub-contractors to the OT operation.

6.4.2.1 Community Engagement

Considerable effort has been made over the past few months by the SP team to update local stakeholder identification and analysis information, review key issues raised by communities and establish processes and procedures that build on the wealth of knowledge within OT to make continuous improvements to local community engagement. The CSE Guideline has been finalised and is a useful tool for SP and other teams to help prepare discipline specific community engagement action plans. The planned revision of the SEP operational management plan will complete this current update of the stakeholder engagement system. The SEP update should include key advances and changes in the community engagement area in recent months such as new engagement and disclosure methods, e.g., Tripartite Council, Community Interaction Centre. The IESC look forward to seeing the draft revised SEP in due course.

During the site visit the IESC were able to review several action plans for targeted community engagement including for the Undai River/Bor Ovoo Spring relocation project and some that were still being drafted (ecosystem services/biodiversity and UG development). This new approach to issue-specific community engagement planning is more holistic and collaborative and builds on the wealth of knowledge of stakeholders from within different OT teams.

The Undai River specific engagement plan non-conformance can now be closed. It was apparent during the site visit that much work has been done by OT to ensure that the various teams are aligned on Undai River engagement. Priorities for upcoming engagement on the Undai include agreement of the new Bor

³⁷ A 'Community and Stakeholder Engagement Tracking System' being rolled out by Rio Tinto operations worldwide.

Ovoo Spring location by herders and the rehabilitation or similar of wells in several locations to offset the changes to the Undai River system from the diversion. A total of 48 herder households were identified by the IEP Phase 1 as being potentially affected by the Undai River/Bor Ovoo relocation project and face to face meetings have now been held by OT (with CAO involvement) with each of these households. These households are identified as the key stakeholders in the Undai engagement plan. These consultations have indicated that herders generally agree with the new location but have proposed to create/improve water resources at 4 other locations around OT site. This is good progress on engagement around this sensitive topic and we look forward to seeing further outcomes at the next audit.

Engagement with the Elected Herder Team (EHT) has formally transitioned to the Tripartite Council. The Tripartite Council was officially launched, there is a signed MOU and three meetings have occurred to date. The council plans to meet at least every 2 months or earlier if the need arises. The timely establishment of the council and approval of the MOU including the Charter is highly positive and all stakeholders should be commended for this outcome. The council has the potential to be an effective engagement forum for joint activities with herders if implemented and managed as intended (See Section 6.4.2.4). The Tripartite Council it is hopeful about what it can achieve, but recognizes that trust and joint implementation of activities is essential. There are already examples of success for the Tripartite Council, for example they recently negotiated the provision of trucked water from OT to herders in 5 locations nearby to the OT site. The next most important priorities for the council are to facilitate the successful completion of the MDT study and agree the Bor Ovoo Spring relocation / Undai River diversion project activities. The council does not replace individual herder engagement which continues on a daily basis in many different forums.

Community consultations have been ongoing with Javkhlant and Khairhan *bagh* residents on the construction of the OT-GSK road. It is important that this consultation includes engagement on the construction workforce that will be present in the temporary worker camp ("Ochir Tuv camp"). Further Cooperation Agreement consultations are also planned with the community in Q4, 2015 to share information about the operation of the agreement and collect proposals from communities for the initial allocation of the DSF. The series of OT site tours have continued and recently included Khanbogd scientist, Khanbogd high school graduates, Manlai *soum* delegation, South Gobi *soums* citizen's representatives, Khanbogd meteorology staff and South Gobi State Fund officials; a total of 340 community members participated in site tours between April to August and 480 in total year to date.

The bi-annual Open Day by OT was held together with a Contractor's Fair in Khanbogd on 2 July 2015 (Figure 6.6). The Open Day was aimed at providing current information to the public on OT operations and the social and environmental programs available to the local community. There were more than 250 locals in attendance. The Contractor's Fair was designed to enable direct engagement between OT key contractors, the local authorities, businesses and general community. A total of 37 OT contractors participated and presented their activities and in addition a total of 34 open positions for employment were advertised (a total of 15 persons were hired from Khanbogd as a result). More than 500 local residents attended the fair. Feedback from participants was favourable and the local community was pleased to hear about vacancies and procurement opportunities and have direct engagement with OT contractors.



Figure 6.6: Khanbogd Open Day and Contractor's Fair, 2 July 2015

6.4.2.2 Information Disclosure

The monthly community newsletter continues to be the main method for information disclosure to communities. The depth of information disclosed is continuously improving with regular sections on a wide-range of topics. More recently the company has included more local stories, events and information from the community. Key metrics are being progressively reported on community grievances, participatory environmental monitoring (PEM), and training and employment figures. This joint company-community newsletter approach is best practice. Reporting on environmental and social performance over-time would be another good practice for OT to consider (e.g., past 12 months local employment figures or the comparative number of complaints from the previous year).

The Community Interaction Centre in Khanbogd was opened on 24 May 2015. A joint steering committee and operational procedure have been developed to manage the CIC collaboratively with the *soum* government. A local company is contracted to manage the administration of the centre. It is intended that some of the rooms will be 'rented' out to local organisations to bring in some revenue to help with running costs of the facility. A procedure for this has also been established. The OT operation has a room at the centre dedicated to information about the mine and the company including a model of the open pit and processing facilities and samples of different types of ore from the process. A range of community events have already been hosted at the centre (~ 15 events) with reportedly around 800 visitors to date. The CSP staff in Khanbogd are now located in the CIC (a total of 8 CSP staff).

The CIC provides the opportunity for greater information disclosure by OT to the Khanbogd community. It also offers residents a more 'passive' way to obtain information about the operation. It is suggested that OT maximises the display of disclosure materials at the CIC by including a wider range of materials e.g., posters on OT-community programs, procurement opportunities, cultural events and so on. Suggestion boxes to receive community feedback and proposals for the DSF are worth consideration.



Figure 6.7: Khanbogd Opening Ceremony of Community Interaction Centre, 24 May 2015

The Participatory Environmental Monitoring (PEM) program continues to be successfully implemented and now covers monitoring in the following areas:

- Dust;
- Well water;
- Elm tree;
- Fauna; and
- Rangeland.

A few important changes and improvements have occurred to the PEM program recently including: 5 herders now participate in OT dust monitoring activities as observers since May 2015; there is better collaboration with the OT Environmental team, their local and international contractors and herders on elm tree monitoring, and the Nutaag Partners work has been extended to include restructuring of the participatory rangeland monitoring program which now covers 60 permanent plots. Information disclosure and engagement activities for the PEM program are being effectively planned, implemented and documented. Regular monitoring results on the different PEM sub-programs are provided in the monthly community newsletter and disclosed in a range of other formats and locations.

6.4.2.3 Community Grievances

A total of 11 community grievances were received between April and August 2015 and all of these were resolved at the time of the audit (Figure 6.8). The most common types of complaints continue to be environmental (dust, water, pollution) and those related to road construction (e.g., animal injury, road litter etc). There were also two human resources complaints and two compensation related complaints from herders. Overall the number of complaints remains low for the size of the operation. The most repeated complaints continue to be related to human resources. This was observed as a result of tracking of trends of complaints and as a response OT organised several actions to try to decrease and prevent recurring HR complaints. This included having the HR manager work in KB *soum* office 2-3 days to meet residents who had HR related issues and questions, and a meeting was organised with the Khanbogd *soum* governor, deputy governor and specialist of the labour and welfare department to discuss HR related issues.

There were also 11 cases of feedback provided to OT during this period which included positive feedback on community infrastructure activities (e.g., bulk water supply) and the herders forum held in Dalanzadgad, as well as requests for collaboration with OT.

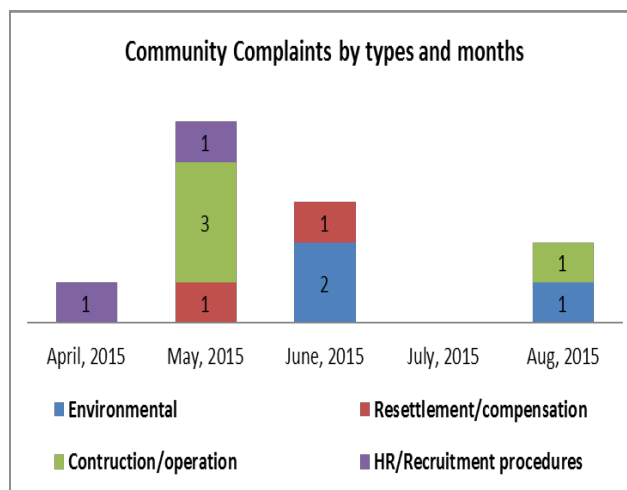
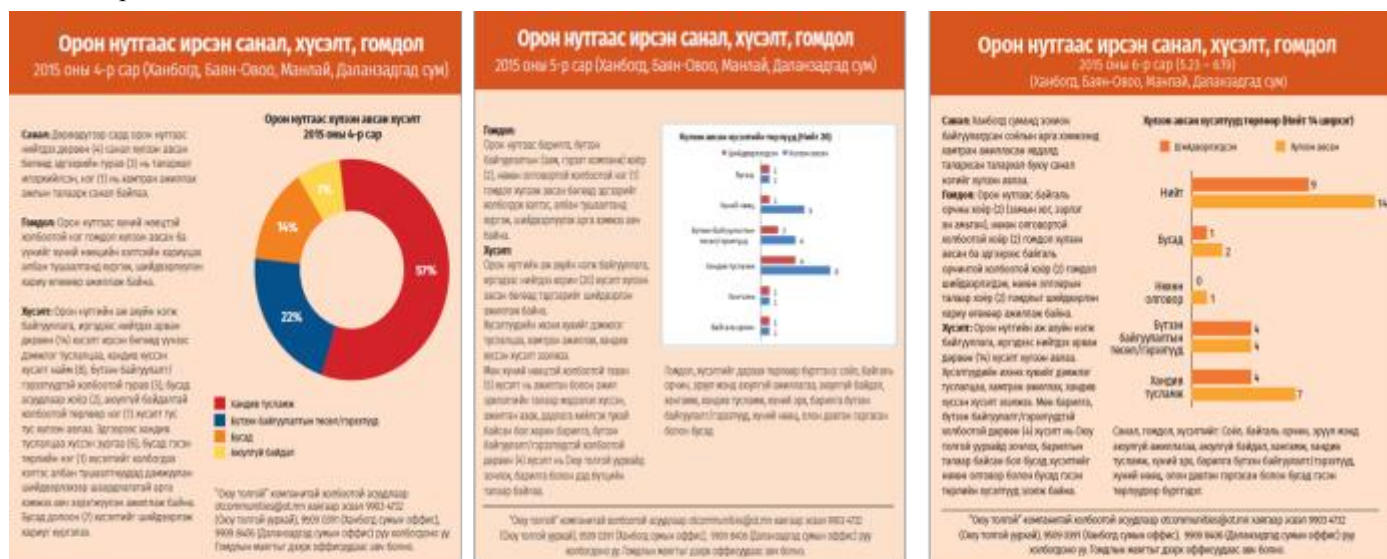


Figure 6.8: Community Grievances April to August 2015

Regular reporting to communities on grievances continues through the monthly community newsletter and includes both qualitative and quantitative information (Figure 6.9). The detailed reporting of complaints externally by OT to communities on a regular basis is best practice. This demonstrates an open and transparent approach to information disclosure and the significant improvements made by the operation to report on both positive outcomes of their interactions with communities as well as the areas for further improvement.



Translation: **Feedback:** In April we received a total of four feedbacks, three of them expressed appreciation and one of them was to collaborate. **Complaints:** Received one HR type complaint and submitted it to HR department's related staff and they are working to resolve it.

Translation: **Complaint:** Received a total of three complaints; two construction / contractor (road) and one compensation type complaint. We submitted them to relevant staff and they are working to resolve them.

Translation: **Feedback:** Received one feedback appreciating the support to organize a Cultural event in KB soum. **Complaints:** Received a total of four complaints; two environmental (road litter & wild birds) and two compensation type complaints. Resolved two environmental complaints and other two are in the process to be resolved.

Figure 6.9: Disclosure of Community Grievances, Requests and Concerns in Monthly Newsletters (April to June 2015)

6.4.2.4 IFC Compliance Advisor Ombudsman and EBRD Project Complaints Mechanism

The two formal complaints lodged with the IFC Ombudsman Office (CAO) regarding allegations of inadequate compensation for resettled herders and the Undai River diversion have been transitioned to the responsibility of the Tripartite Council. The MOU and Charter for the Tripartite Council were signed in June 2015 and this included formal responsibility for addressing these herder complaints. The Elected

Herders (the EHT) has now been superseded by this council. It is the IESC's understanding that the complaints made to the CAO are still in mediation but upon completion of the MDT study and any relevant corrective actions, would be withdrawn; paving the way for the Tripartite Council to be the vehicle for all future engagement activities on herder related topics. This is encouraged by the IESC and should be expedited as far as is possible. The IESC met with representatives of the council during this site visit, including the current Chairperson (a herder representative), the OT members on the council, and a Khanbogd *soum* government representative of the council. These parties were all positive about the structure and remit of the council and hopeful that it would be an effective group to resolve these outstanding complaints.

A third complaint to the EBRD's Project Complaint Mechanism (PCM) aimed specifically at Energy Resources LLC and OT LLC alleges major disruption to herd movements due to increased traffic on transport corridors. The IESC were informed by OT that they have now received a letter from the EBRD dismissing the complaint made. This closes out the need for any further action on this issue by OT.

6.4.3 Recommendations

59. Finalise other discipline specific engagement plans on priority topics, i.e., on the UG construction and biodiversity/ecosystems services in accordance with the new CSE Guideline and provide to IESC/Lenders for review before next site visit;
60. Document all engagements on the Undai and Bor Ovoo with herders and channel the decision making process through the Tripartite Council so it is formally recorded and sanctioned;
61. Establish a wide range of disclosure materials and displays at the Community Interaction Centre in addition to the model and current information on display;
62. Continue engagement with communities on the road construction when it begins again after new year. Ensure it includes discussion of the construction workforce that will be present in the temporary worker camp near the construction site;
63. Consider reporting externally metrics that show performance over time (e.g., past 12 months local employment figures or the comparative number of complaints from the previous year);
64. Continue dialogue with the Tripartite Council on the findings and recommendations from the IEP to agree a way forward on those that may be challenging to implement; and
65. Maximise the display of disclosure materials at the CIC by including a wide range of information. Suggestion boxes or similar to receive community feedback and/or proposals for the DSF under the Cooperation Agreement may also be worth consideration..

6.5 REGIONAL AND COMMUNITY DEVELOPMENT

6.5.1 Project Strategy

Regional and community development is one of the main functions of the SP team. A core element of the OT approach to regional and community development is the establishment of a long-term Cooperation Agreement for the South Gobi, supported by sub-agreements that address thematic areas of importance to the target *soums*, Umnogovi *aimag* and the mine. As part of the step-wise approach to preparation of the Cooperation Agreement, OT made an Interim Agreement with Khanbogd *soum* which was signed in late 2013. Implementation of the Interim Agreement has been ongoing in 2014.

A range of localised projects continue to be implemented by the CSP team that are contributing to regional and community development, including those being delivered through the local business and economic development, cultural heritage, community health, safety and security, pastureland management, and employability and training programs.

There are two work streams in the CSP department and the Compliance and Governance work stream covers the cooperation agreement and interim agreement. OT is positioning the operation towards eventually delivering all social programs through the cooperation agreement model.

The regional and community development program is directly related to in-migration management which is addressed through the Influx Management Plan³⁸ (IMP) and to a lesser degree in the Labour Management Plan and Community Health, Safety & Security Management Plan³⁹ (CHSSMP). These plans are all designed to minimise unplanned influx, maximise regional and community development to help the host communities cope with population growth, and promote sustainable economic development.

6.5.2 Observations

6.5.2.1 Cooperation Agreement

A number of local infrastructure and community development projects have been started and/or completed in Khanbogd since April 2015. The bulk water supply project has been started in Khanbogd including the part of the project funded by OT: water source, water supply main, the distribution network across the *soum* centre and its supporting facilities.⁴⁰ The construction of flood and drainage facilities in Khanbogd is complete (see figure below). and will be handed over in September 2015. Construction commenced on the OT financed Manlai Sports Hall (see figure below) and work was almost 50% completed at the time of the site visit. OT also recently financed the construction of 5.1 km of transmission line from OT to the central grid (Khanbogd and Bayan Ovoo consumers are now also transferred to regional tariffs). As described above, the internal fit out of the CIC is now complete and the centre was opened in May 2015.



Figure 6.10: Flood / Drainage Facility in Khanbogd and Manlai Sports Hall Construction

Road construction for the Zone 3 portion of the OT-GS road commenced in the summer season and will then wind down for winter and re-start again next year. Road construction for the OT to Khanbogd road has not yet been scheduled. The permanent Khanbogd landfill⁴¹ is a commitment by OT in the Cooperation Agreement and it is budgeted for in the 2016-17 budget. The planned Cultural and Sports (C&S) hall in Dalanzadgad is understood to be still on hold.

The Development Support Fund (DSF) has been registered as a non-government organisation under the name of “Gobi Oyu”. The DSF charter and Relationship Committee (RC) rules and the founding resolution for Gobi Oyu have been finalised. The DSF/RC protocol and the funding guideline for projects are still in development. The overall governance structure is shown in Figure 6.11.

The 1st DSF Board meeting is scheduled for the end of September 2015 and the 1st RC meeting around the same time. The first funding transfer is scheduled for 30 September. Community consultations in Umnogovi aimag, Khanbogd, Manlai, Bayan Ovoo and Dalanzadgad soums are planned for October to collect DSF proposals.

³⁸ *Influx Management Plan - Doc. No. OT-10-PLN-0004 dated 01.09.2013.*

³⁹ *Community Health, Safety & Security Management Plan - Doc. No. OT-10-PLN-0001 dated 01.09.2013.*

⁴⁰ *The bulk water supply project is being done in collaboration with the ADB and the government.*

⁴¹ *Design was completed with OT support but construction of the landfill itself is the responsibility of the soum and not part of the Interim Agreement.*

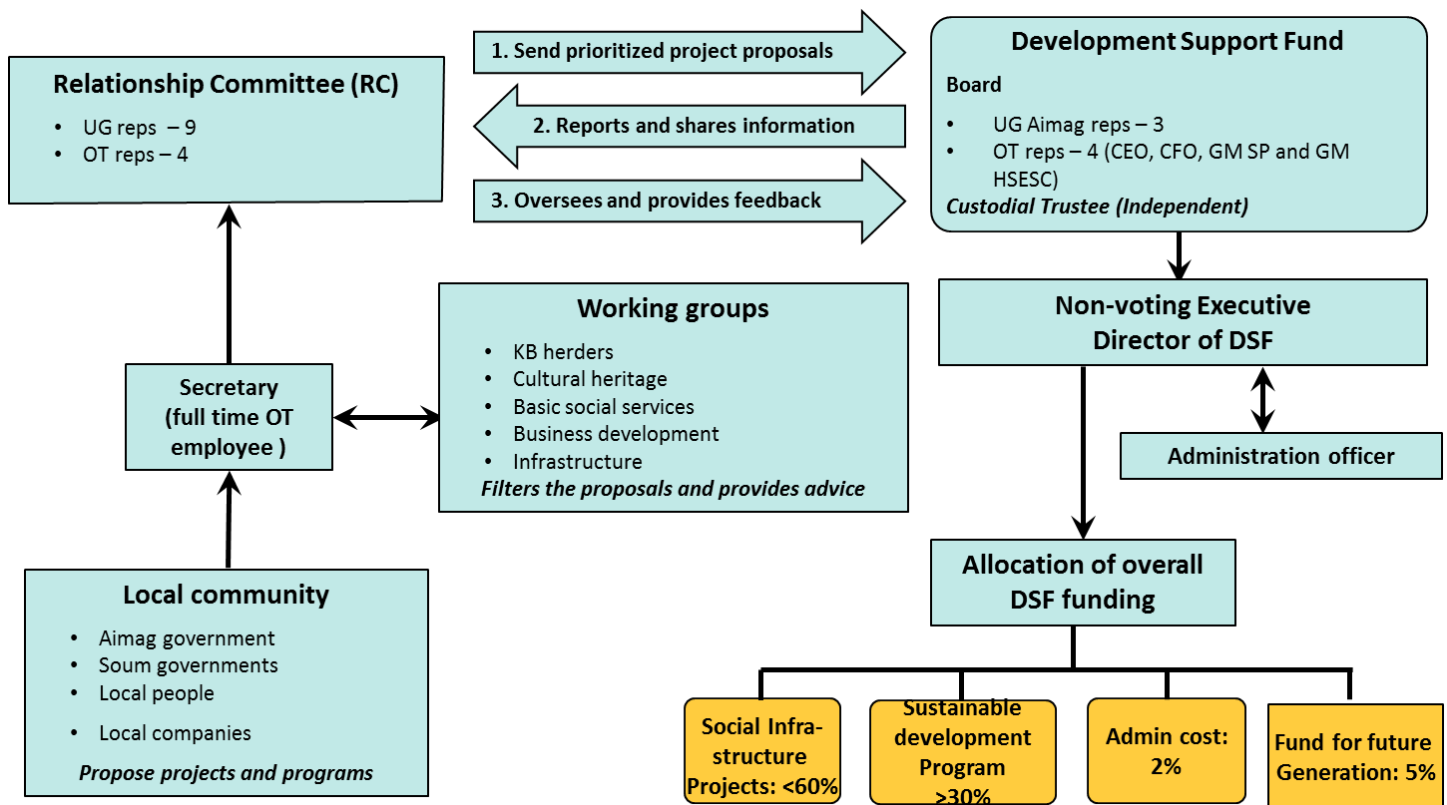


Figure 6.11: Governance Structure of the Cooperation Agreement

The Khanbogd *soum* authorities and Tripartite Council representatives met were well informed about the Cooperation Agreement and how it will function. The Tripartite Council has been nominated as the Working Group for Khanbogd Herders under the governance model so that any developments aimed at herders, pasture and livelihoods (under the Traditional Animal Husbandry and Pasture Land Management thematic area) will be assessed by the Tripartite Council.

Recent non-infrastructure contributions made by the OT operation include support for the disabled children's room at the Khanbogd hospital and the establishment of the Youth Development Centre (See Section 7.4.1). These are good examples of more sustainable education and health development contributions made by OT in the host community.

A micro-credit loan scheme is earmarked as part of the 5% of the DSF that will be allocated to the 'Future Next Generation Fund'. This will be a revolving fund to be used for micro-loans for local residents. It is still early in the planning for this scheme but OT has started to investigate how the fund will operate and which banking entities may be viable partners. As stated previously, it will be important for the criteria for this micro-loan scheme to be structured so it can be readily accessed by herders and other families/individuals to make a range of livelihood investments (not only small business start-ups). The IESC looks forward to seeing the operating framework and action plan for the Future Generation Fund when available.

6.5.2.2 Induced In-migration

No assessment of in-migration management activities was conducted at this audit as the current status of operations does not present any additional risks to population growth or reduction at this time. It will however, be necessary for OT to consider and assess any potential new or additional risks that may result in induced in-migration impacts due to the UG construction. The recently established working group between OT and the *soum* on long-term worker housing should consider influx risks in their upcoming engagements. In-migration risks, if any, due to UG construction must be adequately assessed in advance.

6.5.2.3 South Gobi Supplier Development

The Supplier Development Program by OT continues to focus on building the capacity of South Gobi suppliers and in particular those in Khanbogd. Recently local vegetable growers from Khanbogd started supplying tomatoes and cucumbers to OT. A total of 12 suppliers from Umnogobi currently operate at OT site (one more than the last report) with eleven of these from Khanbogd. Overall the OT operation is working with 100 South Gobi suppliers and of these 43 suppliers are from Khanbogd. More significantly, 90% of the spend in the South Gobi is with Khanbogd suppliers (Figure 6.12).

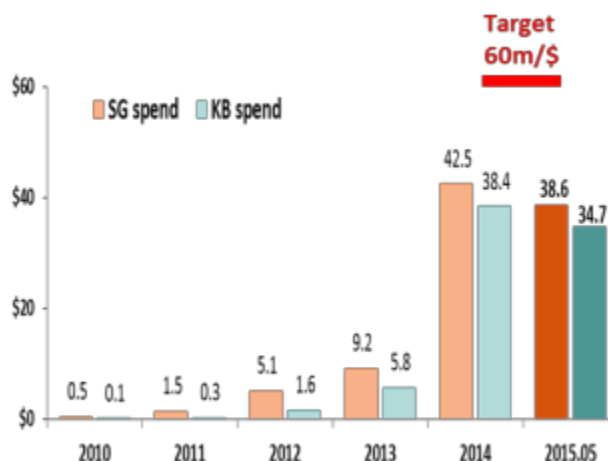


Figure 6.12: South Gobi (SG) and Khanbogd (KB) Supplier Spending to May 2015

6.5.3 Recommendations

66. Complete the final governance arrangements for the Cooperation Agreement as planned (Investment Agreement Item 4.9, SEP28, SEP29, IMP (various), IMP20, IMP21);
67. Finalise the operating framework and implementation plan for the Future Generation Fund. Implement the first phase of the fund under the Cooperation Agreement once finalized. Ensure the micro-loan scheme can be readily accessed by herders and others it intends to target by making the access criteria relevant;
68. Continue to dialogue on influx/out-migration and related issues with Khanbogd *soum*. Ensure engagement on influx risks is incorporated into discussion between the working group on long-term worker housing. New or additional risks to in-migration due to UG construction must be adequately assessed in advance (IMP02-04, IMP07, IMP08); and
69. At the appropriate time develop procedures and build capacity of the *soum* and OT to monitor and deal with influx and associated issues (IMP02-04, IMP07, IMP08).

7 HEALTH AND SAFETY

7.1 WORKER HEALTH

7.1.1 Project Strategy

Occupational health is managed under the OT Health, Safety and Environmental Management System which is consistent with OHSAS 18001, and addressed in the Environmental and Social Management Plan. Occupational health assessments are conducted for workers based on exposure to risk, and medical monitoring of employees and contractors is performed. Onsite health facilities have staffing to respond to chronic conditions and emergencies.

Fitness for work is emphasized in the ESMP, and policies and practices address a range of health maintenance and protective measures, including alcohol impairment awareness. Thermal stress and dust is actively monitored.

7.1.2 Observations

Occupational health resources include four cross-trained staff with audiometry, dosimeter, and sampling / testing equipment. The Health Department is currently working on filling an open industrial hygienist position that has been vacant since 2014. Common studies include evaluation for dust and noise, and silica and noise sampling to assess potential risks for Similar Exposure Groups is planned for September 2015. Occupational health activities are tracked based on scheduled/completed sampling as well as appointments for SEGs. The Health Department is also formalizing a fatigue management program.

The health clinic is managed by International SOS and is staffed with about 20 doctors, nurses, paramedics, technicians and other personnel, and includes X-ray and laboratory equipment and a pharmacy. Ambulances are available at the clinic, and one is maintained at the airport. The clinic typically receives 50 to 60 cases per day, except in spring when the number averaged over 90 per day in May and June. The more frequent cases received at the clinic since April 2015 have been respiratory, dermatological, and ear, nose and throat cases.

The Health Department has conducted wellness presentations and tool box talks to approximately 1,900 attendees since the beginning of the year, at about 50 venues.

The ChemAlert program has been implemented for access to information on chemicals used on the Project. Currently, 893 products are registered in the ChemAlert program, with Material Safety Data (MSD) summaries in Mongolian. The Health Department performs updates and checks of chemicals used on the Project to ensure accuracy and risk classification, and provide training for end users.

7.1.3 Recommendations

Nil.

7.2 COMMUNITY HEALTH

7.2.1 Project Strategy

Community health is addressed in the CHSSMP. The primary objectives include: mitigate the community health and social conflict risks associated with influx; develop strong relationship with health service providers and improve their capacity to respond; and mitigate impacts of road and other transport movements associated with the Project. In addition to Transport, Influx Management, and Emergency Response, CHSS management programs also address monitoring of key health indicators for community residents relative to OT operations, and response strategies. Implementation of community health protection measures are the joint responsibility of the HSE and CSP departments.

7.2.2 Observations

OT continues to provide assistance to communities emergencies, as needed. Community cases treated at the OT Clinic through July 2015 are approximately 27, primarily cases of trauma, X-ray, and ophthalmology. More cases were seen in the spring and summer than the winter.

Recent local health system strengthening activities have included in-kind donations for the Khanbogd soum hospital including used furniture, gers, computers, an air-conditioning unit and installation. Of the 40 local health care workers enrolled in English language training in Dalanzadgad a total of 38 completed the course and 19 successfully passed the exam.

The Khanbogd hospital now has a disabled children's therapy room which was fitted out with furniture and accessories provided by OT (Figure 7.1). This room is used by hospital staff to provide twice weekly sessions of play, massage, and therapy for disabled children and their parents. This is a highly beneficial contribution to these families and the first opportunity they have had to regularly obtain medical support for their disabled children's development. The IESC visited the room at the time of one of the sessions and all of the parents indicated how much of a benefit this new service is to their families.

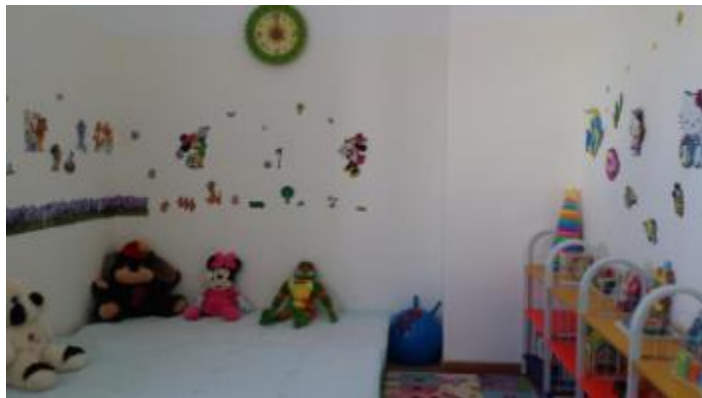


Figure 7.1: Disabled Children's Room in Khanbogd Hospital

Another significant achievement in the community health area in recent months was the opening of the Youth Development Centre (YDC) in the OT Trade Training building (Figure 7.2). The YDC is housed in the area formally used by the CSP team. In partnership with the UNFPA Youth Development Program OT facilitated the establishment of a YDC for Khanbogd *soum*.⁴² The aim of the centre is to be youth and adolescent friendly and provide a range of services from psychological and careers counselling to access to computers, books and other equipment. Training of YDC staff was completed in mid-May and the centre was opened on 9 July 2015. The YDC support team has been established under the leadership of the Deputy Governor of Khanbogd *soum*. A YDC youth panel has also been established. There are also plans to launch a youth friendly 'clinic' within the Khanbogd *soum* hospital by end-September which OT will support through in-kind donations.



Figure 7.2: Youth Development Centre in Khanbogd Soum

7.2.3 Recommendations

70. Develop specific plans for herder health contributions by OT as a result of the herder health and livelihoods study. Define proposed actions as part of the Cooperation Agreement.

7.3 WORKER SAFETY

7.3.1 Project Strategy

Occupational safety is also managed under the OT Health, Safety and Environmental Management System which is consistent with OHSAS 18001, and undergoing audit at the same time as the IESC were on site. A series of operations management plans and procedures provide management controls and monitoring

⁴² Khanbogd *soum* was not originally targeted as part of the UNFPA Youth Development Program but was included through support from OT to provide a building/office space and fund other essential elements.

systems, along with specific procedures to be followed for mining and transportation activities, including exposure to safety risks of the public. 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. All employees and contractors receive training in hazard awareness and the assessment process.

Hazardous substances are addressed in the Hazardous Materials Management Plan, and health and safety awareness discussed in other Operational Management Plans. Design and operations for blasting is undertaken in accordance with the Blasting Standard Work Procedures, which address: use, handling, and transport of explosives; personnel and training; schedules, warning systems, and monitoring; and audit procedures. Additionally, the Noise and Vibration Management Plan addresses associated effects from blasting, and it is noted that there are no sensitive receptors in the area.

Physical hazards relate to mine conditions, transport, use of fixed and mobile equipment, and machinery. Geotechnical safety is addressed as part of mine plans and related operations management plans, including the Mineral Waste Management Plan. Transport and machinery safety management controls are addressed through traffic controls, signage, illumination, and safety barriers and berms. Specific procedures have been developed for work activities, including electrical safety, isolation, working at heights, crane operation, confined spaces, etc.

The underground mine is still in a care and maintenance condition at present, with personnel restricted to maintenance of equipment, inspections and roof support. Workshops have been cleared of potential hazards, and equipment situated for safety and maintenance at the Shaft 1 entry ramp. Monitoring is performed for explosive gases, and refuge bays located within close proximity of equipment. Refuge bays have been inspected in anticipation of plans for resumption of underground development work, and non-compliances that were identified were corrected.

7.3.2 Observations

The Critical Risk Management (CRM) program focuses on risks that, if left uncontrolled, could result in a fatality. Seventeen critical risks have been identified (e.g., confined space, entanglement and crushing), including five associated with underground mining (e.g., underground fire, underground hoisting). Critical controls for each critical risk to prevent or mitigate a fatality are identified and verified. Critical Control Checks (CCC) are performed by workers and supervisors, and Critical Control Verification (CCV) conducted by superintendents and above. Training was completed and the implementation process finished at the end of July 2015. Placards are in evidence throughout the site providing reminders of critical risks, and project records document implementation. CRM has been integrated into pre-start meetings, task assignments and maintenance planning. It has also been integrated in hazard identification and task procedures – SWPs, JHA, Permits and TRACK (Think, Recognize, Assess, Control, and Keep safe). Project records track the monthly CCVs completed and compare with established targets to promote sustained attention and involvement.

During 2015, the monthly HSEC Department themes will reflect critical risks, and the July and August periods are reminding workers of “Slope Failure” and “Lifting Operations.”

The attention to vehicle safety has included review of the use of light vehicles on and off-site, and measures to isolate travel ways where heavy vehicles operate such as at the Open Pit and TSF. Berms, separate vehicle travel ways, and drive-through parking are among improved journey management processes expected to have positive effect. The IESC witnessed the use of these measures, including separate travel ways for light and heavy vehicles in the Open Pit and TSF, which has been recognized by RT as its first mine to implement this practice so extensively.

An additional vehicle safety measure related to fatigue management that is being implemented is SmartCap technology and fatigue management. SmartCap equipment measures an operator’s brain activity and calculates his level of alertness. It is a predictive technology that employs electroencephalography with patented technology and fatigue algorithms. SmartCap is intended to allow an operator to monitor his own fatigue by providing alerts in real time. An initial program of outfitting approximately 28 trucks operating at the Open Pit is planned.

Training in process safety management was performed in July 2015 to go beyond personnel safety and evaluate potential hazards from the plant operating systems, considering chemical release, fire, explosion and other hazards. A review of process safety hazard zone status at occupied buildings was conducted.

In August 2015, the HSESC Department organized a contractor safety forum, with representation from about 40 contractor companies and 130 participants.

Security and Human Rights training for the security service providers and the communities team was completed in July 2015. The training program has been developed based on RT's policies and in accordance with the Voluntary Principles on Security and Human Rights. In August, the Security and ERT departments were integrated and the Site Business Resilience Center setup.

Incidents, Injuries and Illnesses are tracked within the RTBS system, with summaries included in the monthly and quarterly HSE Reports. Incident descriptions encountered at departments are provided in the reports. In August 2015, monthly incident counts (reflecting significant incident, significant potential incident, and process safety incident) included six incidents at the Open Pit, Concentrator, Trades Training Center, and Logistics, with critical risks identified as vehicle collision (haul truck hit road berm on TSF road, and outbound logistics truck impacted road guardrail offsite); falling object (Victaulic pipe cap separated from main pipework at Concentrator); and exposure to hazardous substances (lime dust entered employee's eye). Two were reported injuries, with one lost-time.

Incident and injury statistics are analyzed within the RTBS system, which allows a range of calculations including Lost Time Injury (LTI) and LTI Frequency Rate (LTIFR), and All Injuries Frequency Rate (AIFR) figures for comparison with relevant targets (AIFR and LTI) that are tracked and presented in monthly reports. AIFR and LTI are within targets through August 2015.

The HSE Business Conformance Audit for ISO14001 and OHSAS 18001 recertification was being performed September 15-21, 2015 and recertification was confirmed.

7.3.3 Recommendations

Nil.

7.4 COMMUNITY SAFETY

7.4.1 Project Strategy

Community safety risks and management measures are incorporated into several environmental and OH&S management plans and procedures described above, and the key community safety protection measures are summarised in the CHSSMP. The CHSS management programs include commitments on community safety awareness training and monitoring of personal safety issues in the local population. Safety risks which have the potential to affect communities are the joint responsibility of the HSE and CSP departments. The CSP team is responsible for safety awareness training and monitoring within communities and these remain currently focused on road traffic safety and human security and human trafficking risks.

The increase in the workforce for the UG construction may bring additional risks in terms of community safety and security and these will need to be investigated to see if current training, awareness raising and support programs may need to be augmented to address any new or increased risks.

7.4.2 Observations

No community safety incidents or concerns were reported by OT during this site visit or by the local stakeholders met by the IESC.

It is good to see that OT has been monitoring registered crime statistics on a monthly basis in Khanbogd, Bayan Ovoo, Manlai and Dalanzadgad *soums* in the past 6 months. Review of the statistics show that there has been a total of 35 registered crimes between January to July in Khanbogd (registered crimes were cumulatively: 3-Jan; 6-Feb; 10-Mar; 10-Apr; 22-May; 25-Jun; and 35-Jul). The slight increase between May and July is understood to correlate at least in part, to the summer period and more people being present in Khanbogd *soum* centre for a range of daily and community activities. A similar increase is observed in Dalanzadgad but not in Manlai or Bayan Ovoo. It would be worthwhile for OT to engage with the *soum* government to investigate if there could be any linkages to changes in workforce numbers (e.g., decreases or increases) that need to be monitored and/or managed more closely. It will also be important to

understand if any mitigations are needed to minimise the risk of crime locally when the size of the workforce expands due to UG construction.

The partnership between OT and the International Organisation for Migration (IOM) continued in 2015. The most recent activities include a survey of 127 migrant women to evaluate their living conditions, two day training for 100 migrant women (on topics such as safe migration, family development and the family as non-violent environment, and increasing family income in a new environment), and participation by 35 women in a small business development contest with 8 proposals involving 30 women provided a settlement support grant. A total of 44 civil servants were recently training to work with migrant women in Khanbogd, Bayan Ovoo, Manlai and Tsogttsetsii. As suggested by the IESC, OT prepared a report on the outcomes from the their work with IOM to support migrant women.

The SP team and ERT have refined the draft emergency response procedure for incidents occurring in the communities to define OT's process for responding upon notification of an incident, formatting it to be consistent with other emergency response procedures being updated. The ERT is also in the process of final review of the draft TSF Emergency Response Procedure (see Section 5.7), which addresses potential downstream impacts and response actions should there be a release from the tailings storage facility. Upon finalization of these procedures, the ERT and SP teams should initiate dialog with community leaders on the subject. Additionally, the ERT has continued periodic Emergency Response Committee meetings, that include the SP team as well as other OT department representative to discuss incidents, action lists and plans relating to emergency response as discussed in Section 5.7.2.

7.4.3 Recommendations

71. Dialogue with the Khanbogd soum authorities and Police on recent increases in crime in Khanbogd; consider if training or other activities can be implemented with workers to reduce some of the risks or if there are other such measures that OT could support (IMP Table 2, IMPm11, IMP04, IMP05);
72. Investigate if any mitigations are needed to minimise community safety risks from crime as a result of an increased workforce in Khanbogd or Dalanzadgad due to UG construction; and
73. With review and finalizing of the TSF Emergency Response Procedure (see Section 5.7), evaluate approach to communities to introduce purpose and content of procedure, notification of officials and other parties with responsibilities within the potential impact zone along the Budda Stream and Undai River, and planning for training and exercises as appropriate (Site Emergency Response Plan; EPRP Section 4.4 and 4.6, IFC Guidelines and EBRD Performance Requirements, and UNEP APELL Guidance).

8 CULTURAL HERITAGE

8.1 PROJECT STRATEGY

A Cultural Heritage Management Plan⁴³ (CHMP) is in place as well as a range of complementary Cultural Heritage Management System (CHMS) procedures, including a chance finds procedure and a land disturbance permit amongst others. Physical protection measures have been implemented at cultural sites and a range of contributions continue to be made to local cultural traditions and events. A team is present at Khanbogd/onsite to implement the cultural heritage management requirements.

The focus of cultural heritage management and monitoring continues to be on fulfilling commitments made by OT to protect known cultural heritage sites and to make a sustainable contribution towards preserving the tangible and intangible heritage of the Gobi region. These commitments are embodied in the Cultural Heritage Program Phase II which is currently being implemented. Chance finds procedures are being implemented during construction of the OT-GS Zone 3 road in Khanbogd *soum*.⁴⁴ Recently work has been done to further investigate and plan for the protection and promotion of regional cultural heritage sites.

8.2 OBSERVATIONS

In 2015 year to date, no cultural heritage incidents have been recorded and a total of 32 land disturbance permits have been received, assessed and approved by the CH team (22 inside and 10 outside the fenceline). Work has now started on road construction along Zone 3 of the OT-GS road⁴⁵ with chance finds procedures being implemented and chance finds monitors present during all ground works.

Monthly monitoring of cultural sites is continuing at 19 locations in the region. Eight (8) CH assistants are responsible for monitoring, maintenance and protection at these heritage sites (these include a number of herders). During 2015 year to date, cultural heritage and community relations inductions have been given to 1191 workers. A total of 717 workers have been trained in the Chance Finds Procedure year to date (including 210 copper concentrate truck drivers).

The Khanbogd Elderly Association is still working at the Gobi Culture Ger and a total of 1367 people have visited the Ger this year (CH & CR induction sessions – 257; Mongolia Orientation course training – 17; OT employees & OT guests visits – 1093).

Leading archaeologists and palaeontologists from the United States and Japan travelled to Mongolia in April and May 2015 to work with OT and relevant agencies on preparation of the CHMP for the *Shar Tsav* paleontological site and *Khurdet* cave (regional sites). Three experts in total conducted a range of activities including: compilation of available data from studies on Shar Tsav dinosaur footprint; sharing knowledge of the development and management of heritage sites registered by UNESCO; advice on international standards to be adhered to; compilation of heritage sites with similar characteristics to Khurdet cave; translation into English of inscriptions in Chinese and Mongolian; advice on site management and marketing and heritage tourism opportunities with the two sites; consultations with regional and local stakeholders and community members; and advise on governance and management of the sites.⁴⁶

A Draft CHMP for these sites was subsequently developed consisting of six chapters and two appendices with the input from these international experts. This CHMP includes a detailed implementation plan and schedule with clear division of responsibilities for actions related to both sites. The draft was disseminated for regional and *soum* level stakeholders review and feedback in mid to late 2015. This will now be presented to the Umnugobi aimag Citizen's Representative Khural by the Mongolian Academy of Sciences and OT in September 2015 and finalised therein after.

Other highlights from recent cultural heritage activities include the Khanbogd mountain worship ceremony in May 2015 which was supported by OT (Figure 8.1) and the Nadaam Festivals in all four target *soums*. Extension of the Khanbogd museum and a replica of OT Hill are still under discussion with the *soum* and no decision will be made on these until OT has further progress on UG mine planning has occurred. It is

⁴³ *Cultural Heritage Management Plan - Doc. No. OT-10-PLN-0002 dated 01.09.2013.*

⁴⁴ *The OT to Khanbogd to Javkhlan bagh road is not yet under construction.*

⁴⁵ *Zone 3 of the OT-GS road is the last 17 km to the Chinese border.*

⁴⁶ *This advice included the affirmation that the CHMP is the responsibility of Umnugobi aimag and the South Gobi Cultural Heritage Study and Development Center is responsible for its implementation.*

understood there has been no further progress on the Centre for Gobi region cultural heritage and development studies⁴⁷ since the last audit by the Mongolian Academy of Sciences.



Figure 8.1: Mountain Worship Ceremony in Khanbogd Soum

8.3 RECOMMENDATIONS

74. Finalise the draft CHMP for *Shar Tsav* and *Khurdet* cave and disclose outcomes and relevant information to regional and other stakeholders as appropriate;
75. Continue dialogue with the Mongolian Academy of Sciences on the establishment of the Centre for Gobi region cultural heritage and development studies.

⁴⁷ The resolution was formalised on December 12, 2014 (Resolution No. 195).