

MONGOLIA'S
WORLD CLASS
MINING COMPANY



Non-Technical Summary

Environmental and Social Impact Assessment

PROJECT CONTACT DETAILS

Full copies of the Oyu Tolgoi Environmental and Social Impact Assessment and Non-Technical Summary are available in both English and Mongolian from the website: www.ot.mn

They will also be available for review at public locations in Ulaanbaatar and throughout Omnogovi *aimag*, including Oyu Tolgoi offices in Khanbogd, Manlai, Bayan-Ovoo, and Dalanzadgad.

Additional locations in Omnogovi:

- Khanbogd: Ceremonial House (Yosloliin Urguu)
- Manlai: Information Hall, Governor's Office
- Bayan-Ovoo: Secondary School
- Dalanzadgad: Central Library and the Citizen's Hall.

In Ulaanbaatar: Oyu Tolgoi Information Centre.


To make comments and/or raise questions, please contact us by the following means:

By email: OTESIA@ot.mn

By drop-box: Forms and drop boxes can be found at the locations listed above.

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1

INTRODUCING THE OYU TOLGOI PROJECT

*Located in the southern Gobi region of Mongolia,
the Oyu Tolgoi project is developing one of the
world's largest known copper-gold deposits.*



The high precious mineral content of Oyu Tolgoi ore helps reduce the production costs and will contribute to Mongolia's competitiveness in the world market



Figure 1: Project location



Section 1

The Oyu Tolgoi project involves the development of one of the world's largest copper-gold deposits, located in the southern Gobi region of Mongolia. Discovered in 2001, it lies 600 kilometres (km) south of the capital city Ulaanbaatar and 80 km north of the Mongolian-Chinese border. Figure 1 shows the project location.

The project is operated by Oyu Tolgoi LLC (Oyu Tolgoi) and is based on the mining and processing of copper and gold to produce a high-value concentrate that will be exported to support global industrial development. An initial ore production of 100,000 tonnes per day (tpd) is expected when commercial operations start in 2013. The project represents the largest single investment in the history of Mongolia, with capital investment of 7.8 trillion Mongolian tugrug (MNT), or 6 billion United States dollars (US\$), in addition to the 1.3 trillion MNT (US\$1 billion) spent on exploration and evaluation. Oyu Tolgoi is owned 34% by the Government of Mongolia and 66% by the Ivanhoe Mines Group (Ivanhoe). As of January 24 2012, Ivanhoe is 51% owned by Rio Tinto who manages the Oyu Tolgoi project with a mission to develop a world-class copper business that is safe and sustainable.

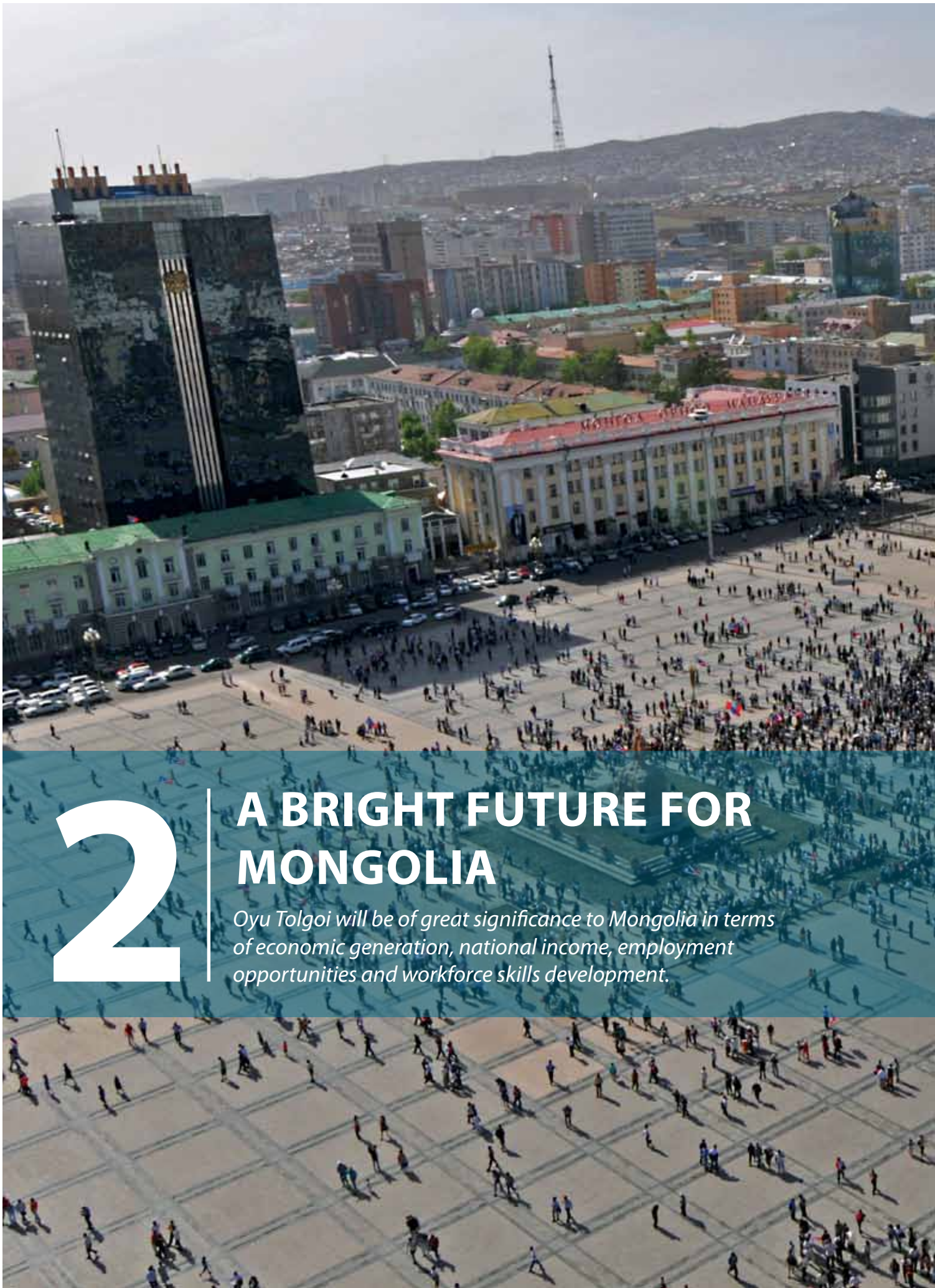
Rio Tinto is a leading international mining group headquartered in the United Kingdom with a market capitalisation of approximately £54 billion (US\$83 billion) as of May 30 2012. Ivanhoe is a Canadian-based mining development company, whose other

core assets are its 57% interest in the Mongolian coal mining company, South Gobi Resources, and mining projects in Australia and Kazakhstan.

Oyu Tolgoi is developing the project with a strong focus on safety and on minimising the impact on the environment and local communities. It aims to build its reputation by ensuring it has a positive impact in Mongolia, where this includes a substantial economic benefit, increasing the workforce skills and knowledge, and conducting business with integrity in all situations. The company will also focus on its values, which include a goal of zero harm, responsible stewardship and to develop and nurture employees. These values are expressed through the principles and standards of conduct set out in Oyu Tolgoi's 'The Way We Work', and are vital in laying down the project's commitment to contribute to sustainable development.



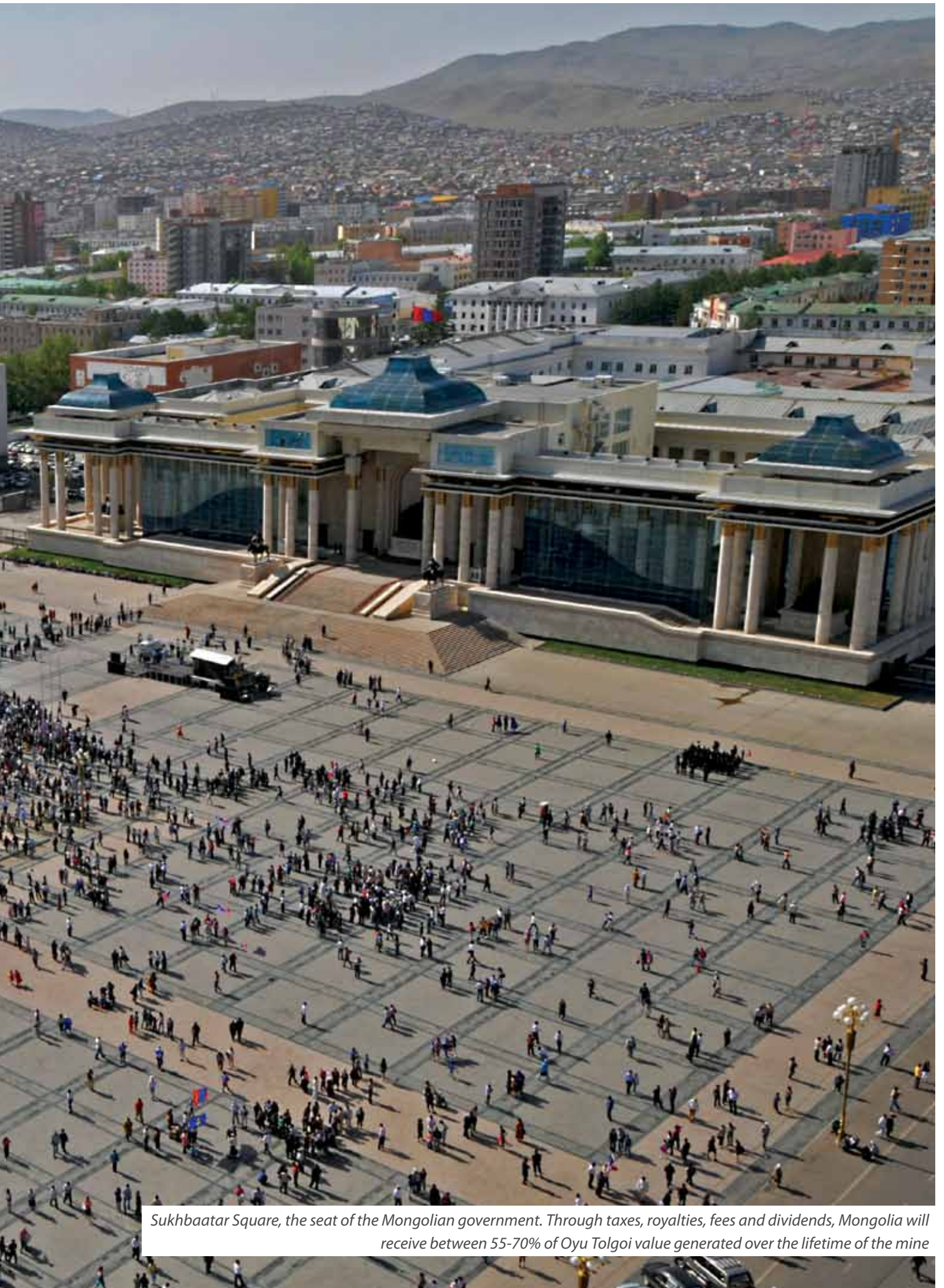
Oyu Tolgoi has contracted already with around 1,000 Mongolian suppliers



2

A BRIGHT FUTURE FOR MONGOLIA

Oyu Tolgoi will be of great significance to Mongolia in terms of economic generation, national income, employment opportunities and workforce skills development.



Sukhbaatar Square, the seat of the Mongolian government. Through taxes, royalties, fees and dividends, Mongolia will receive between 55-70% of Oyu Tolgoi value generated over the lifetime of the mine



Oyu Tolgoi recognises that careful stewardship of water resources is a high priority in the dry southern Gobi region

Section 2

As the largest project ever developed in Mongolia, successful delivery of the Oyu Tolgoi project will be of great significance to the country in terms of economic development, national income, employment and labour force skills development.

It is anticipated that the project will bring the following benefits:

- **Economic:** Construction of the project is estimated to increase the gross domestic product (GDP) of Mongolia by approximately 15%. Commercial operation of the project is estimated to increase the GDP of Mongolia by 35% by 2020 (Source: 'The Development of the Oyu Tolgoi Copper Mine: An Assessment of the Macroeconomic Consequences for Mongolia,' February 2011. School of Economic Studies, National University of Mongolia, and BAEconomics Pty Ltd).
- **Supplier development:** The project is prioritising domestic procurement and has established the 'Oyu Tolgoi Procurement Principles and Policies, 2012' to develop and utilise a national and local supply chain, increasing the multiplier effects of the project across the Mongolian economy.
- **Employment:** The construction workforce peaked at approximately 14,800 in December 2011, making the project the largest employer in Mongolia at that time. Almost 10,000 of these workers were Mongolian citizens. Oyu Tolgoi

has made substantial commitments with regard to training and employment. It is currently sponsoring the training of 3,300 Mongolians in a 110 billion MNT (US\$85 million) education and training programme from whom it can recruit staff as well as provide trained workers to other national organisations. The project will have an operational workforce of approximately 3,500 and within ten years at least nine out of ten Oyu Tolgoi employees will be Mongolian.

- **Regional development:** The project will help facilitate the development of the southern Gobi region, particularly Omnogovi *aimag* (province) and Khanbogd *soum* (district) where the project is based. The South Gobi Regional Development Council (SGRDC), established by the Government of Mongolia, is intended to facilitate this development across all major resource development and infrastructure projects in the region.

PROJECT ENVIRONMENTAL AND SOCIAL GOALS AND OBJECTIVES

Oyu Tolgoi is committed to sustainable development by finding a balance between environmental, social and economic needs. As a responsible corporate citizen, it recognises its responsibilities to the environment and to the communities in which it operates. Oyu Tolgoi is also committed to maximising the benefits of the project and to avoiding, minimising or mitigating any environmental or social impacts, as follows:



People

- We have consulted widely with stakeholders since 2002 when exploration activities commenced and have developed a Stakeholder Engagement Plan to guide this process
- We are committed to developing a skilled Mongolian workforce and are implementing a training programme to develop the skills of Mongolian workers
- We will report publicly on project performance and will engage local communities to participate in monitoring our performance.

Economy

- We recognise that the project will have a significant and positive impact on the Mongolian economy, and will support the Government of Mongolia in maximising sustainable economic benefits to Mongolia and to the region in which the project is located
- We support the development of Mongolian suppliers of goods and services through the implementation of the 'Oyu Tolgoi Procurement Principles and Policies, 2012'. We support the development of local suppliers and a sustainable economic base through our Local Business and Economic Development (LBED) Programme.

Regional Development

- We support Government initiatives to coordinate and manage regional development activities, including the SGRDC

- We recognise the potential for in-migration into the region, drawn in large part by the project, and are taking pro-active steps to manage this process to the benefit of local communities
- We support local communities and government agencies in community planning and infrastructure development through our Local and Regional Planning and Infrastructure (LRPI) Programme.

Biodiversity

- We are committed to Rio Tinto's corporate policy of achieving a 'net positive impact' (NPI) on biodiversity
- We have designed our facilities to minimise impacts on biodiversity where possible to mitigate or offset unavoidable impacts
- We have adopted a conservative approach to habitat protection and have extended our ecosystem management activities significantly beyond the physical footprint and direct impact area of our activities
- We seek to work with other operators, government authorities, non-government organisations (NGOs) and local communities to help manage threats to wildlife on a collective and regional basis.

Water

- We recognise that careful stewardship of water resources is a high priority in the dry southern Gobi region. We are committed to the responsible and efficient use of water resources

- We seek to maximise water use efficiency and potable water availability through technology selection, efficient processing and water recycling throughout all our operations
- We use water resources not utilised by others. We keep water supply options under evaluation and are committed to ensuring that our operations do not adversely affect other water users.

Health, Safety and Environment

- We have a goal of zero harm and are committed to exceptional health, safety and environmental (HSE) performance and continual improvement of our operations
- We have established recognised HSE management systems and encourage implementation of similar systems by our suppliers of services and goods
- We assure Mongolians that environmental protection and mitigation is a top priority by achieving International Standards Organisation (ISO) 14001 certification of our Environmental Management System prior to the start of commercial operations.

REGIONAL DEVELOPMENT

In October 2009, the investors and shareholders of Oyu Tolgoi signed an Investment Agreement (IA) with the Government of Mongolia. The IA defines the taxation and regulatory framework under which the project will operate and provides for the Government of Mongolia to become a 34% shareholder of the project.



The signing of the Investment Agreement in 2009 was the result of six years of public negotiation between the Oyu Tolgoi project investors and the Government of Mongolia

The IA requires the project to use modern mining and processing technology that meets Mongolian and international standards, and to conduct operations efficiently and in a manner that minimises environmental impact. It is also designed to promote regional development as outlined below.

South Gobi Regional Development Council

Under the IA, the Government of Mongolia has established the SGRDC, which includes representatives of the Government, local governance organisations, private sector entities, civil society organisations, potential aid donors and international financial organisations with activities directed towards the southern Gobi region. The SGRDC is mandated to co-ordinate and manage regional and community development issues and impacts associated with the Oyu Tolgoi project and



Oyu Tolgoi believes that education is a crucial part of sustainable economic development



Once the mine begins operating in 2013, there will be a workforce of approximately 3,500

other major investments in the southern Gobi region. Oyu Tolgoi is a member of the SGRDC governing board and supports the SGRDC's implementation of social and economic programmes.

Employment and Training

Oyu Tolgoi is working to meet its labour relations, employment and training commitments under the provisions of the IA. This includes maintaining a greater than 60% Mongolian workforce for construction work and a greater than 75% Mongolian workforce for direct mining operations. For the remainder of the Oyu Tolgoi workforce in the operations phase, at least 90% of employees will be Mongolian citizens.

Oyu Tolgoi is investing in Mongolia for the long term by undertaking the largest vocational training programme in the country's history. Specifically:

- 39 billion MNT (US\$30 million) is going towards a five-year training plan that includes the establishment of training facilities at the Oyu Tolgoi site and a training centre in Khanbogd *soum*
- Up to 15 billion MNT (US\$11.5 million) is going towards establishing two mining-focused professional training and vocational centres in the neighbouring cities of Dalanzadgad and Nalaikh
- 13 billion MNT (US\$10 million) is going towards the student scholarship programme for 200 students to study at Mongolian universities and for 30 students to study overseas in mining-related fields

- 3,300 Mongolians are being trained in 18 different industrial sectors at 42 technical and vocational education and training (TVET) schools with full financial support from Oyu Tolgoi.

More details are given in Section 5, Environmental and Social Management: Employment, Labour and Working Conditions.

Oyu Tolgoi Obligations

Under the IA, Oyu Tolgoi is also:

- Developing partnerships to ensure that sustainable benefits from the project reach the Mongolian people, especially Omnogovi *aimag* citizens and groups directly and indirectly impacted by the project
- Giving priority to citizens of local communities in the southern Gobi region, with preference to Omnogovi *aimag*, when recruiting, training and employing a workforce
- Supporting the project's development programmes to assist in starting and developing local businesses to supply Oyu Tolgoi and the wider Mongolian economy.

Infrastructure

Oyu Tolgoi is investing in infrastructure on an unprecedented scale that will benefit Mongolia.

Power

The IA allows for power to be provided to the project from outside Mongolia, provided that within four years after the commencement of commercial operations it sources all its power requirements from within Mongolia. Refer to Section 4, A World-class Mining Operation: Power and Section 5, Environmental and Social Management: Cumulative Impacts for more details.

Transportation

The IA allows for Oyu Tolgoi to construct a road between the project and Gashuun-Sukhait on the Chinese border. It also allows Oyu Tolgoi to construct an airport to serve the project. Refer to Section 4, A World-class Mining Operation: Roads and Section 5, Environmental and Social Management: Traffic and Transport for more details.

3

OUR SCIENTIFIC AND CONSULTATIVE APPROACH

Mongolian and international experts and organisations have been involved in the preparation of project environmental and social studies and reports since 2002.



The Oyu Tolgoi Environmental and Social Impact Assessment identifies and assesses the potential environmental and social impacts of the project, focusing on key areas such as biodiversity, water resources, cultural heritage and resettlement

Through all project phases Oyu Tolgoi works to avoid, minimise, mitigate and manage potential adverse impacts to acceptable levels and, where possible, to have a net positive impact

Section 3

The comprehensive Oyu Tolgoi Environmental and Social Impact Assessment (ESIA) is the culmination of nearly 10 years of independent work and research carried out by both international and Mongolian experts. Incorporating stakeholder input during the entirety of the process, the ESIA identifies and assesses the potential environmental and social impacts of the Oyu Tolgoi project, including cumulative impacts, focusing on key areas such as biodiversity, water resources, cultural heritage and resettlement.



Knowledge transfer at work – studying core samples

The ESIA also sets out measures through all project phases to avoid, minimise, mitigate and manage potential adverse impacts to acceptable levels established by Mongolian regulatory requirements and good international industry practice (GIIP) – as defined by the requirements of the International Finance Corporation (IFC) Environmental Health and Safety Guidelines and the European Bank for Reconstruction and Development (EBRD) Environmental and Social Policy, 2008.

This Non-Technical Summary (NTS) of the ESIA describes the project and discusses the systems being used to manage the issues that have been identified through the impact assessment process for construction. It also provides an overview of the management systems that are being developed for the operations phase of the project. Since the construction of the Oyu Tolgoi mine is well advanced, this NTS also includes, where appropriate, a status on committed work.

The NTS and the complete ESIA will be made available on the project website and disclosed at certain locations (refer to page 2, Project Contact Details) within Mongolia.



Environmental Impact Assessments approved by MNET (2004-2012)

- Detailed Environmental Impact Assessment (DEIA) of Infrastructure Corridor from Oyu Tolgoi to Gashuun Sukhait, 2004
- DEIA of Petrovis Temporary Fuel Station Facility at Oyu Tolgoi Site, 2004
- DEIA of Project on Oyu Tolgoi Water Supply from the Gunii Hooloi and Galbyn Gobi Groundwater Aquifer Areas, 2005
- DEIA of Emulsion Plant Used for Early Period of the Oyu Tolgoi Project, Excavation of Borrow Pits and Shafts, 2005
- DEIA of Shaft-1, 2005
- DEIA of Shaft-2, 2006
- DEIA of Oyu Tolgoi Mining and Processing Facilities, May 2006
- DEIA of Domestic Airport Re-location, 2007
- EIA Report for Diesel Power Plant at Oyu Tolgoi Site, 2007
- DEIA of Oyu Tolgoi Construction Camp Waste Water Treatment Plant, 2007
- DEIA of Oyu Tolgoi Quarry Exploration and Batch Plant, 2007
- Amendment of DEIA on Oyu Tolgoi Mining and Processing (DEIA and risk assessment on chemicals used for Oyu Tolgoi construction period), 2008
- Amendment of DEIA on Oyu Tolgoi Water Supply from Gunii Hooloi and Pipelines Project, 2009
- DEIA of Javkhlant - Entrée Lease Area, 2009
- DEIA of Shivee Tolgoi - Entrée Lease Area, 2009
- DEIA of Oyu Tolgoi Fuel Depot and Fuel Station Extension, 2010
- Amendment of DEIA on Infrastructure Corridor between Oyu Tolgoi and Gashuun Sukhait Project, 2010
- Amendment of DEIA on Oyu Tolgoi Water Supply from Gunii Hooloi Groundwater Aquifer Project, 2010
- DEIA of Permanent Domestic Airport, 2011
- Amendment of DEIA on Construction Chemicals, 2011
- DEIA of Oyu Tolgoi Coal-fired Power Plant, 2011
- DEIA of Oyu Tolgoi Fuel Depot, 2011
- DEIA of Oyu Tolgoi Project Mining and Processing, 2012

DETAILED ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENTS

The ESIA draws heavily on the Detailed Environmental Impact Assessment (DEIA) reports required by the Mongolian Environmental Impact Assessment (EIA) law that have been approved by the Ministry of Nature, Environment and Tourism (MNET) to allow construction to commence. The DEIAs have been prepared by a range of Mongolian experts and organisations in accordance with Government requirements that the impact assessment for the project be split into separate components to facilitate technical review. DEIAs continue to be developed as the project design evolves (see previous page). All the findings and permit requirements arising from the DEIAs remain valid and continue to provide the environmental legal and compliance framework for the project.

The ESIA evaluates the project from the perspective of a range of additional international standards and is a requirement of the International Financing Institutions (IFIs) that will be providing finance for the project. These standards include:

- IFC Performance Standards on Social and Environmental Sustainability, 2006
- IFC General Environmental, Health and Safety Guidelines
- IFC Environmental, Health and Safety Guidelines for Mining
- EBRD Environmental and Social Policy, 2008, incorporating the EBRD Performance Requirements
- Organisation for Economic Co-operation and Development Revised Recommendation on Common Approaches on the Environment and Officially Supported Export Credits (Common Approaches), 2007.

A range of international and Mongolian experts (see below) has helped to develop the Oyu Tolgoi project ESIA. In preparing the ESIA, Oyu Tolgoi has updated the information in the DEIAs with more recent monitoring and survey data. The ESIA also addresses social issues, which were not discussed in a comprehensive manner in the DEIAs. Figure 2 illustrates the ESIA development process.

Mongolian Expert Contribution to the ESIA

A wide range of Mongolian experts and organisations has undertaken environmental and community studies on behalf of Oyu Tolgoi since 2002. These include:

Socio-economic:

- Centre for Policy Research
- Population Training & Research Centre

Cultural Heritage:

- Mongolian Academy of Sciences, Institute of Archaeology (MASIA)

Pastureland:

- Mongolian Society for Rangeland Management

Wildlife:

- A wide range of individual experts

Environmental

- Eco Trade LLC
- Nature Friendly
- SEC

Community Health and Safety

- Khukh Tenger Khugjil Konsortium

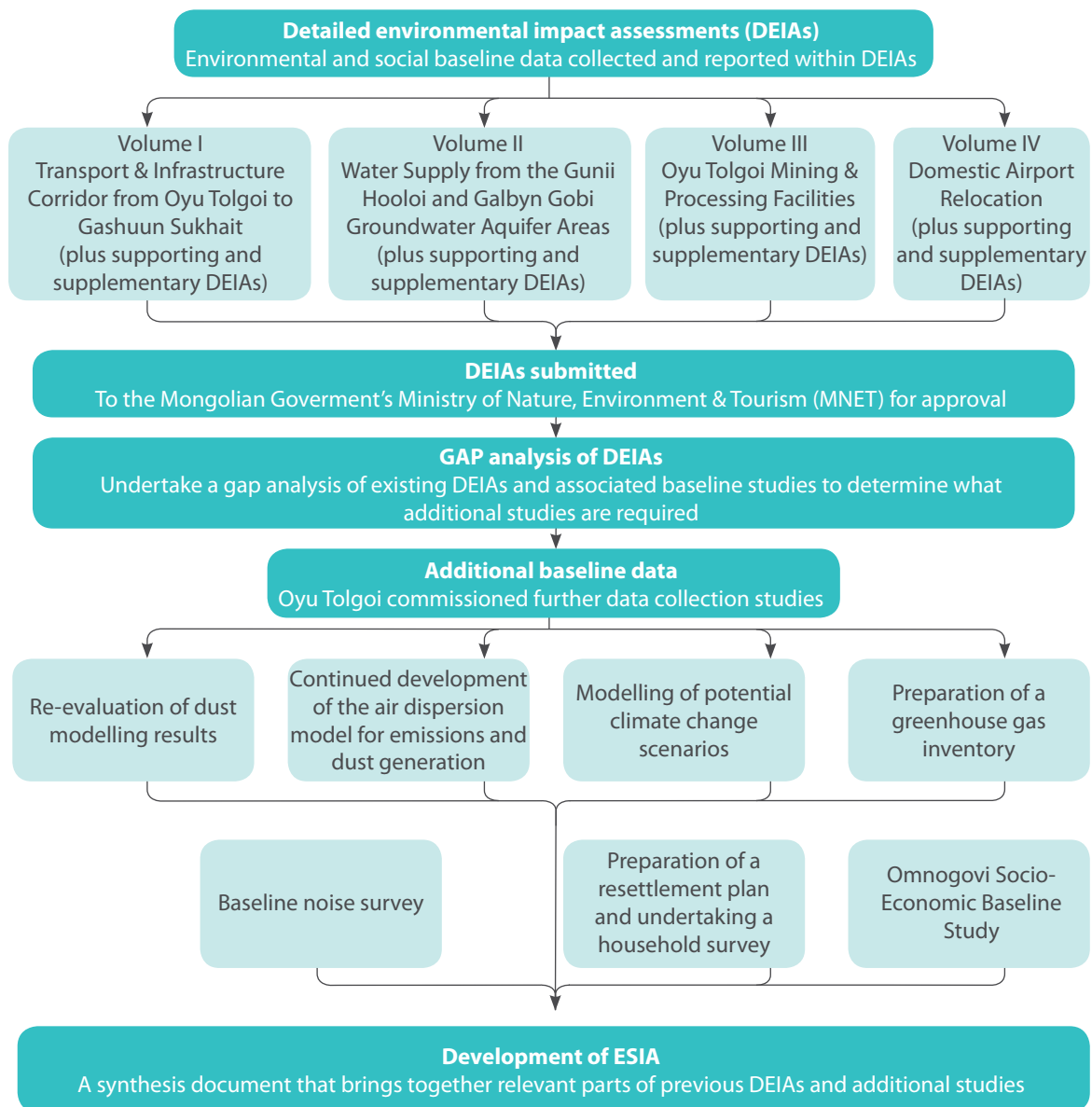


Figure 2: ESIA development process



Regular water monitoring allows Oyu Tolgoi to minimise any impacts to water sources used by the local communities and their animals



The testing of air quality is part of Oyu Tolgoi's ongoing environmental monitoring process

BASELINE DATA COLLECTION

Since 2002 Oyu Tolgoi has collected baseline data from the following sources, providing a clear and representative basis for planning and impact assessment:

- Field sampling programmes and surveys, such as, surface and groundwater quality, identification of herders' wells and springs, dust measurement, fauna surveys and vegetation surveys
- Verbal evidence provided through interviews both with permanent residents and with settlers and herders
- Specific monitoring programmes undertaken by Oyu Tolgoi in accordance with Mongolian requirements and compliance with international standards, such as air quality, air emissions and traffic
- Laboratory analysis of environmental samples
- Secondary data review through public sources of information.

In 2008-2009 Oyu Tolgoi commissioned the Omnogovi Socio-economic Baseline Survey, the first such survey to be undertaken in Mongolia. The survey's results have provided an excellent database for a number of follow-up initiatives to be taken by the *aimag* Government, community-based organisations and Oyu Tolgoi.

Most recently, during the preparation of the ESIA in 2010-12, additional activities have been undertaken, including:

- Re-evaluation of dust modelling results for the tailings storage facility (TSF)
- Re-running the air dispersion model to take account of the current plant design and layout
- Modelling of potential climate change scenarios and impacts on the Oyu Tolgoi project
- Preparation of a greenhouse gas inventory
- Ongoing work with the Oyu Tolgoi design engineering team on the design and management of the TSF and the waste rock dump (WRD)
- An extensive assessment of biodiversity resources and potential project impacts with leading Mongolian and international experts in order to meet Rio Tinto's corporate biodiversity commitment to strive for a NPI
- Preparation and implementation of a Resettlement Action Plan (RAP) to manage the expected economic displacement and to evaluate and document the effectiveness of the resettlement and compensation process for herders whose winter shelters were within 10 km of the Oyu Tolgoi Mine Licence Area (MLA) and who were relocated in 2005.



Monitoring is an important part of Oyu Tolgoi's commitment to being a good environmental steward

IMPACT ASSESSMENT AND MITIGATION PLANNING

The ESIA describes Oyu Tolgoi's assessment of the nature and significance of the project's probable environmental and social impacts.

For each area of impact, mitigation measures describe the steps and actions to be taken through construction to operation, decommissioning and closure. Where possible, the following hierarchy of mitigation measures has been followed:

- 'Designing-out' impacts through avoidance
- Assessing alternatives
- Modifying the design to reduce or minimise the impacts
- Applying mitigation measures to manage impacts
- Establishing fair compensatory or offset measures to address residual impacts.

In addition to the application of GIIP, Oyu Tolgoi has incorporated relevant local and national environmental requirements.

Refer to Section 5, Environmental and Social Management for more details on how Oyu Tolgoi is addressing the key environmental and social issues related to the project.

MANAGEMENT PLANS

Management plans describe how Oyu Tolgoi will manage the potential impacts identified in the ESIA.

The development of management plans is a two-stage process as follows:

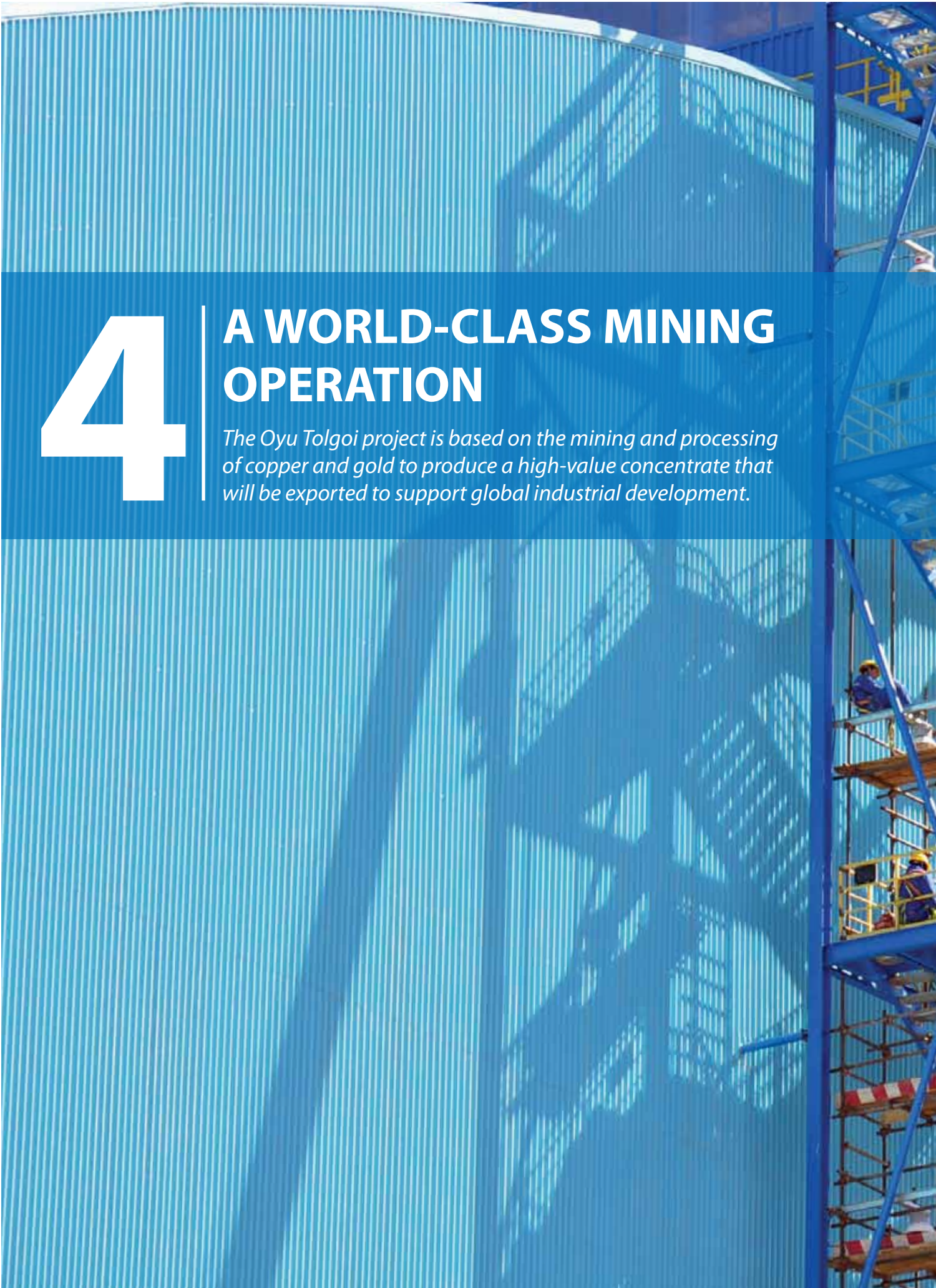
- **Stage 1: Construction Phase:** Construction-phase Management Plans to control the environmental, social, and health and safety management aspects of day-to-day construction activities prior to commencement of commercial mining and ore production.
- **Stage 2: Operations Phase:** Operations-phase Management Plans will be detailed plans that control the environmental and social management aspects of all project activities following the commencement of commercial production in 2013.

Management plans covering the construction phase are included within the ESIA. Operations-phase plans are being developed as part of the operational readiness preparations and will follow the strategies and commitments stated in the ESIA.

4

A WORLD-CLASS MINING OPERATION

The Oyu Tolgoi project is based on the mining and processing of copper and gold to produce a high-value concentrate that will be exported to support global industrial development.





Construction of the Oyu Tolgoi mine site is nearing completion, with first commercial production expected in 2013



Work carries on round the clock at the Oyu Tolgoi mine site

Section 4

The Oyu Tolgoi MLA is located in the southern Gobi region of Mongolia, one of the most sparsely populated countries in the world. Mongolia is divided into 21 *aimags*, each of which is further subdivided into *soums*. The project MLA lies in the eastern part of Omnogovi *aimag* in Khanbogd *soum*, approximately 220 km from the *aimag* capital of Dalanzadgad and 45 km southwest of Khanbogd *soum* centre, the local administrative centre. (See Figure 1 on page 6.) Khanbogd *soum* is the least densely populated district in Mongolia. The ESIA relates to Mine Licence 6709A, which covers an area of 84.96 square kilometres (km²), where the main Oyu Tolgoi deposits are located. Figure 3 illustrates the mineral deposits and MLA boundary.

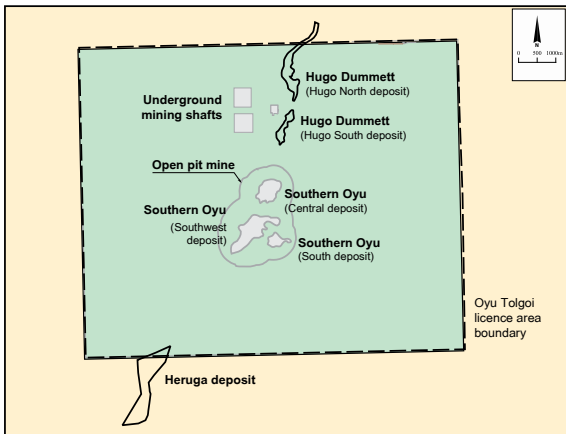


Figure 3: Mineral deposits underlying the Oyu Tolgoi Mine Licence Area

Oyu Tolgoi is developing a series of deposits containing copper, gold, silver and molybdenum.

Current approvals provide for construction of an open pit copper-gold mining operation, supplemented within four years by production from the underground mining development. Ore from the mining operations will be processed through a 100,000 tpd capacity concentrator.

Increasing underground ore production will eventually require an expansion to the plant throughput capacity. Oyu Tolgoi is studying an expansion to the concentrator to process up to 160,000 tpd of ore within the 27-year life of the currently approved project. This expansion is subject to any necessary regulatory approvals and the identification and permitting of additional water resource requirements to support the increased processing capacity. This expansion is considered as part of the assessment of cumulative impacts in the project ESIA as outlined in Section 5, Environmental and Social Management: Cumulative Impacts.

SITE LAYOUT

The mine consists of an open pit, shafts to access the underground deposits, a concentrator or processing plant, a mine TSF on the eastern part of the MLA and on-site WRD to the south of the open pit. Figure 4 shows the site layout and Figure 5 shows the site in relation to the associated project infrastructure.



MINING METHOD

Six deposits have been identified within the Oyu Tolgoi MLA, comprising:

- Central
- Southwest
- South
- Hugo North
- Hugo South
- Heruga.

The Central, Southwest and South deposits together are referred to as the Southern Oyu deposit, and Hugo North and Hugo South together are referred to as the Hugo Dummett deposit. The Oyu Tolgoi ESIA addresses the open pit operations at Southern Oyu and one underground block cave development at Hugo North. The Southern Oyu deposit will provide ore for the concentrator for the first four years of operation, after which time it will start to be displaced by underground production from the higher-grade Hugo North deposit.

Oyu Tolgoi benefits from Rio Tinto's global expertise and technology to ensure a world-class mining operation.

Open Pit Mining

The open pit will have a maximum planned depth of 770 metres (m), and will comprise a series of 'benches' cut and blasted into the rock. Benches act to stabilise the slopes within the open pit and also act as the haul roads to enable ore and waste rock to be removed by trucks. A conventional open

pit mining method is planned, using two bucket hydraulic shovels and two electric rope shovels to excavate the rock (following drilling and blasting) and 290 tonne (t) diesel trucks to transport rock out of the open pit. The mine will operate 24 hours per day based on two 12-hour working shifts, and will continue to feed the concentrator until the end of currently approved project life in year 27.

Underground Mining

A conventional block caving mining method will be used to produce ore from the Hugo Dummett deposit. Block caving 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. The broken ore is then pulled out through a 'drawpoint' arrangement, resulting in the formation of a cave or void, into which further overlying material will fall. An important aspect of block caving is that once the initial cave is formed, production continues without any requirement for further drilling and blasting until the ore column above is exhausted. This process is not only one of the most cost-effective underground mining techniques but also allows a greater proportion of an ore body to be extracted relative to waste rock.

The ore handling system transports ore to the surface, using a system based on crushers, conveyors and skip hoists.

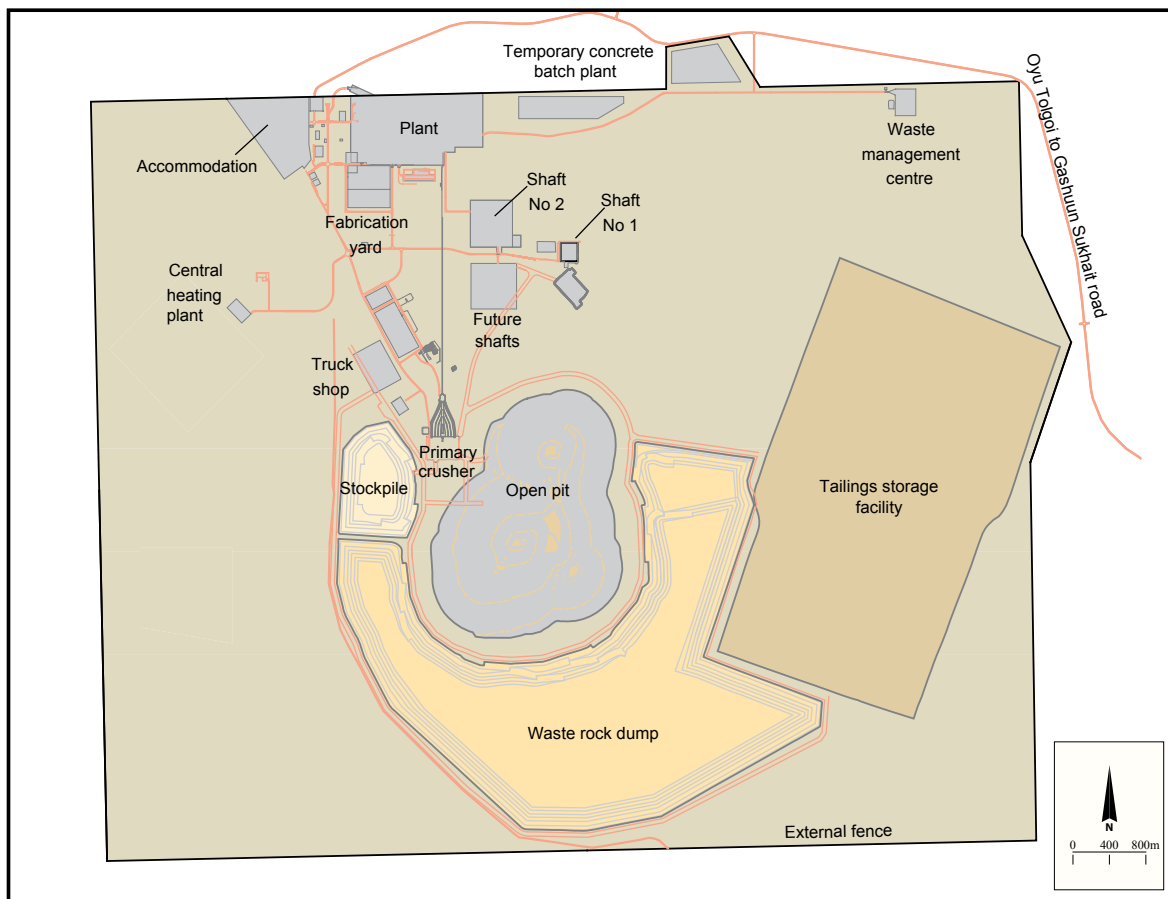


Figure 4: Layout of surface facilities at the Oyu Tolgoi mine site

PROCESSING OPERATIONS

Process Description

The process of converting the ore into concentrate, the mine's sellable product, is based on conventional technology and proven equipment. Single equipment streams minimise the number of equipment units where possible and reduce footprint and complexity. Figure 6 shows a simplified process flow diagram.

The process stages can be summarised as follows:

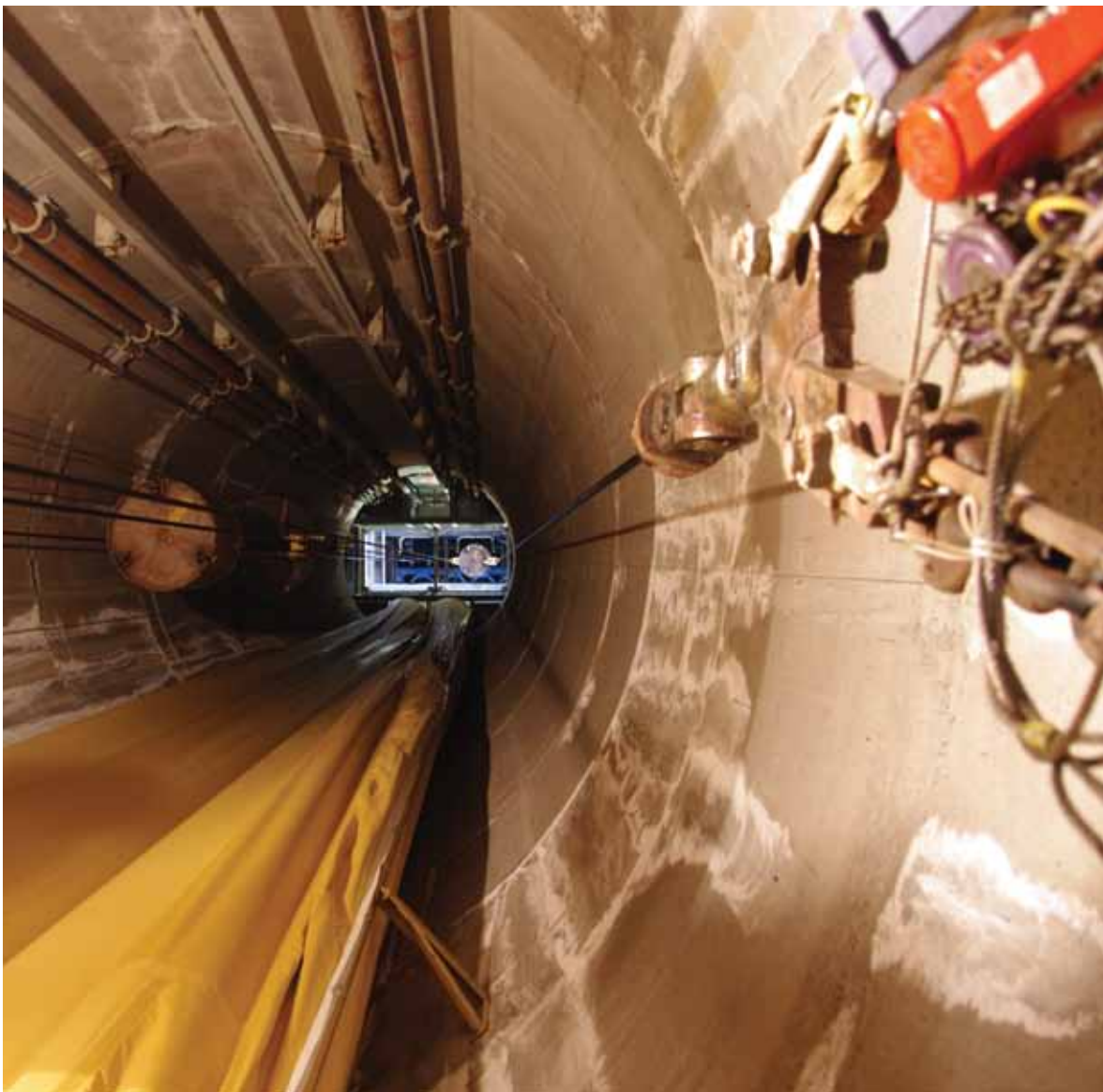
- **Crushing:** Ore will be hauled from the open pit to a primary crusher. An ore stockpile near the crusher will absorb fluctuations in mine production and allow the blending of different ore types. Crushed ore from the primary crusher will be conveyed to a stockpile near the concentrator. This stockpile will have a maximum capacity of three days' supply of ore for the mill.
- **Grinding:** A series of large (up to 13 m) diameter mills will be used in the grinding circuit. Fines (small particles) from the grinding mill will pass through cyclones for size separation. Fines of 150 microns or less will pass through to the flotation circuit for processing, and larger particles will be returned to the grinding circuit until they are sufficiently small to pass through for processing.
- **Flotation:** The plant will comprise a typical porphyry copper flotation circuit with no unusual features or equipment. Copper-containing materials will be skimmed off the surface for further processing and the sludge (tailings) pumped to the TSF for disposal.
- **Concentrate Dewatering and Storage:** Concentrate will be thickened to 65% solids in two thickeners. Automatic pressure filters will reduce the concentrate moisture content to less than 9% (with water recycled). Concentrate will be stored in sealed containers for transport to the



Figure 5: Oyu Tolgoi MLA and other project features including borefield and infrastructure corridor

point of delivery to customers at the Mongolian-Chinese border.

- Tailings Disposal:** Flotation tailings will be thickened to 60-65% solids in two tailings thickeners. Thickened tailings will be pumped through two tailings lines to the TSF. Water from the TSF will be recycled back to the concentrator.
- Process Chemicals:** Chemicals required for ore processing will be obtained from international suppliers. Storage will be provided for a six-week supply of unmixed reagents and for a one-day supply of diluted, mixed reagents. Quicklime will be received in bulk from China and stored in a silo capable of holding a two-week supply. Quicklime will be mixed with water as required to maintain a one-day supply of slurry in holding tanks.



Shaft accessing the underground deposits

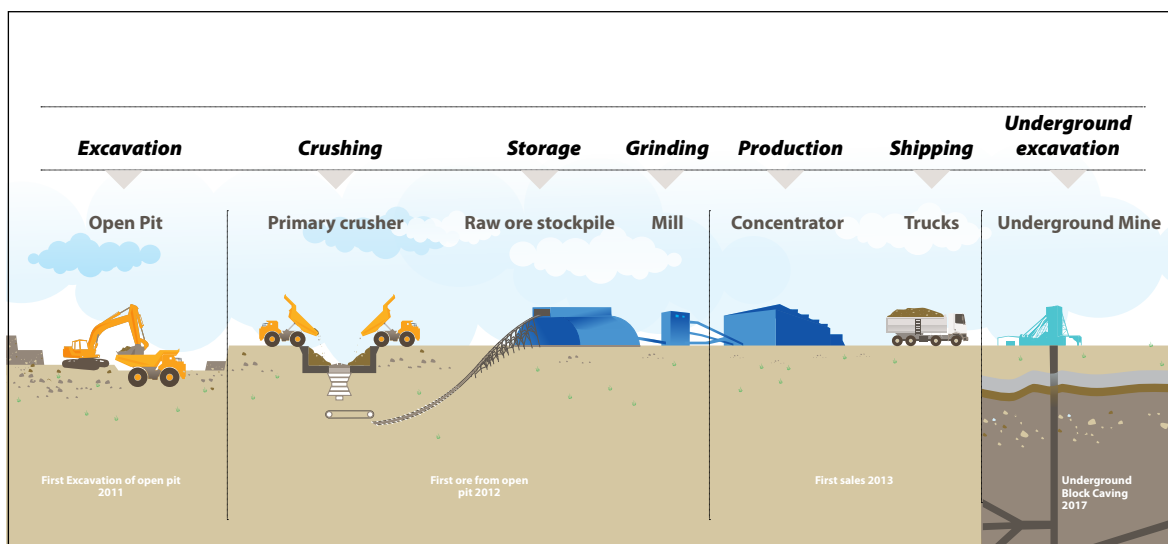


Figure 6: Key milestones for Oyu Tolgoi – simplified process flow diagram



Good reliable infrastructure such as the upgraded 105 km paved road from the Oyu Tolgoi site to the Chinese border is a crucial component of ensuring shared value between the project and the local communities

ROADS

The route for the concentrate transport extends for approximately 105 km south-east from the MLA, following an existing dirt road (a designated national road) to Gashuun Sukhait, the border post on the Mongolian side. Oyu Tolgoi has designed the road in accordance with a Memorandum of Understanding (MoU) signed with the Government of Mongolia in 2007. The existing road was used for local transportation and trade and was also used to access the border crossing at Gashuun Sukhait. The project has used the dirt road during construction for the materials imported from China. The dirt road has been improved during this time by grading and it is currently being upgraded to a national specification sealed bitumen road that will be used by the Oyu Tolgoi project and general traffic (but not by coal trucks). It is currently expected to be completed in late 2012 or early 2013. At this time the Government of Mongolia will assume operational and maintenance responsibilities for the new road.

WATER SUPPLY

Water is a precious resource in the dry southern Gobi region. Oyu Tolgoi recognises that the responsible and efficient use of water resources is a key priority for the project and local communities, as the project is located in a region which has limited surface water resources, low annual rainfall and also limited potable groundwater resources.

Construction Water Supply

During the construction phase, water is being obtained from the weathered bedrock aquifer within the MLA. All temporary construction water supply boreholes were fully permitted for use by the relevant government agencies and individually assessed prior to use to confirm that their area of influence does not include any existing springs or boreholes used by third parties or wildlife (outside the MLA).

Throughout the period of use of the construction water supply bores, and through into operations,

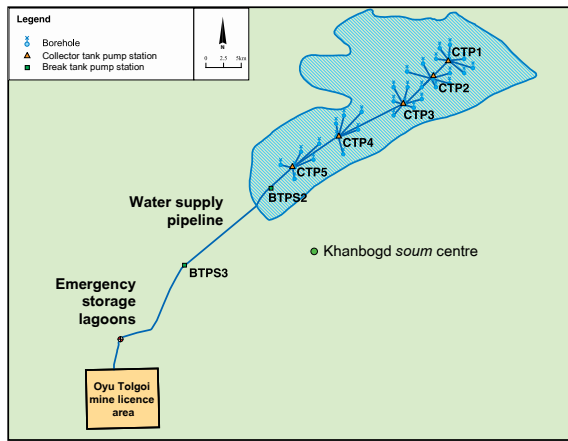


Figure 7: Location of the Gunii Hooloi borefield in relation to Oyu Tolgoi MLA

the water levels and quality will continue to be monitored in the herders' wells and springs around the MLA. Should an impact be detected on a herder well, Oyu Tolgoi will provide a replacement water supply that provides at least the same quantity and quality of water as the affected well using a design that is acceptable to the herder.

Operations Water Supply

Oyu Tolgoi has undertaken an extensive investigation to understand potential groundwater supplies for use during the operations phase of the project. It has concluded that a local deep groundwater resource is the best source of water supply for the project. This water is brackish to saline and is not consumed by existing water users in the area.

Significant aquifer systems have been identified and delineated in the Galbyn Gobi and Gunii Hooloi basins, both of which form substantial groundwater resources. After extensive assessment, Oyu Tolgoi determined that the Gunii Hooloi aquifer has sufficient reserves to supply the project's water demand. While it is not anticipated that the project will have a significant impact on the shallow water users and groundwater-dependent plants and animals, this will only be known for certain once operations have started. Oyu Tolgoi continues to monitor the relationship between the surface flows, shallow aquifers and groundwater abstraction together with local herders, and will establish mitigating actions should any adverse impacts be identified.

The Gunii Hooloi borefield extends 40-70 km to the northeast of the Oyu Tolgoi MLA as illustrated

in Figure 7. Bores will be developed in two distinct areas, the southwest 'low flow' area and the northeast 'high flow' area. Oyu Tolgoi is currently permitted to take approximately 810 litres per second (l/s) of water from the Gunii Hooloi aquifer. The average water demand during the initial years of operation, with a production rate of 100,000 tpd, is predicted to be 696 l/s. The borefield and supply pipeline have been designed with a capacity of 900 l/s to provide for permitted seasonal peak demand and refilling of the emergency lagoons if required.

Water will be pumped from the borefield into two 200,000 cubic metre (m³) emergency storage lagoons located on elevated ground approximately 5 km to the north of the Oyu Tolgoi MLA. These lagoons provide approximately one week of emergency supply of water as a contingency in the event of a pipeline or borefield breakdown or maintenance. The lagoons have floating covers to prevent evaporation.

The water will be gravity-fed to the site through two pipelines (one acting as emergency back-up) from the lagoons. All equipment in the Gunii Hooloi borefield and pipeline will be remotely controlled and an access track will be provided along the pipeline to each pump station and bore. All buildings will be fenced off.

Long-Term Water Supply

Oyu Tolgoi's ongoing groundwater assessment programme aims to provide a range of future water supply options. Any future mine expansion requiring additional water resources will be subject to any necessary regulatory approvals and the identification and permitting of additional water resource requirements to provide the increased processing capacity.

POWER

The project is energy intensive with an energy build-up to start-up in excess of 200 Megawatt (MW) with capacity for further growth to around 310 MW in the longer term. A reliable and stable power supply is required for operations and safety purposes.

Construction Power Supply

Oyu Tolgoi owns and operates a diesel power station (DPS) located within the MLA to provide construction power to the project. After the project's long-term power supply has become



Initial power supply for the project will be imported from China via a new power line. Here the line passes in front of one of the shaft heads being constructed to access the underground deposits

operational, the DPS will provide stand-by power for the mine site.

Initial Power Supply

The current plan for power supply for project commissioning and early operations (for the period until the long-term power supply is available) involves importing power to the site from the Inner Mongolian electricity grid in northern China via a dedicated 220 kilovolt (kV) overhead power line that is currently under construction by the project.

Long-Term Power Supply

The IA requires project power to be sourced from within Mongolia within four years of the commencement of commercial operations. Oyu Tolgoi plans to meet the project's longer term energy needs by constructing a new power plant in the MLA, which is currently scheduled to enter service in the fourth quarter of 2014. At this time, the power plant will replace the initial power supply described above.

Refer to Section 5, Environmental and Social Management: Cumulative Impacts for more details.

ACCOMMODATION

Construction-Phase Accommodation

During the construction phase, accommodation comprises:

- Two on-site camps, one of which will become the on-site operations camp and one temporary site construction camp
- A number of remote temporary camps, the three largest of which are the South camp for road and power line construction workers, the North camp for borefield and power line construction workers, and the Khanbogd *soum* centre camp for cleaning and catering staff.

The on-site camps are designed to accommodate up to 12,000 Mongolian and expatriate workers, supervisory and management staff. Camps are equipped with mess halls (offering Mongolian meals and other specific menus in recognition of the international composition of the workforce as appropriate), recreational facilities and medical facilities. The remote construction camps accommodate up to 3,000 workers and are sustained by supplies from Oyu Tolgoi central on-site facilities.



Workers' accommodation during construction

Operations-Phase Accommodation

For the operations phase, Oyu Tolgoi is developing plans to enable workers to live with their families in a purpose-built residential area located in Khanbogd *soum*. Detailed planning for this residential area is being undertaken during 2012.

Oyu Tolgoi will develop its worker housing plans in close co-operation with national *soum* and *aimag* authorities to ensure that benefits are shared with other local residents in Khanbogd *soum*. The objective is to support the development of

broadly-based and self-sustaining communities where local residents and Oyu Tolgoi workers and their families benefit from living in an integrated community.

Accommodation will still be available at the Oyu Tolgoi MLA for single workers, or those who work on a fly-in fly-out (FIFO) basis.

For more details on operations-phase accommodation, refer to Section 5, Environmental and Social Management: Influx.



Construction workers' camps on the Oyu Tolgoi mine site



5

ENVIRONMENTAL AND SOCIAL MANAGEMENT

The project is working on positive measures to avoid, minimise, mitigate and manage environmental and social impacts as defined by Mongolian and international standards.



Oyu Tolgoi has involved local communities in its activities since the early days of the project



Section 5

This section summarises the key findings from the impact assessment studies conducted on behalf of Oyu Tolgoi since 2002. It also sets out in tabular format key environmental and social issues and associated management measures undertaken or proposed in the related management plans.

The management plans described in this section share a number of common objectives:

- Outline Mongolian laws and international standards relevant to the environmental and social aspects of the project
- Identify potential sources of impact
- Define the operational management procedures
- Define roles and responsibilities
- Define monitoring and reporting procedures
- Define training requirements.

Certain plans have additional specific objectives which are listed as appropriate.

WATER MANAGEMENT

Oyu Tolgoi recognises that careful stewardship of water resources in the dry southern Gobi region is one of the most critical aspects of the project in relation to environmental and social impacts and management. It is committed to working with the local communities for the life of the operation to ensure that they are not negatively impacted by the project's use of water and that improved water management practices are applied by all users.

Water Sources

Groundwater occurrence in the project area can be summarised as follows:

- **Deep basins** (up to 400 m depth) filled with clastic sediments containing large volumes of brackish groundwater. These water sources are not currently used and generally are not connected to the shallow aquifer systems that provide drinking water for people and livestock. Oyu Tolgoi has undertaken an evaluation of the deep basins around the project, including an assessment of the available water resource, its sustainability and the potential for impact on other groundwater users, fauna and flora. Based on this evaluation groundwater from the Gunii Hooloi basin has been permitted for abstraction and will be used on-site. This basin was chosen for the absence of other users, very limited hydraulic connectivity with surface aquifers used by herders, and absence of vegetation dependent on this deeper aquifer. While full recharge of this aquifer will not take place during the lifetime of the project, less than 20% of the available water resources will be consumed, leaving water for other users in the future.
- **Shallow groundwater** (typically 2 to 5 m below the ground surface) present in the alluvium within the stream beds in the project area. This is typically fresh water, which is recharged annually, and is the principal source of groundwater used by herders and wildlife, and also supports



From left: The Undai river in winter, in flood and in summer

groundwater-dependent vegetation. Note that this shallow groundwater is not present over large parts of the Gunii Hooloi deep aquifer (the area is commonly referred to as ‘camel pasture’ reflecting the lack of available water) and thus the Gunii Hooloi boreholes (with one exception) do not intersect the shallow aquifers.

- **Intermediate basins** (approximately 100 m depth) at the edge of the granite massifs filled with coarse-grained sediments and recharged with water flowing off the massifs. One of these basins adjacent to Khanbogd *soum* centre is planned to be exploited for the township’s water supply, subject to the completion of investigations and permitting.
- Small amounts of water are present in isolated lenses in the upper sections of the weathered and fractured bedrock (at various depths, but 10 to 50 m depth in the vicinity of the MLA). This groundwater has been used for mine construction purposes and, as construction is completed, Oyu Tolgoi will switch over entirely to the Gunii Hooloi supply.

Oyu Tolgoi has sought to mitigate the impact of its operations through appropriate and careful design and planning. The network of wells installed into the deep aquifers of the Gunii Hooloi basin, which extends some 40-70 km northeast of the MLA, has been designed to minimise the drawdown in the basin. The layout of the wells has been derived from a groundwater model for the Gunii Hooloi basin. This model has been developed to enable the water

resource and its interaction with the surrounding formation to be managed, and is subject to ongoing improvement and evaluation.

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

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

The Undai is one of the most significant ephemeral watercourses within the project area of influence. The Southern Oyu pit excavation will extend into the Undai watercourse and the WRD is planned to lie across the course of the Undai leading to the loss of the Bor Ovoo spring. To avoid any significant impact on the surface and groundwater flow in the Undai, and to the herders and fauna and flora reliant on this flow downstream of the MLA, the

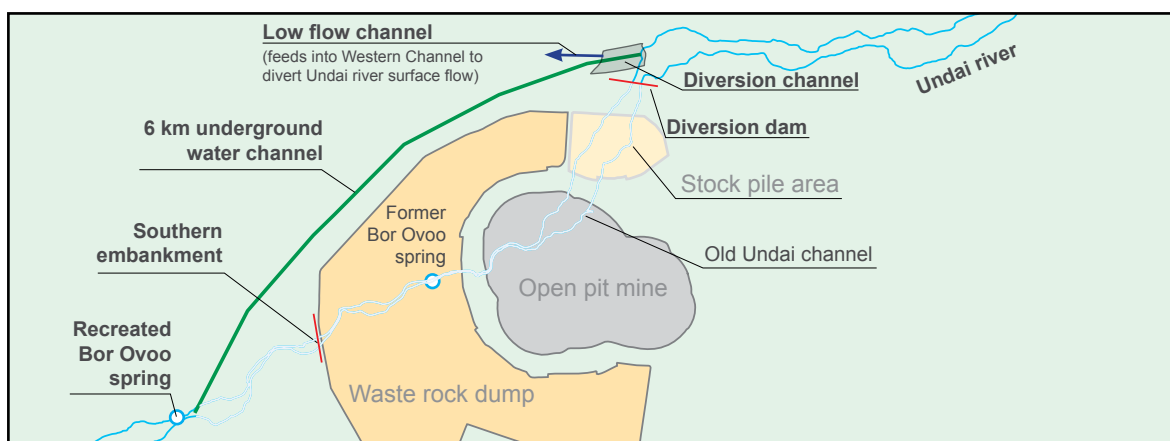


Figure 8: The proposed Undai river diversion

Undai will be diverted around the mine operations, and a replacement spring installed in the Undai watercourse downstream of the project fence line which will be accessible for herders and wildlife.

This diversion of the Undai, and the creation of replacement spring, will be constructed in accordance with the Government-agreed engineering design requirements. The design of these and the location of the spring have also been discussed with the local communities, and are designed to provide a sustainable permanent solution which will not require future maintenance, and will protect downstream water users from disrupted water flow. Refer to Figure 8 and box (right) on Undai river diversion for more details.

Water Use and Conservation

Oyu Tolgoi recognises that water in the southern Gobi region is a very valuable and finite resource and is focused on minimising water use throughout all aspects of the project. Therefore, Oyu Tolgoi has designed one of the most water-efficient mines of its kind in the world. To this end water recycling forms a key part of Oyu Tolgoi's water management plans, as follows:

- 83% of production water will be recycled for use on the plant site with the remaining 17% of additional water required for the project being supplied from the groundwater reserves in Gunii Hooloi
- 80% of drinking and public use water will be treated and recycled into the production water
- 50% of water used for cleaning machinery and equipment will be re-used.

To achieve and strive to improve on these targets Oyu Tolgoi is investigating the use of a series of innovative water recovery techniques; those that

are considered to be effective will be implemented with the aim of reducing further the water demand from Gunii Hooloi.

Monitoring

Throughout the project area of influence Oyu Tolgoi is going above and beyond Mongolian standards by monitoring the groundwater level near herder wells and springs through a network of dedicated shallow bores located adjacent to the herder wells. The results are being used to develop a robust dataset of water levels, which enable Oyu Tolgoi and the herders to appreciate the seasonal variations in water levels in the herder wells and the river bed aquifers. The monitoring by Oyu Tolgoi is complemented by the independent Participatory Environmental Monitoring (PEM) Programme in partnership with the herders, which is supported by the training and equipment provided by Oyu Tolgoi.



Oyu Tolgoi is working to improve the understanding of the area's water resources

Undai River Diversion

Background

The 120 km long Undai river is one of the most significant hydrological features in the vicinity of the mine. The Undai is an ephemeral surface water feature, with permanent subsurface flows that create both ephemeral and more persistent springs.

The Undai passes southeastwards through the western part of the Oyu Tolgoi MLA. Surface flows of the Undai are short-lived and unpredictable. Flood events provide temporary standing water features which can be vital at times for herders and their livestock. Drinking water is provided through annual flooding of the river which recharges shallow alluvial aquifers.

Rivers and springs are living heritage sites that play a vital part in the functioning of the landscape and in maintaining local people's livelihoods in the area. The Undai represents one of the important water supply sources for Khanbogd *soum* herders and their livestock. The Bor Ovoo is one of a number of springs that provide a supply of fresh water, an essential ecosystem function in the dry environment of the southern Gobi region.

Undai river diversion scheme

The Southern Oyu pit excavation will extend into the Undai flood plain and the WRD will lie across the course of the Undai. Oyu Tolgoi is planning to divert the watercourse to prevent the flooding of the open pit and ensure continuity of flows within the Undai downstream of the site.

The diversion will result in a 6.8 km section of the Undai through the MLA becoming dry. Key design elements include a diversion dam to prevent water continuing along the old Undai channel and a buried pipe to capture and divert the continuous subsurface flows to the south of the WRD. Diverted water will be used to create a new ephemeral spring (to replace the Bor Ovoo).

This artificial spring will be supplied by the diverted subsurface flow in the Undai and has been designed to be accessible to a wide range of faunal species. As the Bor Ovoo forms part of the living tangible heritage of the project area, and is important to local communities, a ceremony will be held both to deconsecrate the original ground and to bless the new spring location. A new ovoo is likely to be formed at the new spring site.

Consultation

In addition to the DEIA consultation, initial community information disclosure on the Undai was conducted by Oyu Tolgoi in 2007 and subsequently during community quarterly meetings in 2009 and 2010. Concerns raised by the community through the consultation programme included the following:

- The community were hesitant to agree to the engineering solutions proposed as this sort of activity is unfamiliar to them and difficult to understand
- The reliability of future water supplies
- The need for mitigation of negative impacts on water
- If the diversion does not work, who will be responsible and how will the water will be replaced?
- The terms of any compensation (water will only be replaced by water. Money will not replace water)
- The need for Oyu Tolgoi's contribution to the tangible resource protection of Khanbogd *soum*.

In response to community concerns regarding the Undai river, and in line with Oyu Tolgoi standards for stakeholder engagement, the Communities and Social Performance team has developed a specific plan in relation to consultation regarding the Undai. This Community Engagement Plan is designed to ensure effective engagement with local communities, government and key relevant stakeholders prior to, during, and after the diversion of the Undai.

Summary

- The approved Volume III DEIA remains a primary permit for the project and provides the basis for current construction approval
- A revised DEIA reflects the updated design of the Undai diversion
- Oyu Tolgoi has undertaken a number of rounds of consultation related to the Undai Diversion since 2006 and continues to engage with the local community through the Community Engagement Plan
- The updated design was used for public consultation
- Construction of the diversion will not commence until the revised DEIA is approved (expected soon).

Based on the monitoring data collected by Oyu Tolgoi to date, the water levels across the project area of influence appear to be stable with only small fluctuations recorded. These small fluctuations are considered to reflect the limited use of the aquifers by the herders and the annual recharge of these aquifers by the summer rains.

Continual Improvement

Oyu Tolgoi fully understands and appreciates the critical importance of water to the ongoing development of the southern Gobi region. It is committed to improving its own performance and also playing a leadership role together with other public and private sector partners to develop a model of water use for the region that is efficient and sustainable.

In addition to the work on its water usage, Oyu Tolgoi will work closely with the Government of Mongolia, other water users (both private and public), NGOs and potential aid donors to:

- Improve the knowledge base and understanding of the area's groundwater resources
- Develop a water use, treatment and efficiency model that maximises water use efficiency in the region
- Work with other industrial water users to co-ordinate activities to improve resource efficiency

to support the economic development of the southern Gobi region and Mongolia

- Seek to develop alternative water supplies
- Educate consumers on efficient water use
- Develop a common understanding of available water resources and the priority uses for that water.

The aim is to develop a sustainable model for water use in the southern Gobi region of Mongolia. The SGRDC is likely to be central to this process.

Management Plan

In addition to the common management plan objectives (as listed on page 34), the Water Resources Management Plan aims to:

- Ensure compliance with all related project requirements and applicable industry standards
- Minimise impacts to natural surface and groundwater quality
- Ensure continuity of supply for the project and minimise adverse impacts on other water users
- Ensure that all treated waters are safe for re-use
- Ensure effective implementation of water conservation, including recycling initiatives.

The table (right) describes the key issues and associated management measures detailed in the Water Resources Management Plan.

Participatory Environmental Monitoring Programme

The primary objectives of the PEM Programme are to involve the local community in environmental monitoring, to allow Oyu Tolgoi to benefit from the local community's traditional environmental knowledge, and to present the environmental activities of the Oyu Tolgoi project more clearly to the local community. The overall objective is to increase all parties' environmental knowledge.

A key component of the PEM Programme is the Participatory Water Monitoring (PWM) Programme which started formally in mid-2011 with an initial group of nine herders – subsequently increased to 26. These herders are measuring the water levels of their own wells with equipment supplied by Oyu Tolgoi. The herders are located in the vicinity of the MLA, Gunii Hooloi and along the Oyu Tolgoi to Gashuun Sukhait infrastructure corridor.

The main objectives of quarterly meetings with herders are:

- Encouraging further active community participation in environmental monitoring programmes
- Improving herders' knowledge of the behaviour of groundwater in their wells
- Increasing community trust in Oyu Tolgoi's water monitoring work and the information obtained
- Encouraging community support for and input to Oyu Tolgoi's approaches to environmental impact management
- Increasing public awareness and understanding of environmental issues
- Using the herders' daily (or twice daily) measurements of groundwater levels in their wells to supplement Oyu Tolgoi's monthly readings
- Ensuring quality assurance/quality control of the herder data
- Increasing Oyu Tolgoi's ability to respond to herder concerns.

Key Issue	Key Management Measures Implemented by the Project
Water usage and conservation	<p>Develop and maintain a water balance inventory for the construction phase. The water balance will be used to:</p> <ul style="list-style-type: none"> ▪ Undertake routine review of the effectiveness of water conservation measures ▪ Undertake routine review of water usage during construction. In the event that water usage significantly exceeds predicted levels the potential impacts of this will be assessed and any necessary additional mitigation measures will be identified and implemented. <p>Re-use wastewater generated from the construction phase sewage/sanitary treatment plant where possible (eg, for concrete production and road dust suppression) and, where not immediately possible, place in grey water storage ponds pending re-use.</p> <p>Bury water distribution pipelines below ground freezing layer and equip with insulated air release valves and periodic isolation valves to minimise risks of water loss or leaks.</p> <p>Collect climate data at the current station including evaporation data.</p>
Water management	<p>Develop a refined groundwater model, utilising the new data from the enhanced groundwater monitoring network and geophysics, to provide a prediction of the potential groundwater cone of depression around the future pit. If there are any springs or wells which may be impacted, mitigation measures will be developed in consultation with the local herders and other stakeholders.</p>
Sewage water	<p>Send all sewage and sanitary waters produced on site, at the airport and at remote construction camps to the main wastewater treatment plant at the mine site construction camp or locally established mobile wastewater treatment plants.</p> <p>Ensure all sewage treatment plants perform to applicable Mongolian discharge standards and relevant international and project standards.</p> <p>Ensure no treated wastewater is directly discharged to local ephemeral watercourses or permitted to infiltrate into the aquifers.</p>
Drinking water	<p>Provide clean drinking water for all workers to meet Mongolian, World Health Organisation (WHO) and Codex potable water standards.</p> <p><u>Note:</u> The Codex Alimentarius Commission is an intergovernmental body that implements the joint Food and Agriculture Organization/WHO Food Standards Programme. Its principal objective is to protect the health of consumers and to facilitate the trade of food (including bottled water) by setting international standards (ie, Codex Standards).</p>
Water abstraction drawdown	<p>Assess individually each temporary construction water supply borehole prior to use to confirm that its area of influence does not include any existing springs or boreholes used by third parties or wildlife.</p> <p>Source water resources required during construction of the Oyu Tolgoi to Gashuun Sukhait road and Gunii Hooloi pipeline from aquifers that are deeper than, and hydraulically disconnected from, those used by any adjacent herders.</p> <p>Monitor water levels and abstraction rates at each borehole to ensure that water levels and abstraction rates are as anticipated. If water levels and/or abstraction rates significantly exceed anticipated levels, a re-evaluation of the borehole will be performed to determine if any additional mitigation actions are required.</p> <p>In accordance with the complaints, disputes and grievance procedure, any potential impacts reported for a herder well within the potential impact zone will be investigated by a team including professional hydrogeologists to assess the likely reason for the failure and identify measures to mitigate any impacts.</p> <p>Publish results of all related water monitoring activities in routine internal reports as well as in the Annual Environmental Report issued to the MNET which, when approved, will be made publicly available on the Oyu Tolgoi website.</p>
Well drilling contamination and drawdown prevention	<p>When drilling any groundwater abstraction boreholes:</p> <ul style="list-style-type: none"> ▪ The operations will use water-based polymer drilling mud ▪ The cuttings and excess mud will be collected in local mud pits ▪ Upon completion of the works the mud pits will be allowed to evaporate and will then be covered and the areas restored. <p>Install all production water bores in a manner that maintains the screened sections of bores entirely within the deep aquifer zone which will be isolated from any upper aquifer layers, including any shallow alluvial aquifers, by the use of a grout seal.</p>

Key Issue	Key Management Measures Implemented by the Project
Alluvial aquifer connectivity and conductivity	<p>Prevent the Gunii Hooloi pipeline from acting as a barrier or otherwise impacting the groundwater flow in the ephemeral watercourse it crosses. Oyu Tolgoi will:</p> <ul style="list-style-type: none"> ▪ Backfill the pipeline excavations with materials which have the same or higher permeability than the existing sediments ▪ Where feasible bury the pipeline into lower permeability sediments beneath the surficial alluvial aquifer ▪ Plug the pipeline trench adjacent to any ephemeral watercourses with low permeability material to prevent groundwater leaving the alluvial aquifer and flowing along the pipeline route. <p>The early groundwater exploration wells form part of the baseline monitoring network. If any of these water level monitoring wells are found to be leaking, resulting in suspected connectivity between the shallow and deep aquifers, Oyu Tolgoi will fill the borehole with cement grout or convert it to a piezometer once investigations by the Water Agency are complete, and permission from the Water Agency and the Khanbogd <i>soum</i> Governor has been obtained.</p>
Contamination prevention	<p>Where possible, power pumps at temporary construction water abstraction wells from the construction camp mains power supply.</p> <p>Locate pumps, which will be powered by their own diesel generators and associated tank, outside the bore shelter building, and provide secondary containment. No fuel or chemical storage will be located within 50 m of abstraction wells or springs.</p> <p>Install a cut-off wall across the Undai down-gradient of the WRD which will prevent any migration of groundwater through the alluvial sediments and cause it to flow back to the open pit. Additional monitoring wells will also be installed along the re-routed Undai channel, downstream of the seepage collection pond, and down slope of the southeast section of the WRD to enable Oyu Tolgoi to monitor the effectiveness of the cut-off wall and respond early to address any seepage if groundwater passes the cut-off wall.</p> <p>Include clay or geomembrane composite liner system to United States Environmental Protection Agency (USEPA) standards in the permanent waste management facility landfill and leachate evaporation ponds to prevent ground contamination. Install groundwater monitoring wells in the Cretaceous clay around the permanent waste management facility as part of the monitoring regime at the site.</p> <p>Construct the TSF with an engineered natural clay liner and equip with a seepage capture ditch to minimise the potential for any impact to underlying groundwater resources during the operational phase.</p>
Availability of water resources used by third parties and wildlife – Undai diversion	<p>Construct the Undai diversion in accordance with the international engineering design requirements used for the project which have been approved by the Mongolian authorities.</p> <p>Monitor the effectiveness of the Undai diversion and the extent of impacts on downstream water resources during and immediately after construction. This activity will include the monitoring of water levels and quality in downstream monitoring wells and herder wells, and the measurement of the flux through the groundwater diversion pipe.</p> <p>Monitor the behaviour of the diversion seasonally, commencing with the first wet season post construction of the diversion. This will enable Oyu Tolgoi to assess the extent of any erosion within the western channel of the Undai and downstream of the diversion. A photographic record of the condition of the diversion after each significant flood event will be maintained to allow any significant erosion to be identified, monitored and, if considered necessary, remediated.</p>
Availability of water resources used by third parties and wildlife – ephemeral watercourse diversions	<p>Detailed engineering solutions have been developed for the other diversions in the MLA to ensure that they are robust and sustainable, and ensure that surface water resources are not degraded, but effectively pass around Oyu Tolgoi's operations, including the future subsidence zone, and the TSF.</p>

Key Issue	Key Management Measures Implemented by the Project
Availability of water resources used by third parties and wildlife - Bor Ovoo spring	<p>Establish a permanent surface water source to replace the Bor Ovoo spring approximately 500 m to the south of the MLA boundary. The permanent surface water source will be continuously supplied with water outside the winter months (ie, when the system is not frozen) via the subterranean flow diversion pipeline associated with the Undai river diversion. The replacement water source will replicate the size, nature, water quality and availability of the Bor Ovoo spring.</p> <p>Monitor the success of the Bor Ovoo replacement borehole as part of the PWM Programme to be implemented with local herders and, if any issue is identified, work to develop, implement and monitor a mutually-acceptable solution.</p>
Flood water management	<p>Construct fords or culverts where project construction facilities or infrastructure (eg, project roads) cross ephemeral surface water channels or playa areas (also known as pans or dry lakes). Where culverts are used these locations will be individually assessed, designed and installed to ensure adequate flow of flood waters and to avoid significant erosion upstream or downstream of the culvert.</p>
Community sanitary treatment infrastructure	<p>Provide assistance to the development of a sustainable reticulation water supply system for Khanbogd <i>soum</i> centre as described in the Influx Management Plan. Oyu Tolgoi, in conjunction with other organisations such as the ADB, has commissioned a study to identify a sustainable water supply to support the expansion of Khanbogd <i>soum</i> centre as part of the 2012 Regional Development Plan for Khanbogd <i>soum</i>.</p>



Oyu Tolgoi's operations depend on water sources not used by others



Khanbogd soum centre, located 45 km from the Oyu Tolgoi mine site

ECONOMIC AND SOCIAL ISSUES MANAGEMENT

Population and Economy

Mongolia is a relatively homogeneous country with the vast majority of people belonging to the Khalkh Mongol ethnic group and speaking the Khalkh Mongol language. The United Nations Population Division estimated Mongolia's population to be 2.9 million in 2010. Up to 60% of Mongolians are now urban dwellers and there has been considerable migration to the capital city, Ulaanbaatar.

In Mongolia, nomadic herders do not self-identity as members of any distinct indigenous culture group. In fact, according to 'The State of the World's Minorities and Indigenous Peoples – Mongolia (Minority Rights Group International – 2012)', no portion of the Mongolian population is considered distinctly indigenous.

In 2010 the population of the Omnogovi *aimag* was approximately 48,500 people, one-third of whom were classified as urban. The *aimag* is the least densely populated in Mongolia with a population density of 0.3/km². Khanbogd *soum* is characterised by a sparse and widely-spread population. In 2010, the *soum* had a population of 3,522 of which rural herders comprised 2,067 and the *soum* centre 1,455.

Economic activity in Mongolia has traditionally been based on herding and agriculture. At the

end of 2009, the livestock sector made up 86% of gross agricultural production. Rain-fed cultivation is the major characteristic of Mongolia's crop production, which makes it susceptible to the natural environment and dependent on rainfall during the growing period. Crop yields, especially of grains, remain low. Concerns about food security in Mongolia are real since there are often large inter-annual variations in the country's ability to produce principal food items.

Mongolia is rich in mineral resources, the most significant being copper, zinc, gold and coal deposits. During 2009 the mining and quarrying sector accounted for 28% of Mongolia's GDP and 86.1% of export earnings. Exploration activities have resulted in the development of a pipeline of potential mineral projects that include Tavan Tolgoi (coal), Tsagaan Suvraga (copper and molybdenum) and Tumurtei (iron ore).

Mongolia's economy continues to be heavily influenced by its neighbours. Mongolia purchases 95% of its petroleum products and a substantial amount of electric power from Russia, leaving it vulnerable to price increases. Trade with China represents more than half of Mongolia's total external trade – China receives about 75% of Mongolia's exports. Mongolia joined the World Trade Organization in 1997 and seeks to expand its participation in regional economic and trade regimes. In early 2009, the International Monetary



Fund agreed a US\$224 million stand-by arrangement with Mongolia to help the country recover from the effects of the recent global financial crisis.

The 2010 Global Human Development Report indicates that Mongolia's international ranking in terms of the United Nations Development Programme Human Development Index (HDI) was 100 out of 169 countries. Mongolia's relatively low global ranking in HDI is primarily due to its

low per capita GDP. Distance from markets, lack of infrastructure, limited opportunities to access education and healthcare, and the resulting unavailability of jobs, all have negative impacts on living standards, particularly outside Ulaanbaatar. Although access rates to roads, electricity, and the mobile phone footprint have expanded rapidly over the past 10 years, poor infrastructure remains a key development constraint. *Gers* (portable, bent wood-framed dwelling structures) remain the most



Economic activity in Mongolia has traditionally been based on herding and agriculture



Camels are one of the animals kept by herders in the project area

common type of housing in Mongolia. Data from 2002-2003 show that approximately 45% of citizens in the country lived in *gers*, 30% in permanent houses and 20% in apartments.

Economic impacts associated with the project construction phase are already being felt, primarily through the positive impacts of revenues into the state budget through tax and other statutory payments. However the negative impact of consumer price inflation is occurring, although the impact of the Oyu Tolgoi project on overall price inflation cannot be determined at this stage from Government statistics.

In the course of its long operational lifecycle, Oyu Tolgoi is predicted not only to contribute substantially to the strengthening of the Omnogovi *aimag* and local *soum* economies, but also to stimulate the national economy. In addition to the directly earmarked regional and local investments by the project, effective distribution of the project-generated funds by the Government remains among the key factors that will determine a successful economic outcome.

The project is forecast to increase the size of the Mongolian economy by over 35% by 2020. GDP per capita is projected to rise by 1.7 million MNT (over US\$1,000) by 2020 – an increase equivalent to over 60% of today's GDP per capita. By 2043, real GDP per capita is forecast to increase by 4.67 million MNT

(US\$3,510). The scale of the anticipated economic effects associated with the Oyu Tolgoi project will therefore be felt nationwide. A large proportion of project cashflows will be paid to the Government of Mongolia in the form of fees, royalties and taxes. The project is expected to account for over 30% of government revenue in the form of taxes and dividends by 2020 (Source: 'The Development of the Oyu Tolgoi Copper Mine: An Assessment of the Macroeconomic Consequences for Mongolia,' February 2011. School of Economic Studies, National University of Mongolia, and BAEconomics Pty Ltd).

It is also predicted that the project will cause the real exchange rate to appreciate by circa 15% by 2020, although the actual extent of the appreciation will depend on the copper price and related government policies. At the same time, replacement of domestically-produced goods with imports, coupled with a risk of falling demand for national exports due to the rising exchange value are likely to have a negative impact on the competitiveness of domestic industries which rely on exports. Appreciation of the exchange rate may also influence the sectoral composition of the national economic output where the growth of the mining industry may be accompanied by the contraction of and higher labour costs in the non-mining sectors, particularly in agriculture and manufacturing.

Project-Affected Communities

The project-affected population comprises residents of the Khanbogd *soum*, including those people residing in the *soum* centre and herder households in rural locations.

Oyu Tolgoi began initial consultation activities with these local communities in 2003 and is committed to conducting regular stakeholder engagement and mapping exercises over the life of the project. Local communities have made clear their interest in regular access to information, especially in relation to impacts to water, soil and pastureland, and Oyu Tolgoi's provisions for employment, training, and community assistance.

A socio-economic baseline study and impact assessment for the project was undertaken in 2008-2009 which involved significant consultation activities through focus group discussions, interviews with government and other organisations, and workshops with local communities.

Herder Households Directly Affected by Land Acquisition

Herder households residing in or around the different project sites are the most directly affected by land acquisition requirements. The majority of project components are located in the Javkhlant *bagh* (smallest sub-division of local government)

within Khanbogd *soum* and this area is the most affected by land acquisition and related disturbance impacts. The population that has been or will be directly affected by land acquisition includes households that have already been physically relocated, and households that will be economically affected by loss (grazing land, wells, damage/division of pastures) in and around the project area.

Other Affected People in Khanbogd Soum

Khanbogd *soum* is earmarked for a residential development to house project workers during operations. Oyu Tolgoi is also constructing a dedicated training centre/education facility in Khanbogd *soum* centre and has already opened a supplier development centre in Dalanzadgad.

Vulnerable and Marginalised People

Vulnerable and marginalised people are those who, by virtue of gender, ethnicity, age, physical or mental disability, economic disadvantage or social status, may be more adversely affected by physical and economic displacement than others and who may be limited in their ability to claim or take advantage of benefits arising from the project. Vulnerable people include, but are not limited to:

- Seriously ill and disabled persons, whether mentally or physically
- The elderly, particularly when they live alone
- Female-headed households and/or those who live with limited resources.



Oyu Tolgoi began consultation activities with local communities in 2003

Oyu Tolgoi has developed and implemented plans in co-operation with the Khanbogd *soum* administration to ensure that vulnerable people are specifically identified and supported so they can also share in the benefits that the project will bring.

Land Use

There is no private ownership of grazing lands in Mongolia so every member of the community has equal access to use it (under Law on Land of Mongolia, 2002) although pastureland is also subject to customary laws of use. Limited private ownership of land does occur in *soum* centres (as well as in Ulaanbaatar), where households can fence a small plot for a permanent residence (a *ger* and/or a house).

In the project area pastoralists have largely developed their own mechanism of managing and controlling the grazing land as, unlike some other regions in Mongolia, the southern Gobi does not have a formalised pastureland management plan in place at the *bagh*, *soum* or *aimag* level. The pastureland in the project area is used for most of the year by livestock originating from local communities in Khanbogd *soum*. These grazing lands are particularly important for pastoralists in the winter and spring seasons but also as summer pastures. The view of herders is that the *aimag* has a relatively good supply of pastures, with less than 10% of herders considering the supply of pastures as poor.

Water plays a major role in shaping pastureland use and the location of the seasonal camps of herders. In general, hardy and drought-tolerant grasses dominate the pasture vegetation. Pastures are seen by herders to be increasingly affected by human activities, principally roads and heavy traffic, and also from over-grazing of some areas. Because of low grass yield and the poor carrying capacity of the land, herder camps are scattered across the whole *soum* territory and, largely due to water availability, animals are relatively dense in the central and northern parts of Khanbogd *soum* and scarce in the southern part.

The total land area within Khanbogd *soum* is estimated at 14,960 km² and comprises the following land use units:

- **Grazing land** is reported to total 11,762 km² or 78% of the total area in Khanbogd *soum*
- **Urban land** covers 365 km², or 2.4% of the land area. The *soum* centre is the only built-up area; the majority of public infrastructure, services and businesses are located there. In addition, each *bagh* has a small 'bagh centre' which comprises a few basic community buildings used predominantly as a meeting place for herder communities
- **Cultivated land** comprises less than 0.01 km² in Khanbogd *soum*, and produces 4.6 t per annum of potatoes and other vegetables. Crop production is limited to few households growing vegetables using water from a deep well, mostly for family consumption



Grazing land which is essential to herders makes up 78% of the land area in Khanbogd soum

- **State Special Needs Land** (held in reserve by the Government) and other minor land units equate to 2,953 km² or 19.6% of the land area, including land for roads and communications infrastructure, forest and water (springs and playas), as well as mining land now allocated for the Oyu Tolgoi project.

Oyu Tolgoi will require approximately 140 km² of land permanently for the mine site and ancillary facilities, representing less than 2% of the available grazing land within Khanbogd *soum*. This includes land for the MLA that was granted in 2009, and areas outside the MLA for the airport, the Gunii Hooloi borefield and water pipeline, and the infrastructure facilities between Oyu Tolgoi and Gashuun Sukhait. Land will also be temporarily disturbed during the construction phase for activities such as the installation of worker construction camps, excavation of borrow pits and soil removal of the water pipeline and transmission line corridors.

Oyu Tolgoi has carried out detailed assessments of land use, pastureland quality, and water availability and use throughout Khanbogd *soum* to characterise the areas affected by land take (physical displacement) and indirect land use impacts (economic displacement) – a comprehensive exercise undertaken for the first time in Mongolia that goes above and beyond Mongolian standards.

Physical Displacement

Based on extensive consultation with local authorities and communities and predictions of environmental impacts the proposed 10 km exclusion zone around the Oyu Tolgoi MLA was agreed with nearby neighbours and *soum* authorities. This was concluded to be a reasonable buffer to exclude herder winter camps (but not temporary summer grazing which is transient and the location of which cannot be directly controlled by the project). The stated objective of the exclusion zone was to protect herders from potential adverse environmental and/or health and safety risks from the project (groundwater drawdown, dust, noise, etc.) while also minimising land loss. As a result, the project identified 10 households (16 families with 61 people) who needed to be physically resettled, and by 2005 they had moved from within the project's 10 km exclusion zone to dispersed locations as agreed with each individual household.

Oyu Tolgoi has designed a Herder Relocation Programme, the first of its kind in Mongolia, in

consultation with all affected families and Khanbogd *soum* authorities. Extensive negotiations were held during 2004 with each herder household to determine and agree their individual resettlement and compensation packages. By the end of September 2004, tripartite agreements were signed between each of the affected households, the Khanbogd *soum* Government, and the Oyu Tolgoi project. By the end of 2005 all families had been successfully relocated according to the programme, and provided with a comprehensive herder relocation package, including replacement assets and compensation. The programme's focus extends beyond financial compensation in its assistance with employment, education, business development and training.

Oyu Tolgoi monitors affected families through household visits at least annually and provides follow-up assistance as requested wherever possible. In addition, two more formal audits of resettled families were conducted in 2006 and 2010. All families reported their standard of living, income, herd quality, and access to pasture to be at least as good as, or better than, before they were resettled. In 2012, Oyu Tolgoi will undertake another similar audit. For the future, resettled households will be part of the ongoing social monitoring undertaken by Oyu Tolgoi.

Economic Displacement

Oyu Tolgoi's approach to identifying economic displacement impacts, such as disruption to pastureland, has been through open and regular consultation with herders in Khanbogd *soum*. This has included consultation with all herders known to frequent an area, both those with winter shelters and therefore established user rights, and others who may only visit the area occasionally. Since pastureland is communal property (by law), every member of the herding community has equal access to use it for grazing livestock.

In Khanbogd *soum* herders have traditional grazing rights to pastureland at their winter shelter sites, which acts as an informal pastureland management system. Summer grazing is also conducted informally, and there are no designated summer pasture areas in the *soum* (these change from year to year depending on forage quantity, livestock numbers, weather conditions and individual herder family requirements).

Oyu Tolgoi Multi-Year Community Plan

Oyu Tolgoi is developing a Multi-Year Community Plan (in line with the Rio Tinto Communities Standard) to update its existing Social Management Plan. These programmes demonstrate how Oyu Tolgoi seeks to go beyond simply mitigating identified impacts to provide a more holistic and regional approach to economic and community development within Khanbogd *soum* and Omnogovi *aimag*, and are the first of their kind in Mongolia. The objectives of the new Multi-Year Community Plan are to:

- Earn and maintain Oyu Tolgoi's social licence to operate
- Maximise the beneficial impact of the Oyu Tolgoi project on the socio-economic development of the southern Gobi region
- Build and maintain enduring relationships with communities, government, NGOs and civil society based on trust, openness and the pursuit of mutual interests
- Establish objectives and plans that support the social performance vision, and achieve performance-based, measurable results in implementation of the plans developed by Oyu Tolgoi
- Achieve recognition for Oyu Tolgoi's contribution in creating and sustaining a harmonious and mutually supportive relationship between the mine and residents of the region.

The Multi-Year Community Plan is still under development and the planning for 2012 comprises a number of themes and programmes:

Community and stakeholder engagement

- Co-operation agreement
- Resettlement Action Plan
- Rapid information dissemination
- Community complaints, disputes and grievance resolution and management
- Community and cultural induction training for all Oyu Tolgoi employees and contractors.

Community health, education and cultural heritage

- Cultural heritage protection
- Community health, safety and security programme
- Education support.

Local business and economic development

- SME development
- Animal husbandry business development
- Tourism development
- Green business support (such as tree planting).

Pastureland and water resources management

- Participatory environmental management
- Improve dissemination on water use
- Improve water resources
- Improve pastureland management.

Township planning, management and local employment

- Capacity building in township development and management
- Local employment and training
- Local labour exchange.

Based on extensive consultation, Oyu Tolgoi identified a total of 89 households (80 families or a total of 365 people) which are being and/or will be economically displaced, and are being compensated through a consultative process. These households will not be physically relocated.

Management Plan

The RAP, the first of its kind in Mongolia, was designed to address and manage the impacts of resettlement and economic displacement. In addition to the common management plan objectives, the RAP aims to:

- Outline the legal obligations and project standards with regard to land acquisition and involuntary resettlement

- Identify physical and economic displacement impacts and project-affected people related to the project, and take measures to avoid or minimise them
- Establish effective resettlement, compensation and livelihood restoration plans and procedures for ensuring that affected peoples’ livelihoods and standards of living are improved or at least restored
- Define the operational procedures, consultation methods, roles and responsibilities, and requirements for the implementation of agreed compensation.

The table below describes the key issues and associated management measures detailed in the RAP.

Key Issue	Key Management Measures Implemented by the Project
Compliance and overarching commitments	<p>Ensure compliance with Mongolian laws and regulations in relation to land resources together with IFC Performance Standard 5 ‘Land Acquisition and Involuntary Resettlement’ and EBRD’s Performance Requirement ‘Land Acquisition, Involuntary Resettlement and Economic Displacement’.</p> <p>Ensure compliance with the Rio Tinto Communities Standard.</p> <p>Address both physical and economic displacement: impacts from permanent and temporary land acquisition on assets and livelihoods will be mitigated for both physical and economic displacement.</p> <p>Entitle all people residing or using land in the project-affected areas to compensation and livelihood restoration measures sufficient to assist them to improve or at least restore their pre-project standards of living.</p> <p>Deliver compensation directly to affected herder households or individuals.</p> <p>Offer affected households and communities land-based livelihood restoration assistance (eg, Sustainable Pastureland Management Programme).</p> <p>Assist affected households in restoring their affected livelihoods, and closely monitor livelihood restoration and provide transitional assistance as necessary.</p> <p>Compensate for temporary and permanent disruptions to herding activities, including nuisance dust and noise and loss of amenity during construction activities.</p> <p>Monitor and evaluate land acquisition and resettlement implementation and outcomes as part of a transparent process involving affected families, <i>soum</i> authorities and independent parties.</p> <p>Implement a community complaints, disputes and grievance procedure to be available to affected households and other local residents.</p> <p>Engage, inform and consult affected persons and communities during the whole course of resettlement and livelihood restoration.</p>
Compensation	<p>Provide compensation measures in accordance with the established entitlements matrix for physical displacement, economic displacement, division of permanent pastures, disruption to herding practices, restricted access to water resources and community loss of pastureland.</p>
Evaluation of resettled herder households	<p>Follow up with resettled herder families that report to be less well off in terms of access to water from 2010 evaluation.</p> <p>Follow up with resettled herder families that report standards of living are the same as before resettlement from the 2010 evaluation.</p> <p>Provide corrective measures/additional assistance as agreed with affected households.</p>
Identification of economically-affected herders	<p>Finalise census/inventory of herder households economically displaced by the project.</p> <p>Agree displacement impacts and finalise entitlements matrix.</p>
Consultation and negotiation with affected households	<p>Disclose key elements of resettlement and livelihood restoration process to affected herders.</p> <p>Disclose the RAP to affected households, <i>soum</i> authorities and local communities.</p> <p>Convene compensation working group as required.</p> <p>Participate in pasture user group and pasture NGO meetings and activities related to pasture management and livelihood restoration.</p>

Key Issue	Key Management Measures Implemented by the Project
Sustainable Pastureland Management Programme	<p>Establish pasture user groups and a pastureland management NGO.</p> <p>Implement first phase of Pastureland Management Programme including development of pasture management plans with pastureland management organisations to be selected in 2012.</p> <p>Establish a revolving fund for pasture user groups for pastureland management initiatives.</p> <p>Deliver specific community projects/assistance for overall loss of grazing land to Khanbogd <i>soum</i> herders.</p> <p>Undertake rangeland assessment and pastureland health monitoring.</p>
Assistance for vulnerable people	<p>Implement Herder Livelihood Improvement Programme for identified impacted households.</p> <p>Identify vulnerable people within affected herder group and any changes in the economic situation of individual households which may lead them to be defined as vulnerable.</p> <p>Conduct ongoing consultation with vulnerable people and groups.</p> <p>Utilise compensation working group to devise measures and programmes to support identified vulnerable people.</p> <p>Implement specific measures and assistance targeted at vulnerable people.</p>
Education and training	<p>Implement Educational Support and Scholarship Support Programme.</p> <p>Open Oyu Tolgoi technical training centre in Khanbogd <i>soum</i> centre in 2012 (completed April 2012).</p> <p>Provide scholarships and education assistance to eligible herder households.</p> <p>Identify and agree type of training desired by eligible herder households and schedule for implementation as defined in the RAP.</p>
Job creation	<p>Provide jobs to eligible and interested herders under the terms of the RAP.</p> <p>Ensure implementation of job-readiness programmes and other on-the-job training.</p>
Herder business development support	<p>Implement long-term economic and business development projects for displaced herders, eg, small and medium-size enterprise (SME) development and micro-credit schemes.</p> <p>Develop specific proposals for income generation projects for affected herder households.</p>
Animal crossings and division of pastures	<p>Develop a compensation procedure for potential animal loss on Oyu Tolgoi to Gashuun Sukhait road.</p> <p>Ensure crossing points are identified and appropriate measures put in place at all project sites for safe passage of herders and livestock.</p> <p>Implement road signage and other traffic safety measures in consultation with herders along road(s) used by the project.</p>
Herder wells	<p>Provide new or reconstructed wells for households affected by loss or restrictions of access to water.</p> <p>Monitor selected herder wells throughout Khanbogd <i>soum</i> and ensure that affected herder households are involved in the PEM Programme.</p>

Influx

Sustainable local and regional economic development is a priority for Oyu Tolgoi, and it is focused on minimising potential impacts associated with local and regional population influx to the southern Gobi region that may occur as a result of the Oyu Tolgoi project.

From the outset, Oyu Tolgoi recognised that the project would lead to population influx due to the arrival of not only a substantial workforce but also a potentially large number of job-seekers and providers of goods and services. In 2007 it commissioned an influx risk assessment to estimate construction phase in-migration related to the project. This assessment estimated between 500 - 1700 in-migrants would settle at least temporarily

in Khanbogd *soum* during the construction phase, which passed its peak in terms of employment at the end of 2011. In 2010 Khanbogd *soum's* population was 3,522 according to census data. A total of 305 new residents registered in Khanbogd *soum* in 2010 and 323 in 2011 (from January to October). Taking into account those leaving Khanbogd *soum*, the net migration was 256 in 2010 and 237 in 2011 (to October). However, it should be noted that the *soum* authorities further estimate that only about half the new arrivals over that period has registered.

Although the Oyu Tolgoi project's workforce will reduce substantially in the transition from construction to the operations phase, population inflow is still likely as a result of the favourable business environment in the *soum* and improved



Figure 9: Existing or planned mining projects in southern Mongolia and Mongolian-Chinese border crossings through which increased trade is anticipated

infrastructure. The ADB projects that the population of Khanbogd *soum* will increase significantly by 2020, from 3,522 (measured in the 2010 census) to 14,000 in 2015 and to 20,000 by 2020.

In addition to the Oyu Tolgoi development, southern Mongolia more generally is poised to experience a boom in economic activity as a result of a range of factors including (see Figure 9):

- Planned development of new mines at Tavan Tolgoi (coal) and Tsagaan Suvraga (copper). Tavan Tolgoi is one of the largest undeveloped coal deposits in the world and is located around 150 km from the Oyu Tolgoi MLA
- Expansion of existing coal mining operations at Naryn Sukhait and Ovoo Tolgoi and other locations
- Strengthening of trade corridors with the People's Republic of China through the border town at Zamyn-Uud in Dornogovi, and through crossing points of Gashuun Sukhait and Shivee Huren in Omnogovi, and Hangi in Dornogovi
- Development of associated power stations and transport (road, rail and air) infrastructure.

The influx associated with these economic activities is projected to more than double urban populations in the region within the next ten years. For some *soum* centres (notably Khanbogd and Tsogtsetsii), the population is expected to increase significantly by 2020. These areas currently do not have the infrastructure or administrative capacity to manage such large transformations without significant support from the Government of Mongolia and the major project developers in the region.

In an effort to help manage the in-migration, Oyu Tolgoi has developed an Influx Management Plan. In addition, Oyu Tolgoi is working to develop a range of supporting

strategies and programmes to limit and mitigate the effects of in-migration. It is also working to support the SGRDC in co-ordinating regional development activities with government agencies and other project developers.

Social Infrastructure and Utilities

Social infrastructure is dispersed across local *soum* centres and the *aimag* capital, Dalanzadgad. As a result, social infrastructure (and associated planning assumptions) is sensitive to unforeseen changes in population levels (for example, due to influx) and to changes in the levels of Government support for infrastructure provision.

Social infrastructure within the project area is limited, reflecting the low population level and the dispersed nature of settlements. Existing infrastructure capacity shortcomings relate to water and electricity supply, solid waste management and social services. Many areas of public infrastructure provision are the responsibility of the Government of Mongolia but under the terms of the IA Oyu Tolgoi will support the SGRDC to assist the Government in 'resolving matters of urban planning and development, including power, roads, water supply, heating and sewerage.'

Oyu Tolgoi is helping support regional infrastructure development and undertook a number of initiatives in 2011 to this end, including:

- Installation of two new generators and building for Khanbogd *soum* centre power supply
- In Khanbogd, design of a 35 kV power line from the MLA to Khanbogd *soum* centre
- Water resource survey for Khanbogd *soum* centre domestic supply
- Construction of a technical training centre in Khanbogd *soum* centre (completed in April 2012)

The South Gobi Regional Development Council (SGRDC)

The SGRDC is specified in the Oyu Tolgoi IA as a responsibility of Government, and was established in May 2010 under Government Resolution №124. The council comprises: chairman, deputy chairman, secretary and 42 named members from national and local government, NGOs and mining companies (including Oyu Tolgoi), and is supervised by a board of 15 members including the Government of Mongolia, mining companies (including Oyu Tolgoi), Omnogovi local government, IFIs and mining associations. The first council meeting was held in December 2010 and the first board meeting in March 2011.

Vision: To make the southern Gobi region a model of sustainable development and the economic driver of the region and the nation.

Objectives: To maximise the value of large investments in the southern Gobi region through effective co-ordination of participating council members including communities in Omnogovi. Leading consultations with communities impacted by 'beyond the fence' investments: road, airport, etc.

Mission: Specifically, the SGRDC will implement the following objectives:

- Align national, regional and local development planning efforts
- Attract and co-ordinate investments into the region
- Co-ordinate planning, development of townships, population and related infrastructure
- Increase shareholder value to investors and quality of life of residents
- Identify tangible results that demonstrate sustainable regional development and Omnogovi as a model of regional economic development.

By early 2012, the council has met on three occasions, and has formed five sector working groups:

- Migration and townships
- Human resources
- Regional social and business development
- Environmental protection
- Infrastructure development.

Each working group has met and shared information between key stakeholders on development programmes and projects in the region. This has resulted in both a consolidated database of development plans in the region in each sector, and a regional development framework within which the Government and other stakeholders can co-ordinate development activities in the region.

- Design drawing for extension of existing Khanbogd *soum* centre kindergarten completed, work tendered and construction commenced
- Construction of Khanbogd *soum* centre school extension (still under way).

Operations-phase Housing

Oyu Tolgoi is still developing its operational-phase worker housing plans and how the issues of employee housing and supplier location will be handled. The current model based on predominantly FIFO arrangements is being reviewed to consider a model with a balance between some FIFO and predominantly local (Khanbogd-based) family housing, providing the opportunity for a daily commute to the mine for operational workers. Until a site has been agreed and accommodation constructed (planned for 2015), a combination of FIFO, camps and daily bus transportation from Khanbogd *soum* will be provided.

Oyu Tolgoi recognises that the final siting decision for operational worker housing has the potential to change the dynamics of the anticipated influx of people into Khanbogd *soum* who are looking to benefit from the opportunities created by the presence of the Oyu Tolgoi project. As a result, Oyu Tolgoi has adopted a number of principles to guide its actions and to provide reassurance to stakeholders that it will undertake this process and implement its worker housing and other influx management activities in a responsible manner consistent with the IA, Rio Tinto standards and GIIP.

These principles and commitments are as follows:

- Oyu Tolgoi is committed to:
 - Assisting the Khanbogd *soum* authorities to manage population influx (to Khanbogd *soum* and/or a separate town location)
 - Supporting infrastructure development in Khanbogd *soum*

- Providing targeted assistance to vulnerable groups as identified by the Khanbogd *soum* Labour and Social Welfare Office.
- Whichever housing option and location is adopted by Oyu Tolgoi, it is committed to:
 - Undertaking all necessary assessments and studies needed for Mongolian approvals
 - Undertaking a supplemental ESIA
 - Ensuring that sustainable water resources are available to support a town and that these would not conflict with existing supplies for herders and wildlife
 - Ensuring that the new town would not adversely impact biodiversity
 - Minimising adverse impacts of any new access to pastureland.
- Oyu Tolgoi is committed to honouring its responsibilities to support regional development as set out under the IA.
- Oyu Tolgoi is committed to a transition from infrastructure investment (because that infrastructure is still currently necessary) to capacity development investment (namely, sustainable programmes).

Oyu Tolgoi is committed to supporting the sustainable development of Khanbogd *soum* as part of the process of managing influx and

other socio-economic impact arising from the construction and operation of the project.

Management Plan

Oyu Tolgoi has developed an Influx Management Plan and a range of supporting strategies and programmes to limit and mitigate the effects of in-migration and bring new opportunities for residents in the area. In addition to the common management plan objectives, the Influx Management Plan aims to:

- Define suitable mitigation measures for the direct and indirect impacts associated with population influx to the project area of influence, by people seeking employment or moving to the area in expectation of other benefits
- Define project requirements and procedures to guide the project management team, contractors and subcontractors in relation to design and construction activities
- Define roles and responsibilities (including those of Government and other non-project stakeholders).

The table below describes the key issues and associated management measures detailed in the Influx Management Plan.

Key Issue	Key Management Measures Implemented by the Project
Regional influx to Dalanzadgad, Manlai, Bayan-Ovoo and Tsogttsetsii	<p>Establish and operate Oyu Tolgoi LRPI unit.</p> <p>Participate in SGRDC activities, including the co-ordination of in-migration, regional planning and development.</p> <p>Implement joint actions with national, <i>aimag</i> and local governments to support the improvement of regional infrastructure and to address development priorities and needs.</p> <p>Direct corporate investment and facilitation of partnership investments in regional infrastructure and development.</p> <p>Develop a roadmap and action plan for Oyu Tolgoi's support to regional development and housing.</p>
Influx to Khanbogd <i>soum</i> and Khanbogd <i>soum</i> centre	<p>Implement a LRPI Programme.</p> <p>Comply with the provisions of the Oyu Tolgoi hiring policy and procedure.</p> <p>Revise the master plan for Khanbogd <i>soum</i> in consultation with ADB and the Government of Mongolia.</p> <p>Develop a New Arrivals Programme for project employees, their families and other in-migrants to the area.</p>
Employment	<p>Give preference to local recruitment and prioritise the local and regional workforce hire.</p> <p>Use designated recruitment centres and prohibit informal hiring.</p> <p>Minimise pressure on local housing through arranging camp accommodation for construction workforce.</p>
Implementation of housing strategy and housing standards	<p>Provide accommodation for the majority of the construction workforce at the project site (camps) during construction.</p> <p>Minimise camp size through proactive employment of local employees.</p> <p>Provide daily transportation from Khanbogd <i>soum</i> centre to the mine site and other work areas.</p>

Key Issue	Key Management Measures Implemented by the Project
Power and utilities	<p>Implement and provide assistance with an upgrade of local power generation and distribution systems.</p> <p>Fund construction of a 35 kV power transmission line to supply Khanbogd.</p> <p>Renovate the district heating system under an ADB-funded development project for Khanbogd <i>soum</i> centre.</p> <p>Arrange for Khanbogd <i>soum</i> centre water supply as follows (though ADB funds piping into and around the township):</p> <ul style="list-style-type: none"> ▪ Complete investigatory works in relation to Khanbogd <i>soum</i> centre water supply ▪ Explore groundwater and drill/test aquifers to identify alternative resources for water supply ▪ Assess the capacity of available groundwater reserves ▪ Implement a detailed design for the provision of bulk water supply to Khanbogd <i>soum</i> centre ▪ Offset the cost of capital works for the development of a water supply system against water fees payable by Oyu Tolgoi to the Khanbogd <i>soum</i> administration ▪ Monitor water levels and water quality in selected herder wells, and develop appropriate and prompt solutions if any problems are identified. <p>Move sequence-batch reactor sewage treatment plants from temporary construction camps to Khanbogd <i>soum</i> centre when the camps close upon commencement of operations.</p> <p>Support the development of a wastewater treatment system in Khanbogd <i>soum</i> centre.</p> <p>Support jointly with Government of Mongolia and ADB the development of the waste collection system and a purpose-built landfill facility for Khanbogd <i>soum</i>.</p>
Education	<p>Implement vocational/professional training and apprenticeship programmes, as well as the award of graduate scholarships.</p> <p>Co-finance the Khanbogd <i>soum</i> centre school extension together with the Government of Mongolia.</p> <p>Construct an extension to the Khanbogd <i>soum</i> centre kindergarten.</p> <p>Provide 150 to 230 university scholarships over a five-year period under the compensation agreement and Gobi Scholarship Programme.</p> <p>Refurbish four existing TVET colleges and establish two new TVET colleges in Dalanzadgad, (with a branch in Khanbogd <i>soum</i> centre) and Ulaanbaatar.</p> <p>Implement employee scheme to sponsor the training of 3,300 Mongolian workers.</p>
Medical facilities	<p>Based on Health Impact assessment findings, develop a long-term Community Health, Safety and Security Programme to minimise and mitigate health impacts caused by the project operations and to improve health service delivery and capacity in the project area.</p> <p>Establish health consultancy centres in Omnogovi <i>aimag</i>.</p>
Local business development	<p>Support and assist the development of local business as part of the LBED Programme.</p>
Local economy	<p>Improve the livelihood for physically and economically displaced herders, and implement the RAP.</p> <p>Support local businesses through the South Gobi Supplier Development Policy and the LBED Programme.</p>
Access control	<p>Discourage settlement at work sites and report evidence of informal settlement to the <i>soum</i> authorities.</p>

Employment, Labour and Working Conditions

Higher education levels within Omnogovi *aimag* are low. In general, women are more highly educated than men with a higher proportion completing secondary education. Literacy levels are generally high, though school facilities are limited due to a lack of materials and internet access as well as a shortage of teachers educated to a professional level. In addition, children are often required to help with labour in herder families in keeping with tradition.

Herding remains the most important economic sector in Omnogovi *aimag*, still employing about 63% of workers. Reflecting the national situation, the mining, energy, financial and small business sectors are experiencing significant growth in the province.

Given the small and dispersed population in the southern Gobi region, inward investment from mining projects is already having a significant impact on local and regional economic development. In 2007 coal mining, mainly related to the Tavan Tolgoi project, contributed 95% to industrial GDP in Omnogovi *aimag*. The local population generally has high expectations related to job opportunities from mining development, and local employment is a priority for the Oyu Tolgoi project.

The picture is similar at the *soum* level. In Khanbogd *soum*, livestock-based agriculture, shops and small enterprises provide most of the employment. About 40% of the rural population are seasonal pastoralists

who move livestock between summer and winter grazing areas. Many herders are increasingly sedentary and move their herds around without having to move their household. The labour force participation rate (meaning the economically active population as a percentage of the population of working age) in Khanbogd *soum* is 83.4%, above the *aimag* average of 68.8%.

Oyu Tolgoi is likely to be one of the largest, if not the largest, employer in the region but, due to the complex interaction of demand- and supply-side issues, it is not possible to predict the precise impact of the project on employment and labour conditions with certainty.

Through its local procurement and training initiatives, Oyu Tolgoi is already having a significant positive impact on employment and working conditions across the project area and beyond in local suppliers, the workforce and other companies who compete with the project for trained workers. The introduction of high standards of training, health and safety and technical skills at the project have a 'trickle down' effect across the project area and nationally as new methods of working and employment conditions become accepted practice. At a national level, the mining industry labour pool is very small with approximately 16,000 workers. As a result, workers from peripheral or similar industries and unemployed people need to be retrained to supplement the increasing need for a mining labour workforce not only for Oyu Tolgoi but also for the wide range of other mining projects under



Approximately 30% of the Oyu Tolgoi workforce is female and this number is set to increase



Oyu Tolgoi is running the largest vocational training programme ever established in Mongolia by sponsoring the training of more than 3,300 people

development. In general terms, the professional workforce is well educated. However, education standards are lacking for vocational, technical and mining-related graduates.

Oyu Tolgoi is implementing the largest and most comprehensive training programme in Mongolia's history to benefit all Mongolians. To help Mongolia increase skilled labour capacity in the vocational disciplines, Oyu Tolgoi has developed a five-year training programme which is aimed primarily at the development of an appropriately-trained labour pool from which it can recruit workers for the operational phase of the project. As part of the training strategy, in 2010 Oyu Tolgoi signed a MoU with the Ministry of Education to undertake the following:

- Provide 150 to 230 university scholarships over a five-year period
- Refurbish four existing TVET colleges and establish two new TVET colleges in Dalanzadgad and Ulaanbaatar
- Establish a new employee scheme to train more than 3,300 Mongolian workers.

The project is also promoting equal employment opportunities by encouraging the employment and training of women both as employees and

contractors. Government regulations prohibit women from working in certain areas of mining such as driving vehicles over 2.5 t, working underground and mine rescue. The project is engaging with the Government of Mongolia and sharing information about the experiences in countries such as Australia, Canada, and the US where women have successfully transitioned to all mining-related roles. The project is seeking revisions to, or an exemption from, these regulations.

Management Plan

Oyu Tolgoi is committed to creating an environment of 'zero harm' while generating employment and training opportunities for Mongolia's next generation of leaders. In addition to the common management plan objectives, the Labour Management Plan aims to:

- Define the project standards for hiring, employment, training and labour management
- Describe Oyu Tolgoi's plans and procedures for national and local recruitment, hiring, employment, working conditions and training.

The table (right) describes the key issues and associated management measures detailed in the Labour Management Plan.

Key Issue	Key Management Measures Implemented by the Project
Employment at project sites by Oyu Tolgoi, Engineering, Procurement and Construction contractor and sub-contractors	<p>Oyu Tolgoi is working to meet its labour relations, employment and training commitments under the provisions of the IA. This includes an intention to use best efforts to work with contractors who maintain a greater than 60% Mongolian workforce for construction work and a greater than 75% Mongolian workforce for direct mining operations. For the remainder of the Oyu Tolgoi workforce, 90% of employees should be Mongolian.</p> <p>Enforce an anti-discrimination and harassment policy.</p> <p>Implement a worker complaints, disputes and grievance procedure.</p>
Hiring (centres in Khanbogd, Dalanzadgad and Ulaanbaatar)	<p>Adhere to project hiring policy and procedure by identifying project recruitment needs and manpower requirements.</p> <p>Undertake a labour and skills census of Omnogovi population and prepare a database of potential workforce members and skill levels.</p> <p>Post internal and external advertisements with wide publication for available job vacancies.</p> <p>Undertake initial screening by the human resources department to develop a short-list of suitable candidates.</p> <p>Prohibit informal hiring and hiring at the gate (also as influx control measure).</p> <p>Undertake regular audits of Oyu Tolgoi and contractor employment practices and compliance with Oyu Tolgoi employment policies.</p> <p>Implement requirements under the Mongolian Department of Immigration in relation to worker identification and visa requirements.</p> <p>Create recruitment and information offices with dedicated recruitment officers at a local, regional and national level.</p> <p>Identify non-mining employment and business development opportunities through micro-finance and other schemes.</p>
Retrenchment	<p>Commit to established company retrenchment procedures including returning workers to the place from where they were recruited or to their domicile.</p> <p>Undertake advance planning and management of retrenchment and demobilisation.</p> <p>As employment opportunities reduce through the mine life:</p> <ul style="list-style-type: none"> ▪ Support and provide assistance to the development of local businesses ▪ Co-operate with banks to fund micro-credits for SMEs ▪ Establish a supplier development centre in Dalanzadgad ▪ Provide training and technical assistance programmes and market access activities to the existing business operators in project area of influence ▪ Provide priority access and additional support to herders and vulnerable people as part of LEBD Programme ▪ Provide training to support workforce opportunities with other natural resources companies ▪ Undertake deployment to other internal operations (Rio Tinto/Ivanhoe).
Training	<p>In accordance with its annual training plan, organise employee training to upgrade employees' skills and provide further practical experience.</p> <p>Implement the Oyu Tolgoi Training Strategy and Scholarship Programme. There are 74 domestic scholarship holders and eight overseas scholarship recipients in 2012.</p> <p>Implement the Training Strategy and Plan as follows:</p> <ul style="list-style-type: none"> ▪ Immediate one to two years (Phase 1): Phase 1 has been developed using a competency-based approach based on the Australian Quality Training Framework model ▪ Provision for start-up three to five years (Phase 2): Phase 2 is focused on implementing the systems and infrastructure required to enable Mongolian employees to work in operations roles at the commencement of Oyu Tolgoi production. Work on this phase is under way, using the Mongolian TVET system

	<ul style="list-style-type: none"> ▪ Long-term six to ten years (Phase 3): This last phase aims to move the training strategy to full implementation and maturity, including a fully-functioning training framework with the processes, tools, infrastructure, and staff to support a growing mining operation for the life of the mine. This phase has been broadly developed and includes ongoing collaboration with the TVET system. <p>Commit to job-readiness and other bridging training for local workers. This training has been developed and is being implemented by the Oyu Tolgoi Community Relations Department.</p> <p>Establish two new TVET colleges, one new training facility and contribute to the refurbishment of four existing TVET colleges. Planning work for both new colleges is well advanced and construction on one in Nalaikh started in April 2012.</p> <p>Develop various training initiatives for local businesses, entrepreneurs, affected herders. This training forms part of Oyu Tolgoi's LBED Programme.</p>
<p>Health and safety - ensuring a safe and healthy working environment</p>	<p>Commit to:</p> <ul style="list-style-type: none"> ▪ Anti-discrimination and harassment policy ▪ Fair treatment policy ▪ Camp policy and code of behaviour ▪ Policy on labour organisations ▪ Housing/camp provision that meets Mongolian law and GILP for mine site accommodation ▪ Regular audit of Oyu Tolgoi and contractor working conditions and housing provisions ▪ Employee complaints, disputes and grievance procedure ▪ Worker health and safety standards and procedures ▪ Worker Health and Safety Management Plan ▪ Regular health and safety audits of working conditions ▪ Health and safety reporting, including by contractors ▪ Contractors and suppliers required to meet HSE and other relevant standards.
<p>Supply chain</p>	<p>Implement the South Gobi Supplier Development Policy.</p> <p>Identify Mongolian suppliers and service providers available regionally and locally, and maintain a database.</p> <p>Prioritise national, regional and local suppliers in project procurement.</p> <p>Co-operate with banks to fund micro-credits for SMEs.</p> <p>Give priority access and additional support to herders and vulnerable people as part of LBED Programme.</p> <p>Encourage the development of local agricultural businesses through targeted procurement.</p>

Community Health, Safety and Security

The project area represents a remote rural location with dispersed medical and police services. Many residents are highly self-reliant and only turn to state services when absolutely necessary.

Within Khanbogd *soum*, there are challenges in terms of access of the rural population to general healthcare and to specialist healthcare provision such as dental, obstetric and maternity care. Although life expectancy at birth has increased (from 62.8 years in 1992 to 67.2 years in 2008, according to Mongolian census data) the incidence of communicable diseases has also risen, as have 'trauma', accidents and violence-related illness and injury. Combined with a rapidly growing population

there are considerable pressures on the *soum* health services to meet demand.

Khanbogd *soum* is served by the Khanbogd *soum* hospital which is a Government, primary care, level two hospital in the *soum* centre, equipped with nine beds and serving a population of around 3,500. The hospital was built in 1978 and renovated in 2004 (inpatients) and 2010 (outpatients) with support from Oyu Tolgoi. There is also an obstetrics and gynaecology clinic, and a dental clinic (established with support from Oyu Tolgoi) located in Khanbogd *soum* centre, and an SOS medical emergency response service based at the Oyu Tolgoi MLA. There are no medical facilities or staff located in the rural areas.



Oyu Tolgoi donated an ambulance to the local Khanbogd hospital in an effort to support improvements to healthcare in the community

The Khanbogd *soum* hospital has four doctors, six midwives, four nurses, one pharmacist, and one laboratory staff member (2010). This is in line with Government of Mongolia standards for doctors and somewhat below the standard for other medical personnel. There are no community-based public health workers in the *soum*. Oyu Tolgoi has provided direct support for a regional doctors' training programme, the objective of which is to improve conditions and opportunities to access health services for local residents in the remote *soums* of Omnogovi *aimag*. To date, the programme has sponsored 25 doctors of whom 15 were still working in March 2010.

A provincial health resources review undertaken in 2010 found that the equipment in Khanbogd *soum* hospital was adequate and met Government requirements. The hospital is served by a Toyota Landcruiser ambulance with equipment, lights and signage, and a motorcycle, both of which were funded by Oyu Tolgoi.

Potential impacts on community health and safety will principally be related to road safety, community health and dust impacts. Road safety

will be managed through a range of driver training and public awareness campaigns. Dust impacts will be minimised by the use of a sealed road for the transport of concentrate and the maintenance of appropriate separation distances between project activities and local communities.

Management Plan

Oyu Tolgoi is taking steps to go above and beyond other mining companies in Mongolia through implementing a range of health and safety programmes to benefit the community and employees. In addition to the common management plan objectives, the Community Health, Safety and Security Management Plan aims to:

- Establish effective mechanisms and procedures for protecting local communities in the project area of influence, both from direct and indirect project-related hazards, risks and impacts
- Define internal requirements of the project.

The table below describes the key issues and associated management measures detailed in the Community Health, Safety and Security Management Plan.

Key Issue	Key Management Measures Implemented by the Project
Community safety – traffic	<p>Implement the provisions of the Transport Management Plan in relation to road safety, road condition and road use.</p> <p>Implement comprehensive Traffic Awareness Programme in local communities and along transport supply route.</p> <p>Build capacity and invest in emergency and medical service providers, including supplying a local ambulance.</p> <p>Maintain road quality and related safety signage on roads heavily used by project.</p> <p>Install satellite tracking and speed monitoring devices on Oyu Tolgoi vehicles wherever possible.</p>

Key Issue	Key Management Measures Implemented by the Project
Construction hazards	<p>Site construction camps in areas away from rural herders' winter shelters and control access to and from camps.</p> <p>Construct chain link fence around operational sites to control ingress and egress.</p> <p>Remove equipment and hazardous materials for mine closure, and secure open pits and other hazards against public access.</p> <p>Provide regular updates via community relations staff to herders and other residents about potential project hazards and changing activities.</p>
Security and safety in the community	<p>Provide human rights induction training for employees and contractors.</p> <p>Conduct full assessment of and undertake regular audits of security personnel and providers.</p> <p>Provide enhanced human rights training for security and police personnel.</p> <p>Involve external government stakeholders. Oyu Tolgoi is liaising with the Government of Mongolia on enhancing the policing presence in the community.</p> <p>Use the community complaints, disputes and grievance procedure to monitor if any issues related to security personnel arise during construction and operations.</p> <p>Enforce camp policy and code of behaviour for Oyu Tolgoi and contractor employees including rules about anti-social and illegal behaviour.</p> <p>Develop a Healthy Workplace Programme to promote healthy approaches to alcohol consumption and other personal behaviour that can contribute to poor social conduct outside of the work environment.</p>
Health of employees	<p>Provide on-site medical facilities for workers including The Health Screening and Awareness Programme.</p> <p>Enforce camp policy and code of behaviour.</p> <p>Partner local health services to facilitate a range of health campaigns including responsible alcohol consumption, mental health and suicide prevention programmes, nutrition, physical activity and human trafficking.</p> <p>Develop and implement health promotion programmes in the project area of influence.</p> <p>Implement a doctor support programme.</p> <p>Implement Healthy <i>Soums</i>' Programme and Herder Outreach Programme.</p> <p>Develop a Communicable Disease Management Plan.</p>

Stakeholder Engagement

As part of its commitment to being a good neighbour, Oyu Tolgoi has been working with stakeholders over the life of the project. In fact, Oyu Tolgoi has engaged, consulted, and asked for feedback from various stakeholder groups at the national and local levels since work started on early

exploration activities in 2002. Since this time, Oyu Tolgoi has maintained frequent dialogue with local communities (affected parties) together with other interest groups such as NGOs, local and regional regulators, community-based organisations and public interest groups. These activities have helped the project gain valuable insights and inform



Oyu Tolgoi open day at the new project information centre in Ulaanbaatar



Community meetings are part of Oyu Tolgoi's ongoing stakeholder engagement programme

decisions. Building on historical engagement, a Stakeholder Engagement Plan was developed and designed to ensure Oyu Tolgoi facilitates effective engagement with local communities and other key stakeholders during the construction, operation, and closure phases of the project.

Oyu Tolgoi is committed to continuous consultation as the project reaches an advanced stage of construction and through the subsequent project phases. As an important next step, it plans to work with the local community to develop and enter into a Co-operation Agreement that establishes the terms of its long-term relationship with the local community and provides the vehicle by which Oyu Tolgoi's contributions to long-term regional development are also agreed with the local community.

Management Plan

In addition to the common management plan objectives, the specific objectives of the Stakeholder Engagement Plan are to:

- Outline the project standards with regard to effective stakeholder engagement
- Identify stakeholders and their interests and/or issues of concern
- Define the consultation methods and requirements for stakeholder engagement
- Present a specific action plan for stakeholder engagement going forwards
- Provide a complaints, disputes and grievance procedure for local communities.

The table below describes the key issues and associated management measures detailed in the Stakeholder Engagement Plan.

Key Issue	Key Management Measures Implemented by the Project
Consultation and engagement	<p>Conduct regular consultation forums during construction and operations, including open days at <i>soum</i> and <i>bagh</i> centres, household visits, site visits, and focus group discussions in accordance with ongoing community relations activities. Oyu Tolgoi is working on a number of formal community agreements.</p> <p>Continue to convene community groups, including the compensation working group, local advisory groups, pasture user groups and others.</p> <p>Implement ongoing project information campaigns during construction and operations specifically targeting information for local <i>soums</i> via a series of leaflets on key topics; project newsletters; local, regional and national media articles.</p> <p>Display project information in <i>bagh</i> and <i>soum</i> community buildings, eg, community hall, kindergartens, etc, during construction and operations.</p> <p>Further develop Oyu Tolgoi website.</p> <p>Conduct regular community safety briefings and consult with communities on emergency preparedness and response planning.</p> <p>Engage with key stakeholders as follows:</p> <ul style="list-style-type: none"> ▪ Economically displaced households: agree compensation and livelihood restoration measures for affected households, implement compensation and livelihood restoration measures with affected households ▪ Physically and economically affected households: monitor displaced herders to ensure compensation and other benefits are properly implemented and effective ▪ Khanbogd <i>soum</i> herder households: identify measures to provide community compensation for loss of grazing land to Khanbogd <i>soum</i> herders

Key Issue	Key Management Measures Implemented by the Project
	<ul style="list-style-type: none"> ▪ Local advisory groups: hold regular meetings between Oyu Tolgoi and local advisory groups ▪ Khanbogd <i>soum</i> residents: provide project-affected people with access to the community complaints, disputes and grievance procedure related to the project. Support community social and cultural events by sponsorship and participation in celebrations. Support resolution of potential future conflicts between Oyu Tolgoi and Khanbogd <i>soum</i> centre residents. Provide regular project updates ▪ Vulnerable people within affected herder group and Khanbogd <i>soum</i>: identify support that may be required to ensure vulnerable people can access project benefits ▪ Affected communities: provide information on Stakeholder Engagement Plan. Keep updated on project activities. Establish formal agreements between Oyu Tolgoi and local communities on information sharing and complaints, disputes and grievance procedure. Raise awareness and educate local communities on important environmental, cultural, and safety issues related to the project ▪ Transport route communities (eg, Khanbogd <i>soum</i> centre, Manlai and Choir): raise awareness and educate residents on how to avoid traffic safety impacts ▪ National and regional government: keep updated on project activities ▪ Local/regional media: maintain open communication and provide key project information to media groups ▪ National public organisations and NGOs: provide opportunities to obtain information on the project ▪ International stakeholders: provide opportunities to obtain key information on the project.
Information disclosure	<p>Post ESIA documentation (ESIA, NTS) on website with mechanism for comments.</p> <p>Post ESIA documentation in Ulaanbaatar, Oyu Tolgoi branch offices in Omnogovi, and at other public locations in Khanbogd, Manlai, Bayan-Ovoo and Dalanzadgad.</p> <p>Prepare and disclose Fact Sheets on key ESIA themes and topics.</p> <p>Engage with local communities and relevant local, regional and national authorities on the content of the ESIA and Management Plans to discuss key social and environmental impacts and mitigation measures and any significant updates that occur during the operations phase of the project.</p> <p>Provide information to key stakeholders as follows:</p> <ul style="list-style-type: none"> ▪ Local authorities in Khanbogd, Dalanzadgad, Bayan-Ovoo and Manlai <i>soums</i>: provide with copy of NTS in Mongolian and other related ESIA documents ▪ <i>Aimag, soum</i> and <i>bagh</i> Governors in Khanbogd: provide with a copy of the NTS in Mongolian ▪ Herder households in Khanbogd <i>soum</i>: provide presentation on ESIA and Management Plans to compensation working group. Provide copy of relevant Fact Sheets in Mongolian to affected herder households ▪ Residents of Khanbogd, Dalanzadgad, Bayan-Ovoo and Manlai <i>soums</i>: make copies of ESIA, Management Plans and NTS available in Mongolian at Oyu Tolgoi branch office in Khanbogd <i>soum</i> centre, and branch offices in Dalanzadgad, Bayan-Ovoo and Manlai <i>soums</i>.
Management systems	<p>Maintain Oyu Tolgoi branch offices and community relations staff in Omnogovi <i>aimag</i>.</p> <p>Maintain stakeholder database and records of consultation activities with key stakeholders.</p> <p>Update the action plan for local stakeholder engagement at least annually.</p>
Grievance mechanism	<p>Implement provisions of the complaints, disputes and grievance procedure for the community, and educate the community in its use.</p> <p>Provide regular report on community complaints, disputes and grievances, and their resolution to communities and other relevant stakeholders.</p>

Key Issue	Key Management Measures Implemented by the Project
Compliance with project standards	<p>Review and maintain community complaints, disputes and grievance log.</p> <p>Community relations staff to record visitors to Oyu Tolgoi offices and report in monthly department performance report.</p> <p>Community relations staff to record formal and informal engagement with local communities in community diary.</p> <p>Conduct attitude and perception surveys to monitor local community sentiment and concerns related to the project.</p>
Community agreements	Negotiate and finalise Co-operation Agreements with each of the four <i>soums</i> : Khanbogd, Manlai, Bayan-Ovoo and Dalanzadgad. These will provide the governance arrangements for all the above management measures.

BIODIVERSITY MANAGEMENT

Oyu Tolgoi seeks to ensure that the biodiversity of the southern Gobi region ultimately benefits from the project's presence in the region. In keeping with the Rio Tinto corporate Biodiversity Strategy, Oyu Tolgoi is committed to biodiversity management and conservation through a NPI goal, whereby the gains generated by offsets are greater than the residual losses of project impacts. It will be the first mine in Mongolia to make this commitment and go above and beyond national standards. Oyu Tolgoi aims to reach this goal by mine closure but will seek opportunities to achieve NPI as early as practicable in the project life.

Oyu Tolgoi seeks opportunities to mitigate impacts on biodiversity through avoidance, minimisation and rehabilitation, in that order. When this hierarchy of mitigation opportunities is exhausted or optimised for biodiversity, the residual impacts are measured and biodiversity offsets and additional conservation actions are sought to bridge the

residual gap towards NPI. In some cases, including road and power line alignments, avoidance of biodiversity values has been limited by Government planning constraints.

Biodiversity Assessment

The Oyu Tolgoi project lies in the eastern sub-region of the Central Asian Gobi Desert ecoregion which covers an area of over 500,000 km² in southern Mongolia. The low human population density, together with the high degree of isolation of the region, has resulted in the survival of many threatened species that no longer exist in neighbouring countries, making the southern Gobi an area of great interest for fauna conservation in particular.

The landscapes of the Oyu Tolgoi area of influence are characterised by a mosaic of low-statured desert and steppe vegetation typical of the southern Gobi region of Mongolia and neighbouring China. Vegetation of special significance as habitat for



The Asiatic wild ass is the species of greatest conservation interest in the Oyu Tolgoi area of influence

fauna includes the tall saxaul forests and elm groves, both of which are associated with localised conditions with greater available soil moisture or shallow groundwater. Localised floral assemblages are thought to occur on granite outcrops in the region, but these have not been described and are not within the project footprint. Nearly all vegetation in the region has some degree of significance in terms of ecosystem services (that is, the benefits people obtain from ecosystems) to local communities, particularly as a source of forage for livestock and biomass fuel for heating and cooking.

Despite its location in an extreme continental environment with generally sparse vegetation and scant surface waters, the Oyu Tolgoi area of influence supports a diverse fauna with populations

of global conservation significance for a number of globally and/or nationally threatened species. The Asiatic wild ass or khulan, the goitered or black-tailed gazelle, the houbara bustard, and the saker falcon stand out in this regard. Many of the fauna demonstrate migratory or nomadic behaviour as a strategy for coping with the seasonal and geographic climatic variability that drives the availability of resources. Due to the near absence of permanent surface waters, no fish and only a single amphibian species are known from the Oyu Tolgoi area of influence. Reptiles, especially toad-headed agamas, are very common during the warm months and these provide important food resources for predatory birds and mammals.

At least 137 species of birds have been reported from the Oyu Tolgoi project area and more species

Taxonomic group	Biodiversity feature	Scientific name	IUCN Red List status	Mongolian Red List status	Status
Mammal (hoofed)	Asiatic wild ass	<i>Equus hemionus</i>	EN	EN	Nomadic 'resident'
Mammal (hoofed)	Argali	<i>Ovis ammon</i>	NT	EN	Localised resident
Mammal (hoofed)	Goitered gazelle	<i>Gazella subgutturosa</i>	VU	VU	Migratory 'resident'
Mammal (hoofed)	Mongolian gazelle	<i>Procapra gutturosa</i>	LC	EN	Rare visitor from the east
Bird	Swan goose	<i>Anser cygnoides</i>	VU	NT	Likely a regular migrant over the area
Bird	Ferruginous duck	<i>Aythya nyroca</i>	NT	VU	Likely a regular migrant over the area
Bird	Short-toed snake eagle	<i>Circaetus gallicus</i>	LC	EN	Breeds
Bird	Saker falcon	<i>Falco cherrug</i>	VU	VU	Breeds
Bird	Egyptian vulture	<i>Neophron percnopterus</i>	EN	LC	Probably breeds
Bird	Great bustard	<i>Otis tarda</i>	VU	VU	Regular migrant (stops over in the area)
Bird	Houbara bustard	<i>Chlamydotis undulata</i>	VU	VU	Breeds
Bird	Mongolian ground-jay	<i>Podoces hendersoni</i>	LC	VU	Breeds
Bird	Relict gull	<i>Larus relictus</i>	VU	EN	Likely a rare migrant over the area
Bird	Pallas' sandgrouse	<i>Syrrhaptes paradoxus</i>	LC	LC	Breeds
Bird	Yellow-breasted bunting	<i>Emberiza aureola</i>	VU	NT	Likely a regular migrant
Habitat	Granite outcrop floral communities	n/a	n/a	n/a	Near Khanbogd <i>soum</i> centre
Habitat	Riverine elm trees	n/a	n/a	n/a	Mostly in Undai riverbed
Habitat	Tall saxaul forest	n/a	n/a	n/a	Mostly in borefield and depressions
Habitat	Eastern Gobi desert-steppe	n/a	n/a	n/a	Major habitat type in the region - widespread
Habitat	Alashan Plateau semi-desert	n/a	n/a	n/a	Major habitat type in the region - widespread
Plant	Mongolian chesney	<i>Chesneya/Chesniella mongolica</i>	n/a	EN	Patchily distributed throughout

EN = Endangered; VU = Vulnerable; NT = Near Threatened; LC = Least Concern

Figure 10: The priority biodiversity features within the Oyu Tolgoi project area of influence



Saxaul tree

are being identified and included in this list by project staff biologists. The area supports important breeding populations of globally-threatened species, particularly in the Galba Gobi Important Bird Area (IBA) located to the south of the project MLA. Despite the general aridity of the region, artificial ponds constructed by the Oyu Tolgoi project attract aquatic birds and migrants.

Both wild and domesticated large herbivores are key elements of the regional ecosystems and these depend on the ability to move freely across the landscape to track changing patterns of available forage plants. The survival of globally-threatened fauna of the southern Gobi region and the Oyu Tolgoi area of influence will depend upon the sound development of natural resource extraction and transportation and electrical transmission infrastructure, as well as the control of illegal hunting and competition with domesticated livestock for key water and forage resources.

Priority biodiversity features for the Oyu Tolgoi project include all biodiversity features for which the project area of influence qualifies as critical habitat under IFC's Performance Standards, 2006, and EBRD's Performance Requirements, as well as all biodiversity features which are considered significant under Rio Tinto Biodiversity Action



Houbara bustard (top); Pallas's sandgrouse (bottom)



Plan guidelines. The Oyu Tolgoi critical habitat assessment concluded that the entire project area of influence is associated with critical habitat for a range of biodiversity values, as follows:

- **Critically endangered and endangered species:** Asiatic wild ass, the plant Mongolian chesney, argali and short-toed snake-eagle
- **Migratory and congregatory species:** Goitered gazelle
- **Unique assemblages of species:** Distinct floral communities within granite outcrops, other important fauna and flora assemblages such as large hoofed mammal communities, riverine elm trees along seasonal watercourses, ephemeral lakes/ponds, and exceptionally high quality saxaul forests.
- **Key ecosystem services:** Regulation of water
- **Biodiversity of social, economic or cultural significance for local communities:** Three ecosystem services – livestock; biomass fuel; and freshwater.

Figure 10 lists the priority biodiversity features within the Oyu Tolgoi project area of influence. As shown in Figure 10, the species of greatest conservation interest in the Oyu Tolgoi area of influence is the Asiatic wild ass or khulan (*Equus hemionus*), a species recognised as endangered by both the International Union for Conservation of Nature (IUCN) and the Mongolian Red List of

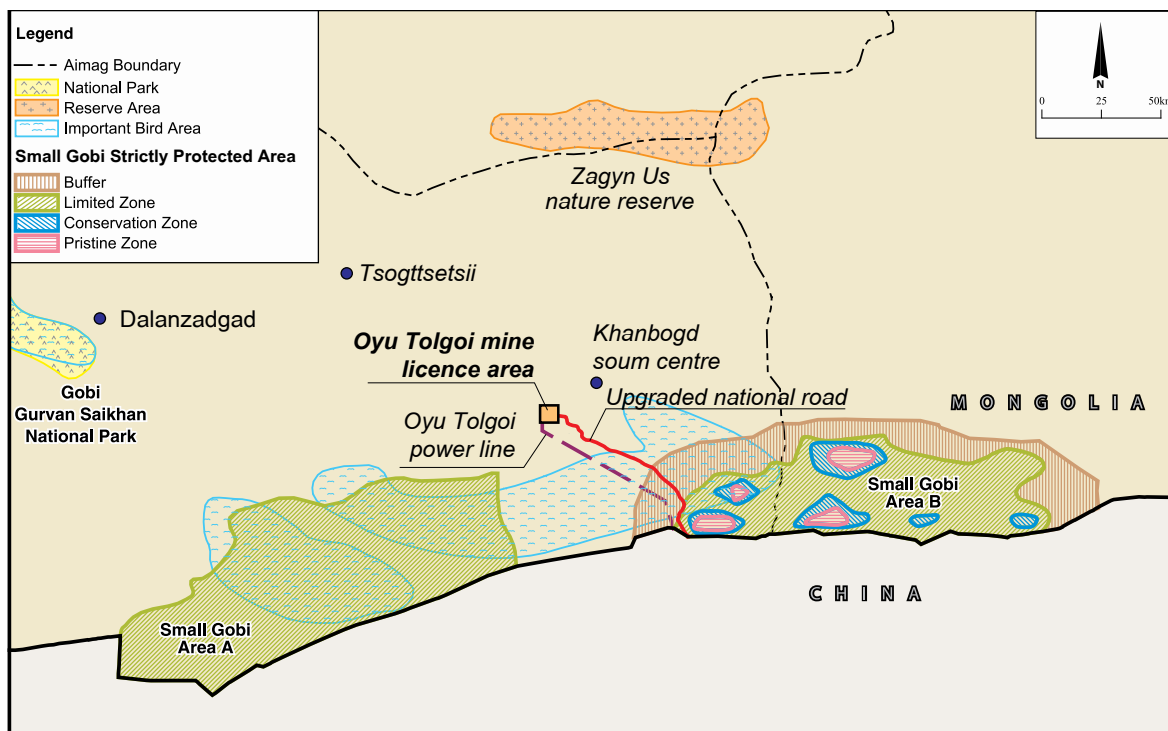


Figure 11: Protected areas of the Southern Gobi region (Source: World Database on protected areas)

Mammals. Southern Mongolia currently holds the largest population of Asiatic wild ass in the world, representing almost 80% of the global population – estimated in 2003 to total 18,411 +/- 898 in four areas. Its habitats have been locally fragmented to varying extents by the creation of transportation infrastructure (eg, the Tavan Tolgoi to Gashuun Sukhait coal road and the Ulaanbaatar-Beijing railroad) and the fence constructed along the Mongolian-Chinese border.

Protected Areas

Omnogovi *aimag* contains a number of protected areas which fall under the Government of Mongolia designation for special protection. These include the Small Gobi Strictly Protected Areas (SGSPA) 'A' and 'B', the Gobi Gurvan Saikhan National Park and the Zagyn Us Nature Reserve. These protected areas contain ecologically-important landscapes together with numerous flora and fauna species of both national and international conservation interest. See Figure 11.

The Oyu Tolgoi area of influence includes portions of two protected and designated areas that are priority biodiversity features, the SGSPA 'B' and

the Galba Gobi IBA. While the Galba Gobi IBA is designated internationally by Birdlife International, it has no protected area status under Mongolian law. The southern part of the existing national road being upgraded by Oyu Tolgoi passes through SGSPA 'B'.

Biodiversity Mitigation Measures

Oyu Tolgoi contracted Fauna & Flora International and The Biodiversity Consultancy to undertake the biodiversity assessment of the project area of influence and to advise on biodiversity management, mitigation and offset programmes. This was achieved using a large, experienced team of local and international experts from the Wildlife Conservation Society, the Wildlife Science and Conservation Centre in the Ornithology Laboratory of the Institute of Biology (Mongolian Academy of Sciences), WWF Mongolia, Mongolian National University and elsewhere.

Management Plan

The table below describes the key biodiversity issues and associated management measures detailed in Oyu Tolgoi's Biodiversity Management Plans.

Key Issue	Key Management Measures Implemented by the Project
Workers' behaviour/ presence of humans	<p>Deter vehicles leaving, but facilitate wildlife crossing, the Oyu Tolgoi to Gashuun Sukhait, Oyu Tolgoi to Khanbogd <i>soum</i> centre and Oyu Tolgoi to airport roads.</p> <p>Control illegal hunting by Oyu Tolgoi personnel when at work (awareness, publicity and enforcement of strict no-hunting policy, including vehicle inspections as required and suitable penalties).</p> <p>Engage with local and regional stakeholders to control hunting in the project area and, more broadly, within Khanbogd <i>soum</i>. As part of this, research the most effective actions to address illegal hunting and animal or plant collecting, and undertake appropriate and practicable actions adequate to facilitate the reduction in the level and impact of illegal hunting and plant or animal collecting to baseline levels (ie, prior to the Oyu Tolgoi project).</p> <p>Enforce speed limits of Oyu Tolgoi vehicles on sealed and unsealed roads within and outside the MLA.</p> <p>Engage with key stakeholders to support the adoption and enforcement of suitable speed limits (in line with Oyu Tolgoi vehicle speed limits) on all public users of the Oyu Tolgoi to Gashuun Sukhait road.</p> <p>Provide all project operations staff and contractors with fuel for fires to remove the need for local timber (eg, saxaul).</p> <p>Prohibit the keeping of pets or feeding wildlife within the project area and camps.</p> <p>Implement and enforce no unauthorised waste disposal or littering from Oyu Tolgoi vehicles or around the workplace.</p> <p>Routinely inspect vehicles entering the Oyu Tolgoi site for illegal wild animal products.</p> <p>Inspect an adequate proportion of all aircraft baggage under project control for illegal wild animal products.</p> <p>Provide driver awareness and training for all Oyu Tolgoi staff and contractors with specific information on priority biodiversity features (eg, hooved mammals and birds).</p> <p>Erect signage on roads to warn drivers of risk of collision with wild animals.</p> <p>Publicise and apply suitable penalties to offenders under Oyu Tolgoi control found trafficking illegal wild animal products.</p>
Water resources	<p>Divert the Undai river channel to maintain surface and subsurface water flows within the Undai river downstream of the MLA.</p> <p>Replace the Bor Ovoo spring and ensure replacement spring mimics the ecological functions of Bor Ovoo spring in terms of maintaining similar surface and subsurface flow patterns and seasonal variations throughout the year.</p>
Land take, earthworks and construction – restoration and rehabilitation	<p>Implement a Rehabilitation Management Plan with the aim to achieve final land uses compatible with pre-mining uses including endemic vegetation cover, water bodies, wildlife habitat, and livestock pasture.</p> <p>Rehabilitate and restore areas and features impacted (in line with standard Rio Tinto rehabilitation and restoration practice).</p> <p>Collect seeds from local species for use in rehabilitation activities and for propagation in the Khanbogd <i>soum</i> centre nursery.</p> <p>Progressively rehabilitate areas disturbed during exploration, construction, development and mining operations rather than defer large scale rehabilitation to the mine closure phase.</p>
Khanbogd <i>soum</i> centre nursery	<p>Establish (already done) native plant nursery in Khanbogd <i>soum</i> centre to cultivate locally native species for use in rehabilitation, on-site greening projects and landscaping as well as Khanbogd <i>soum</i> centre greening and landscaping.</p> <p>Establish an information centre within the nursery grounds to educate visitors on the geography, biodiversity, cultural history, environmental impacts of pollution/waste and traditions of nature conservation in the southern Gobi region.</p> <p>Promote the cultivation of rare and very rare plant species of the local area, including species identified as priority biodiversity features.</p>

Key Issue	Key Management Measures Implemented by the Project
Flora and fauna protection measures	<p>Though the project is already in a fragmented landscape, Oyu Tolgoi is taking a forward-looking approach with respect to impacts on hoofed mammal populations through the construction of underpasses and other management actions.</p> <p>Construct appropriate and sufficient underpasses (at ecologically suitable locations such as river beds) approximately every 6 km along the Oyu Tolgoi to Gashuun Sukhait road. The underpasses will be completed before handover of the road to the Government of Mongolia. This is a step towards maintaining future regional connectivity of hoofed animal populations.</p> <p>Inspect and remove litter and other anthropogenic waste from along the Oyu Tolgoi to Gashuun Sukhait road, Oyu Tolgoi to Khanbogd <i>soum</i> centre road and Oyu Tolgoi borefield access road three times weekly during peak construction period (frequency of inspections to be reviewed on an ongoing basis, and is expected to be reduced as the project moves to the operational phase and traffic on roads reduces).</p>
Power line infrastructure	<p>Add bird flight diverters to all project-constructed power lines (install alternating flapper-type flight diverters and large spirals, in alternating contrasting colours, at a frequency of at least one of each every 10 to 20 m, ie, one device every 5 to 10 m).</p> <p>Insulate medium-voltage power line poles, dead-ends and sub-stations, and pylons where necessary.</p> <p>Where safe to do so, remove nests of birds which predate bustards, except where known to be saker falcon nests, where nests are made on project-related infrastructure.</p> <p>Document and remove collision carcasses and nests (where safe to do so) from medium voltage and high-voltage power lines during regular inspections. Review periodicity of inspections after six months then at annual intervals.</p>
Sustainable regional development	<p>Seek opportunities to engage with key stakeholders to integrate biodiversity mitigation actions into regional planning.</p> <p>Oyu Tolgoi's LRPI unit co-ordinates with the SGRDC established by the Government of Mongolia.</p>

Oyu Tolgoi's operations-phase Biodiversity Management Plan will include on-site management actions, roles and responsibilities for project staff and contractors and a timetable for implementation. Biodiversity commitments will be incorporated into other relevant management plans as necessary.

Biodiversity Offsets

The Oyu Tolgoi project will have residual impacts on biodiversity, meaning impacts that it cannot avoid. The development of an integrated package of offsets and additional conservation actions, will allow Oyu Tolgoi to compensate for project-related residual impacts and achieve its goal of NPI on biodiversity. This offset programme is the first of its kind in Mongolia, and is another example of how Oyu Tolgoi is exceeding Mongolian standards.

Biodiversity offsets are conservation actions designed to compensate for the unavoidable residual impacts on biodiversity caused by a project. They typically take the form of either 'averted disturbance' of habitat (the offset must demonstrate that the disturbance was inevitable without intervention) or ecological restoration of degraded habitat. Offset actions can be applied within discrete 'offset areas', or, if appropriate, more regionally through programmes and policy

interventions (such as concerning the control of hunting). Additional conservation actions are actions intended to benefit biodiversity such as capacity building and environmental education programmes, but which are not considered offsets since their effects or outcomes are often difficult to quantify.

The predicted residual impacts from the project are primarily an increase in illegal hunting and collecting, habitat loss and collisions with power lines, each for a number of priority biodiversity features. These will be addressed by the following offset objectives:

- Reduce illegal hunting
- Improve rangeland management
- Reduce the impacts of non-project power lines (elsewhere in southern Gobi region)
- Strengthen protected areas management
- Demonstrate and contribute to best-practice regional development
- Establish strong enabling mechanisms
- Monitor and evaluate
- Build Oyu Tolgoi capacity.

These biodiversity offset objectives and their supporting activities have undergone a process of expert consultation to determine that they are the best available options. Given the poor state



Oyu Tolgoi has set up a nursery at the mine site to grow native plants for rehabilitation and restoration of any areas of land disturbed by project construction

of knowledge of ecological baselines and the limited number of similar conservation initiatives, the project cannot be absolutely certain as to whether these activities will actually generate the required offset gains. However, Oyu Tolgoi's expert biodiversity specialists advise that these activities are indeed the most appropriate actions, and will generate positive impacts as proposed. Knowledge obtained from additional projects, such as the external planning efforts currently under way, will build on information already presented in the Biodiversity Strategy and will influence, inform and refine the development of detailed Biodiversity Offset Management Plan(s) for the Oyu Tolgoi project.

Ecosystem Services

Ecosystem services is a concept adopted by the project that cuts across conventional approaches of looking at issues from a subject-specific basis and enables the interactions between the biophysical and human environments to be identified. Ecosystem services have been identified and categorised for the project as follows:

Provisioning services:

- Impacts on pasture
- Impacts on wild plants and animals
- Impacts on clean air
- Impacts on drinking water
- Impacts on wood for fuels.

Regulating services:

- Impacts on water quality regulation
- Impacts on water quantity regulation
- Impacts on soil and erosion regulation.

Supporting services:

- Impacts on primary production
- Impacts on habitat for wildlife.

Cultural services:

- Impacts on cultural and/or spiritual sites
- Impacts on (herder) camp sites.

These issues, impacts and associated mitigation measures are either addressed in the biodiversity mitigations or within the associated Management Plans.

For those priority ecosystem services that were determined to be critical services, namely livestock, biomass fuel, freshwater and water regulation, compliance with the Oyu Tolgoi Biodiversity Strategy will be determined over time through a rigorous monitoring programme which will allow the project to assess impacts and establish effective mitigation actions. The project's Biodiversity Strategy aims to produce no measurable adverse impacts on the ability of the critical habitat to support the established population of species or the functions of the critical habitat. Furthermore, residual impacts are mitigated as will be done for natural habitat, including the implementation of biodiversity offsets.

ADDITIONAL MANAGEMENT PLANS

Climate and Air Quality

The project area is characterised by a dry, continental interior climate with extremes of temperature – that is, very high summer temperatures and very cold winter temperatures. Spring months are characterised by frequent dust storms which can adversely impact mining-related operations and disrupt air transport.

Rainfall is limited with a significant excess of evaporation over rainfall meaning that the region tends to be extremely dry with very little permanent surface water.

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

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

Construction activities generate dust through the operation of construction traffic, cut and fill operations, construction and use of access roads and the preparation of camps and other infrastructure. Construction phase impacts are expected to be minor and transient; a potential adverse impact is in relation to dust nuisance to herders and vegetation along the Oyu Tolgoi to Gashuun Sukhait road prior to surface sealing. These impacts are short term and Oyu Tolgoi has offered relocation to the closest herders. GIIP measures will be used to minimise any adverse impacts from dust should they arise.

The operation of mobile mining equipment, process heaters, power generation and the ore concentrator will lead to the generation of gaseous emissions to the atmosphere.



Dust monitoring station in the project area (left) which is subject to frequent dust storms in the spring (right)

A dispersion modelling assessment has been undertaken in order to predict the potential impacts to air quality associated with the operations. Although the modelling predicts that levels of some pollutants could at certain times exceed ambient air quality standards, the remoteness of the area and lack of nearby residents mean that project activities will not adversely impact permanent herder winter shelters which are located at least 10 km from the centre of the MLA. The latest data suggest that emissions from the DPS will be within international standards (such as IFC Environmental, Health and Safety [EHS] Guideline limits) and that ambient concentrations will be within project standards. However estimates of nitrogen oxide emissions from the coal-fired central heating plant (CHP) will be in excess of international standards (such as IFC EHS Guideline limits). However, any impacts will be of limited duration as this emissions source will be removed by the proposed replacement of the CHP

by the Oyu Tolgoi power plant. Catalytic emissions reduction was not considered to be a viable emissions reduction option.

The arid climate and high evaporation levels will mean that dust treatment will be required for roads, the TSF and, potentially, other project features. In contrast there is the potential for short-lived high intensity rainfall events to create flash floods in the ephemeral rivers. For the Oyu Tolgoi mine and camp, the project design will include storm water drains and the Undai diversion will be designed to withstand extreme flood events.

Management Plan

The table below describes the key issues and associated management measures detailed in the Air Quality Management Plan.

Key Issue	Key Management Measures Implemented by the Project
Dust control	<p>Construct trafficable areas around construction sites and camp areas in accordance with applicable project road standards to minimise dust emissions.</p> <p>Treat the surfaces of haul roads using water or re-used treated wastewater at key locations where dust generation is likely to create an issue.</p> <p>Restrict vehicle speeds on all unsealed roads to a maximum of 80 km/hour and as low as 10 km/hour at sensitive receptor locations such as camp areas.</p> <p>Select borrow pit and quarry locations that are not located in close proximity to sensitive receptors such as <i>gers</i> or local communities.</p>
Exhaust emissions	<p>Undertake the following mitigation actions to minimise air quality impacts from the operation of the diesel generators:</p> <p>Short-term</p> <ul style="list-style-type: none"> ▪ Undertake ambient air quality monitoring to assess whether air quality standards are being exceeded as predicted ▪ Undertake stack emission monitoring of the diesel generators to confirm they are operating in accordance with project standards. <p>Medium-term</p> <ul style="list-style-type: none"> ▪ Assess additional mitigation measures if air quality standards are exceeded, including modification of the exhaust stacks to improve dispersion in line with IFC guidelines for stack design. <p>Long-term</p> <ul style="list-style-type: none"> ▪ Phase out diesel generators by construction of power transmission lines. Maintain diesel generators as an emergency back-up. <p>Use the lowest sulphur content diesel practically and economically available from local fuel suppliers in the diesel generators.</p> <p>Undertake the following mitigation actions to minimise air quality impacts from the operation of the existing coal-fired boilers:</p> <ul style="list-style-type: none"> ▪ Assess current performance of the boilers and assess significance of impacts of the boilers to determine whether improvement measures are necessary prior to long-term replacement plan ▪ Replace existing boilers by a new coal-fired boiler. <p>Replace existing incinerator during 2012 which will meet the project standards for emissions. Select and maintain all mobile plant and vehicles to meet Mongolian standards. Use and maintain vehicles and equipment in accordance with manufacturer guidelines.</p>
Greenhouse gases	<p>Work with principal contractors to develop procurement plans that target suppliers with good standards of environmental management, particularly the implementation of energy efficiency programmes that focus on the efficient use of fuel and maintenance of engines.</p>

Noise and Vibration

The project will generate noise and vibration. However, modelling has demonstrated that impacts on wildlife and herders who are outside the MLA boundary are minor or negligible. No impacts of moderate significance or above were identified.

Across the project area, other than the Oyu Tolgoi to Gashuun Sukhait road and the airport, there are no human inhabitants within 500 m of the various project facilities. On-site the accommodation is situated a sufficient distance from the operational area that noise and vibration impacts will be minimal and will not disrupt workers' sleeping patterns. Work areas are subject to occupational exposure limits.



Noise monitoring on the mine site

Management Plan

The table below describes the key issues and associated management measures detailed in the Noise and Vibration Management Plan.

Key Issue	Key Management Measures Implemented by the Project
Noise and vibration	<p>Prior to the commencement of particularly noisy operations, contractors submit environmental procedures detailing the work process, work programme, predicted noise levels and manufacturer's specifications for equipment and machinery to Oyu Tolgoi for acceptance.</p> <p>Schedule noisy construction activities for normal working hours and restrict the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas.</p> <p>Consider noise barriers, baffles, sound insulation or enclosures for particularly noisy equipment such as generators, crushers, grinders, compressor, pumps and gearboxes.</p> <p>Position noisy equipment in sheltered locations, (eg, behind an earth berm) if possible.</p> <p>Continue noise monitoring throughout construction. Notify nearby residents of any exceptional mining activity planned which might create noise near to sensitive receptors.</p> <p>Implement a complaints, disputes and grievance procedure to record and respond to noise or vibration related complaints in accordance with the Stakeholder Engagement Plan.</p> <p>Keep equipment in good condition and turn off when not in use.</p> <p>Site staff accommodation away from major noise sources.</p> <p>As a minimum, restrict blasting activities (should this take place during the construction phase) to between the hours of 09:00 and 17:00, other than in exceptional circumstances, in line with Mongolian industry regulations.</p> <p>Utilise ground vibration guidelines from Australia and New Zealand.</p>



The project mine site is set in a low-lying valley with no significant topographic features

Topography, Geology and Soils

The main topographic elements in the project area are:

- The broad Gunii Hooloi northeasterly trending valley within which lies the sedimentary basin where the project's operational water supply will be sourced
- The elevated dome of the Khanbogd Massif to the east of the MLA
- The general fall of the land south towards the Galbyn Gobi plains which the infrastructure corridor crosses
- The hills of the SGSPA in the south which are slightly elevated compared to the adjacent Galbyn Gobi and form the southern boundary to the Galbyn Gobi plains.

The surface geology comprises a thin covering of gently-dipping to horizontal Cretaceous to Quaternary clay, sands and gravels across the majority of the project area. These sediments overlie a structurally complex sequence of Palaeozoic rocks.

The soils of the project area (including the Gunii Hooloi borefield and the infrastructure corridor) are generally poorly developed and are formed below the very sparse vegetation cover of the southern Gobi region (typical coverage is 8-25%). The organic content of soils is generally less than 1% and they are weakly alkaline, with alkalinity

varying according to the concentrations of calcium or magnesium cations in the different layers in the soil profile.

The conservation of the limited topsoil in the project area is a key priority for Oyu Tolgoi. During the construction phase, topsoil removal is being carefully managed in accordance with the soil maps prepared by Oyu Tolgoi in order to minimise the potential dilution of the topsoil with subsoils.

As the Oyu Tolgoi MLA is set in a low-lying, extensive valley and does not have any significant topographic features, project features such as the shafts and the waste rock disposal area will be visible at some distance from the mine site. The potential for mitigation of the impacts on landscape and topography is limited and will be focused on landscaping to lessen the visual impact of the buildings, such as the pump houses in Gunii Hooloi. A number of the potential adverse visual impacts have been designed out or minimised, eg, limiting the height of the power line and cables.

The removal of ore through the block caving method is likely to result in a subsidence zone later in the mine life as the underground caving leads to a slumping of overlying rock layers. Initial estimates are that this subsidence zone will cover an area of over 8 km² and be characterised by a depression

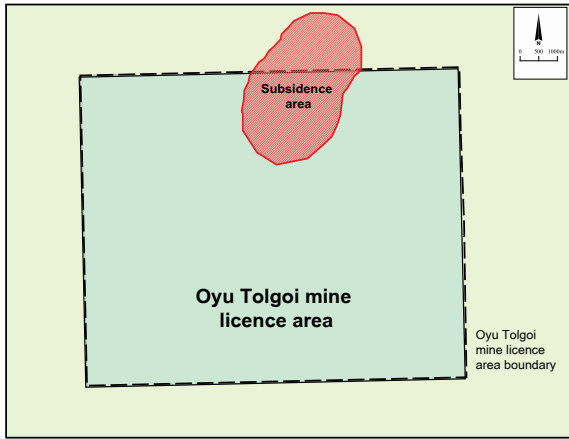


Figure 12: Oyu Tolgoi MLA and anticipated area of subsidence zone

surrounded by a circular cliff-like feature with an overall cliff height in excess of 20 m, which might be manifest as a single cliff or multiple smaller cliffs. Figure 12 shows the anticipated area of the subsidence zone which extends north into an adjacent MLA which is covered both by a joint-venture agreement between Ivanhoe and Entrée Gold Inc and by the existing DEIAs prepared for the project.



Soil sampling

Management Plan

In addition to the common management plan objectives, the Topsoil Management Plan aims to minimise regulatory or community/herder concerns regarding topsoil losses and management.

The table (right) describes the key issues and associated management measures detailed in the Topsoil Management Plan.



Oyu Tolgoi aims to reinstate any disturbed areas as quickly as possible using native plants. Here, Oyu Tolgoi employees monitor disturbed areas to ensure successful rehabilitation

Key Issue	Key Management Measures Implemented by the Project
Planning	<p>Contractors responsible for activities involving earthworks will develop and implement a topsoil management procedure, unless Oyu Tolgoi deems this unnecessary, to be administered through the land disturbance procedure.</p> <p>Contractors' earthworks plans should include consideration of:</p> <ul style="list-style-type: none"> ▪ Planning ▪ Topsoil stripping ▪ Storage ▪ Erosion and dust control ▪ Re-use of topsoil (during reinstatement).
Topsoil stripping	<p>Undertake stripping and clearance operations on an as-required basis to minimise the duration and extent of the area exposed following topsoil removal.</p> <p>Undertake topsoil stripping and stacking only under favourable weather conditions and not in periods of heavy rainfall or high winds.</p> <p>Locate stockpiles away from sources of contamination and not down slope of hazardous material storage areas which have the potential to contaminate the topsoil.</p> <p>Supervise all topsoil removal to minimise the potential dilution of the topsoil with subsoil and move to a dedicated stockpile area.</p> <p>Report indications or evidence encountered during the stripping of possible presence of cultural heritage assets to the Cultural Heritage Superintendent.</p>
Topsoil storage	<p>Partially compact topsoil mounds on the top layer to reduce the potential for wind erosion; in general, however, minimise compaction to promote aeration, maintain topsoil vertical structures, reduce run-off and encourage infiltration.</p> <p>Unless topsoil stockpiles are to be re-used for rehabilitation within a six-month period, condition and seed the surface of topsoil stockpiles with native species to encourage topsoil binding and reduce the potential for wind and water topsoil erosion.</p> <p>Clearly mark soil storage areas and restrict vehicle activity appropriately in these areas.</p>
Reinstatement of temporary construction areas	<p>Reinstate temporary construction areas at the earliest opportunity and prior to the spring dust storm period wherever possible.</p>
Topsoil use in site reinstatement after mine closure	<p>Detail the use of topsoil for reinstatement of areas such as the TSF and WRD areas following closure of the mine in the Mine Closure and Rehabilitation Plan.</p>
Landscaping – visual	<p>Minimise visual impacts of low lying project structures using the following measures where possible:</p> <ul style="list-style-type: none"> ▪ Use landscaping to minimise the visual impacts of smaller structures ▪ Use WRD to screen other structures ▪ Use 10% of the residential area within the MLA for tree planting.
Landscaping – localised changes to topography through cut and fill, levelling and borrow pit excavation	<p>Grade slopes around the mine infrastructure where feasible to screen the structures.</p> <p>Survey and use natural topography to screen operations where appropriate.</p>

Traffic and Transport

There is currently very little traffic in Omnogovi *aimag* other than on the Tavan Tolgoi to Gashuun Sukhait road with up to 800 heavy vehicle movements per day, almost entirely for coal transportation. Existing road transportation infrastructure is of poor quality, comprising mainly dirt roads, which is considered as a main contributory factor to soil degradation impacting vegetation and air quality.

Public transport in the *aimag* is provided in the form of micro-buses, taxis and unofficial transfers. Aviation transport is also important due to the large

distances between population centres. The closest public airport is located at Dalanzadgad.

Oyu Tolgoi will use ground transportation in order to move its product (copper concentrate) from the MLA to the Mongolian-Chinese border. For this purpose, Oyu Tolgoi is upgrading an existing 105 km road to the border as part of the project. This new paved road will also be used for the import of bulk supplies from China. This road is an upgrade to the designated national route in Mongolia to the Gashuun Sukhait border point and uses a former desert road through the SGSPA, in an area where road use is permitted. It also meets the routing

requirements of the Government of Mongolia for the road approach to the Chinese border.

Oyu Tolgoi concentrate will be shipped in 2 t bags by truck to the Mongolian-Chinese border from where they will be loaded on to customers' trucks and transported directly to a smelter or a rail head. Depending on the border opening times the operation will be conducted on a 24 hours per day basis, and will require more than 80 trailer loads per day.

As part of the project, an airport is being constructed approximately 7 km north of the Oyu Tolgoi MLA and will facilitate the transport of people and goods to and from the site from national and international destinations. The location of the new airport is relatively flat and meets international and national aviation safety requirements as well as not disturbing any community housing or infrastructure. The distance from the site avoids

any possible conflicts with aircraft approaches and proposed mine infrastructure.

Traffic and transport issues related to the project will be significantly mitigated by the upgrading and sealing of the existing road between the MLA and the Mongolian-Chinese border. Once completed, ownership and subsequent management of the road will be transferred to the Government of Mongolia and may potentially be used by local traffic and other haulers. Sealing of this road and cessation of the use of multiple, unsealed tracks will significantly reduce overall dust emissions and improve road safety.

Management Plan

The table (right) describes the key issues and associated management measures detailed in the Transport Management Plan.



Oyut aerodrome is the temporary airstrip serving the project until completion of the new airport close by

Key Issue	Key Management Measures Implemented by the Project
Route selection	<p>Undertake all transportation along pre-designated routes that have previously been surveyed by Oyu Tolgoi or its contractors.</p> <p>Ensure that consultation is undertaken with local communities, police, military and emergency services along transportation routes about emergency and accident response.</p> <p>Undertake pre-construction building condition assessments along principal transport routes for buildings considered to be at potential risk from transportation vibration.</p> <p>If new roads are required during the construction phase, select the road alignments to avoid indicator species (characteristic to the ecosystem and often sensitive), herder camps and river beds as much as reasonably practicable.</p>
Protection of flora and fauna	<p>Identify areas where herders and wildlife cross the Oyu Tolgoi to Gashuun Sukhait road and erect signage to alert drivers of possible animal crossings.</p> <p>Control construction traffic through a project journey management system and instruct drivers to follow designated routes. Equip project vehicles with global positioning satellite system, supervised by control room.</p> <p>Include in driver training clear procedures for driving when animals (herd or wild) are observed close to or on the road.</p> <p>Minimise the risk of road kills through the regulation of speed limits by Oyu Tolgoi vehicles.</p> <p>Require all drivers to report all road kill incidents to Oyu Tolgoi.</p> <p>Ensure (airport management) large bird nesting and roosting does not occur within the vicinity of approach and take-off routes, aircraft parking areas, taxiways and other facilities as far as reasonably practical.</p>
Dust control	<p>Maintain road surfaces on unsealed roads within the MLA.</p> <p>Require contractors to comply with Oyu Tolgoi recommended speed limits and slow down through any community areas.</p>
Vehicle standards	<p>Maintain all vehicles according to manufacturer instructions.</p> <p>Operate engine and exhaust systems at manufacturer's specifications to minimise exhaust gases.</p>
Stakeholder engagement - division of grazing land and migration routes	<p>Ensure that the identified herder crossing points are appropriately located and recognised by the herders.</p> <p>Liaise and consult with local families using pastures within the road alignment to minimise the risk of stock loss from vehicle accidents.</p>
Road safety	<p>Put in place traffic safety initiatives such as signage and speed limits to minimise traffic incidents involving people and animals on off-site and public roads in collaboration with the appropriate government authorities.</p> <p>Conduct route surveys, including identification of communities along the route and likely accident black spots.</p> <p>Establish appropriate driving standards, including for day or night driving of Oyu Tolgoi vehicles.</p> <p>Inform affected communities of the potential hazards that could be encountered from increased or altered traffic patterns and volumes on the roads.</p>



The southern Gobi region is rich in archaeological heritage

Cultural Heritage

The southern Gobi region is rich in archaeological heritage, including both intangible (cultural heritage) and tangible (physical sites). Archaeological investigations have been conducted across the potential areas of disturbance of the Oyu Tolgoi project since 2001. Within the MLA, dinosaur eggs, ancient copper mine works, stone structures and some petroglyphs have been discovered.

Studies by Oyu Tolgoi indicate that a range of intangible resources are seen as ‘significant’ for the residents of the Oyu Tolgoi project area. These include artisanal crafts such as metal working, fabrication of *gers* and traditional foodstuffs, traditional singing, kinship and ancestral inheritance (such as family brands for livestock), traditional games (such as *shagai*, a traditional game played with ankle bones), local traditions and taboos, and the practices of Buddhism and Shamanism.

Some impacts to cultural heritage resources within the MLA have occurred for which mitigation measures have already been undertaken. Full investigation of these resources has been conducted and Oyu Tolgoi has received archaeological clearance letters to indicate that no further cultural heritage investigations are required within the Oyu Tolgoi MLA.

Oyu Tolgoi recognises the importance of off-site cultural heritage sites, such as at the Javkhlant Mountain, as well as the importance of intangible cultural heritage in terms of traditional customs.

Oyu Tolgoi’s long-term Cultural Heritage Programme will ensure these aspects will be managed and monitored in partnership with local communities and other stakeholders. Oyu Tolgoi’s Cultural Heritage Programme has been developed to meet international standards and is the first of its kind in Mongolia. The company has created a new benchmark for cultural heritage preservation and protection for companies in Mongolia who are aiming to safeguard important cultural, historical and social resources and is considered by the Government as a template for a new standard of corporate accountability.

Management Plan

Oyu Tolgoi’s Cultural Heritage Management Plan recognises the importance of a planned approach to cultural heritage management and includes the provision of procedures for ‘chance finds’ if any future unexpected finds are made. In addition to this and the common management plan objectives, the Cultural Heritage Management Plan aims to:

- Identify the actual and potential sources of impact on both tangible and intangible heritage
- Establish effective plans and procedures for managing and preserving archaeological sites and cultural assets, including the management of potential ‘chance finds’ during construction and operations.

The table below describes the key issues and associated management measures detailed in the Cultural Heritage Management Plan.



Oyu Tolgoi has funded the restoration of the Demchig monastery

Key Issue	Key Management Measures Implemented by the Project
Preservation of cultural heritage sites	<p>Implement land disturbance permit procedure and chance finds procedure during land clearance and related construction activities across the project to ensure avoidance of cultural heritage site and communities' sensitive area, including consultation with local communities.</p> <p>Undertake rescue excavations if sites are identified by the MASIA and Institute of Paleontology.</p>
Physical loss of tangible heritage sites – MLA, Gunii Hooloi borefield and pipeline and power line	<p>Undertake additional excavations to reach the base of the copper workings with MASIA. In collaboration with MASIA, carry out oral history documentation on Oyu Tolgoi Bronze Age mine heritage.</p> <p>Select route alignment for pipeline to avoid impact.</p> <p>Undertake archaeological and paleontological assessments and rescue excavations, if necessary, with the MASIA and Institute of Paleontology.</p>
Physical loss of tangible heritage sites – Oyu Tolgoi to Gashuun Sukhait road, borrow pits and power line	<p>Implement the chance finds procedure as the Oyu Tolgoi to Gashuun Sukhait road is constructed.</p> <p>Undertake archaeological and paleontological assessments and rescue excavations, if necessary, with the MASIA and Institute of Paleontology.</p> <p>Demarcate and fence three grave sites during pipeline construction.</p>
Indirect disturbance to tangible heritage sites through project-related activities	<p>Minimise indirect disturbances by:</p> <ul style="list-style-type: none"> ▪ Physical protection of identified sites of cultural heritage (demarcation, fencing, signage) ▪ Induction of project staff and contractors in cultural heritage awareness ▪ Compilation of a GIS database to map cultural heritage sites as part of the project Cultural Heritage Programme ▪ Restriction of transport to designated routes.

Deliberate disturbance, desecration or looting of archaeological sites

Enforce camp policy and code of conduct for Oyu Tolgoi and contractor workforce by ensuring:

- Provision of cultural orientation and awareness training on cultural sensitivities associated with the sites of living tangible heritage and elements of the natural environment that are ascribed spiritual significance by local communities
- Preparation and distribution of awareness-raising materials about the importance of cultural and historical heritage
- Restriction of transport to designated routes and rights of way
- Complaints, disputes and grievance procedure includes clause that any Oyu Tolgoi worker or contractor found involved in such illegal activities will be subject to immediate dismissal and transfer to the relevant law enforcement bodies for possible criminal and civil legal action
- Continued consultation with local communities and other stakeholders including dealing with any complaints, disputes or grievances as they arise.

Impacts on intangible heritage (traditions, folklore, festivals, music, traditional sports, and other immaterial cultural assets)

Continue ongoing consultation with local communities.

Implement specialised cultural studies as part of Oyu Tolgoi Cultural Heritage Programme and ethnographic research.

Prepare a list of the traditional sacred places located in Omnogovi *aimag* and specifically in the project area of influence. The list includes sections of the landscape, natural features such as mountains, springs, etc, that have spiritual or sacred value to local residents, as well as cairns, ovoos, and cemeteries. It also includes myths, taboos, and rituals associated with these sacred places such as Oyu Tolgoi hill and the Bor Ovoo spring.

Specific Construction Activity Management Plans

A number of other Management Plans have been prepared as part of the project Environmental and Social Management System (ESMS) to address specific construction activities. Similar plans are under development for the operations phase and will be completed prior to the start of commercial operations in 2013.

Hazardous Materials Management Plan

Though Oyu Tolgoi is not a hazardous material-intensive business, it has developed a Hazardous Materials Management Plan to facilitate the effective storage, management and disposal of hazardous

materials by the project. The plan documents the methods that Oyu Tolgoi is using to prevent adverse effects occurring during the construction phase, and the monitoring plans to assess potential effects and determine the effectiveness of mitigations implemented.

The plan establishes guidelines for the management of hazardous materials, including identification of relevant project standards, mitigation controls and monitoring programmes.

The table (right) describes the key issues and associated management measures detailed in the Hazardous Materials Management Plan.



Oyu Tolgoi has prepared a number of management plans to address specific construction activities

Key Issue	Key Management Measures Implemented by the Project
Selection of hazardous materials	<p>Assess risk of all hazardous materials.</p> <p>Ensure the hazardous potential of each material forms part of the material selection process.</p> <p>Develop prioritised material-specific handling procedures and training requirements.</p>
Hazardous material usage	<p>Maintain an inventory of hazardous materials held or generated.</p> <p>Provide material safety data sheets (MSDS) for all stored materials.</p> <p>Minimise the overall volume of hazardous materials used, purchased and present on site, as far as possible.</p>
Storage of hazardous materials	<p>Design storage areas adequately and safely to store a sufficient quantity of substances required for the project. This will include physical access control to storage areas where appropriate and location away from the immediate vicinity of accommodation or work areas where appropriate.</p> <p>Design the storage area to contain and prevent contamination of the environment, particularly soil and groundwater, through the use of spill containment systems.</p> <p>Restrict ignition sources (including no smoking) and develop fire prevention and management practices specific to the materials being stored.</p> <p>Provide storage of liquid hazardous materials (including waste oil and solvents) with 110% capacity secondary containment.</p>
Handling of hazardous materials	<p>Make available appropriate personal protective equipment to personnel involved in hazardous substance handling operations.</p> <p>Provide on-the-job training to all personnel responsible for hazardous materials handling and storage activities.</p> <p>Avoid handling and no storage of hazardous materials in close proximity to watercourses or wells.</p>
Spill prevention and control	<p>Develop a spill response procedure for hazardous materials stored and used on site.</p> <p>Make available spill kits, protective equipment, and other necessary equipment wherever hazardous liquids are stored or used in significant volumes.</p> <p>Train personnel in the use of fire extinguishers and spill response procedures.</p>
Transport of hazardous materials	<p>Restrict transportation of hazardous materials to operators licensed for the specific material.</p> <p>Ensure containers are appropriate for the material being shipped and properly secured.</p> <p>Ensure containers and trucks are properly marked, labelled and placarded.</p>
Disposal of hazardous materials	<p>Manage all hazardous wastes in accordance with the Waste Management Plan.</p> <p>Arrange collection of any waste oil unsuitable for on-site re-use by a licensed contractor for off-site recycling. Incinerate if recycling is not possible.</p>

Waste Management Plan

This Waste Management Plan is designed to ensure the control and minimisation of potential sources of waste during the construction of the Oyu Tolgoi project. The plan describes the proposed measures to be used to protect affected environmental and social receptors from adverse impacts associated with the generation of project waste. It also establishes guidelines for the management of project wastes, including identification of relevant project standards, mitigation controls and monitoring programmes.

The project has committed to meeting the design and operational standards of USEPA Code of Federal Regulations 258 for the permanent landfill facility (to be built for the operational phase) that is designed to receive non-hazardous wastes.

This Waste Management Plan covers waste management at Oyu Tolgoi through the transition from the existing temporary non-hazardous landfill, to the use of the permanent Waste Management Centre.

In addition to the common management plan objectives, the Waste Management Plan aims to:

- Identify potential sources of impact from waste for the different project phases
- Define the operational procedures for waste management

- Describe waste management facilities.

The table below describes the key issues and associated management measures detailed in the Waste Management Plan.

Key Issue	Key Management Measures Implemented by the Project
Waste management planning	<p>Adopt the principles of the waste management hierarchy (avoid, reduce, re-use, recycle, dispose).</p> <p>Provide all employees responsible for waste management activities with on-the-job training.</p> <p>Use appropriately licensed waste contractors to ensure project waste is transported and treated and/or disposed of at appropriately designed and licensed facilities.</p>
Waste management practices – storage, collection, segregation	<p>Locate separate bins for food waste, metals, paper, cardboard and other waste throughout the accommodation complex, service complex, process plant, underground shops, and other facilities on site.</p> <p>Locate steel bins and dumpsters at each major facility for the collection of burnable and non-burnable materials and recyclable wastes.</p> <p>Label all waste containers.</p> <p>Provide suitable protection for waste from rainfall and sunlight.</p> <p>Store volatile wastes in ventilated areas.</p> <p>Undertake site clean-ups as and when required to keep the site tidy.</p>
Waste management practices – treatment and disposal	<p>Undertake disposal of non-hazardous solid waste separately from waste rock or overburden.</p> <p>No open burning of solid wastes.</p> <p>Consult with the community on the demand for any recyclable products such as scrap metal, cardboard and wood.</p> <p>Reduce the use of small plastic water bottles through the installation of a bottled water dispensing system within working and accommodation areas.</p> <p>Dispose of all combustible hazardous wastes by incineration.</p> <p>Re-use waste oils, as far as practical. If waste oil is not of suitable quality for on-site use, arrange collection by a licensed contractor for off-site recycling. If recycling is not possible, incinerate.</p> <p>Excavate hydrocarbon contaminated soils and place within a dedicated area for storage and treatment.</p> <p>Place other contaminated soils that cannot be remediated by land farming within the tailings impoundment for encapsulation in the tailings.</p> <p>Properly load and secure all wastes leaving the site, and have a manifest which describes their properties and dispatch locations.</p>
Waste rock management	<p>Either stockpile non-acid forming (NAF) waste rock from general construction works and overburden for later use (eg, construction of TSF) or grade in a manner that is sympathetic to the surrounding topography.</p> <p>Dispose of waste rock with acid-forming potential from mine shafts within a dedicated WRD.</p>

Petroleum and Fuels Management Plan

This Petroleum and Fuels Construction Management Plan is designed to ensure the effective storage, management and disposal of petroleum and other fuels by the Oyu Tolgoi project. The plan contains the methods that Oyu Tolgoi will use to prevent adverse effects occurring during the construction phase, and the monitoring plans to assess potential effects and determine the effectiveness of mitigations

implemented. The plan establishes guidelines for the management of fuels, including identification of relevant project standards, mitigation controls and monitoring programmes.

The table below describes the key issues and associated management measures detailed in the Petroleum and Fuels Management Plan.

Key Issue	Key Management Measures Implemented by the Project
Fuel storage	<p>Strictly prohibit smoking from any areas where fuel loading operations take place.</p> <p>Ensure storage facilities have the MSDSs available.</p> <p>Inspect regularly the condition of bulk storage tanks.</p> <p>Provide storage facilities for petroleum and with suitable secondary containment and spill detection devices.</p> <p>Use no buried hydrocarbon storage tanks.</p> <p>Base mobile or temporary fuelling stations no closer than 200 m from any herder well or spring.</p>
Fuel transfer and filling	<p>Ensure fuel transfer takes place inside specified transfer locations or location with suitable spill containment measures.</p> <p>Verify before fuel transfer that all hoses have been connected properly and couplings are tight, transfer hoses are not damaged, and fuel transfer personnel are familiar with procedures.</p> <p>Equip mobile tankers (used for refuelling of heavy plant) with spill control equipment.</p>
Used fuel and drum management	<p>Collect all used petroleum products in tanks marked 'waste oil' and re-use, recycle or dispose of them in accordance with the Hazardous Materials Management Plan and Waste Management Plan.</p>
Emergency response	<p>Manage emergency response planning in accordance with the Emergency Response Management Plan and, if appropriate, the Community Health, Safety and Security Management Plan.</p>
Fuel transport	<p>Manage all fuel transport in accordance with the Transport Management Plan and Hazardous Materials Management Plan.</p>

Emergency Response Management Plan

The safety, health, and well-being of employees and the community near the mine site is of utmost importance. This Construction-phase Emergency Preparedness and Response Management Plan is designed to provide a high-level overview of the procedures to mitigate and control the impacts on community and occupational health and safety, the environment and the project in the event of emergency situations during the construction phase.

The Emergency Response Management Plan provides the overall approach and commitment to emergency response and preparedness, and is used in conjunction with additional specific plans providing detailed command and control and

emergency response actions. The plan ensures specific procedures are in place to address: natural disasters; pandemics, medical emergencies; fires and explosions; traffic incidents; civil unrest; bomb warnings; and environmental incidents, including release of fuels and hazardous substances.

All employees, contractors and visitors are introduced to and instructed on the policies and procedures established with the plan. Area-specific inductions are given to individuals working in high-risk activity areas such as the mill, the open pit, or the open areas surrounding the mine.

The table below describes the key issues and associated management measures detailed in the Emergency Response Management Plan.

Key Issue	Key Management Measures Implemented by the Project
Spill response procedure	A Spill Response Procedure has been developed that is applicable to all project activities and specifies: responsibilities; response equipment; hazard assessment (before attempting a clean-up); notification and response actions; response actions including waste disposal; record keeping and reporting; and training requirements.
Drills	Ensure personnel at the site undertake periodic testing of the Emergency Response Plan.
Review	Review all emergency plans every six months.
Spill prevention and response	Implement measures to prevent or respond to the accidental release of petroleum and fuels to the environment as described in the Hazardous Materials Management Plan and Waste Management Plan.
Fire prevention	Implement fire prevention measures in accordance with the Construction Health and Safety Management Plan and the Oyu Tolgoi Emergency Response Plan.
Community safety	Work with communities to identify an effective emergency alert system for the project. Identify the potential hazards and project responses, and develop action plans for emergency preparedness and response.
Spill notification	Ensure any significant spills involving hazardous or toxic materials are notified to the Mongolian police, intelligence agency or other relevant Mongolian organisations within 24 hours, in accordance with the emergency response procedure.

CUMULATIVE IMPACTS

The southern Gobi region of Mongolia is experiencing rapid growth in the natural resources sector, particularly in mining and energy projects. While some of these projects are already under construction or initial operation, further projects are planned or at the concept stage. Hence, the cumulative impacts of mining in the region are likely to be significant over the mine life of the Oyu Tolgoi project and beyond.

Cumulative impacts are those that may be related to foreseeable future development of the southern Gobi region and also impacts that may be related to foreseeable future project expansion or development.

The Cumulative Impacts section of the ESIA describes:

- The known or planned infrastructure developments within the southern Gobi region and summarises the studies which have been undertaken to assess their scale and impacts
- The Oyu Tolgoi project in the context of other mining and infrastructure projects within the region and considers the cumulative impact of these developments
- Possible future development of the project where additional impacts may be anticipated to occur.

In addition to the work undertaken by Oyu Tolgoi and other project developers, a number of other recent studies consider the regional impacts of the future development of the southern Gobi region. These form the basis of the assessment of cumulative impacts.

The main socio-economic cumulative impacts include:

- Housing and social infrastructure demand
- Community health, safety and security
- Livelihood transformation (loss of traditional livelihoods which is treated as part of the intangible cultural heritage of Mongolia)
- Economic impacts related to economic 'boom and bust'.

The principal environmental cumulative impacts are:

- The cumulative demand for water (from multiple projects)
- Cumulative impacts to wildlife
- Dust generation
- The demand for waste infrastructure and requirements for the disposal of waste
- Increased transportation requirements.

The project, as set out in the ESIA and summarised in this NTS, is consistent with the current Reserve Case definition in Oyu Tolgoi's Integrated Development Plan 2010, which is based strictly on proven and probable mineral reserves. Oyu Tolgoi is studying

an expansion to the plant to process up to 160,000 tpd of ore during the remainder of the 27-year life of the currently approved 100,000 tpd project. This expansion is subject to any necessary regulatory approvals and the identification and permitting of additional water resource requirements to provide the increased processing capacity. Extension to the life of the Oyu Tolgoi project would extend the economic and commercial benefits of the project to the southern Gobi region and to Mongolia more widely. While the economic situation in Mongolia is likely to be significantly different from today, benefits are likely to include:

- Extended employment opportunities for Oyu Tolgoi workers, contractors and suppliers
- Extended economic inflows into the southern Gobi region and Mongolia from salaries and the purchase of goods and services
- Extended direct and indirect taxation revenues for the Government of Mongolia
- Extended dividend income stream for the Government of Mongolia.

Oyu Tolgoi will work with the SGRDC to help achieve its vision to make the southern Gobi region a model of sustainable development and the economic driver of the region and the nation.

As already discussed, the power supply assumptions are based on the IA terms which require the project to source all its power requirements from Mongolia within four years after the commencement of commercial operations.

As part of the future development of the project, Oyu Tolgoi plans to meet the project's longer term energy needs by constructing a new power plant. It has completed initial studies to define and appropriately identify the power plant site location within the MLA and to define its fuel and raw materials requirements, water demand, supply structure and capacity, as well as its technological requirements. The power plant has been designed to meet project standards, including European Union emissions requirements and IFC environmental, health and safety guidelines on thermal power.

As part of the power plant environmental and social assessment, Oyu Tolgoi will undertake an expanded alternatives analysis to review the feasibility and costs/benefits of different fuel sources to determine whether coal represents the only technically and economically viable option to meet the project's requirements. If coal represents the only feasible alternative, further assessment will be undertaken to demonstrate that the technology choice meets the appropriate thermal efficiency and emission standards given design constraints such as coal composition, plant location, water availability, size of plant and operational considerations. The assessment will also consider the use of renewable energy as part of the electricity supply mix in conjunction with coal power or as a stand-alone alternative for lighting and/or heating. Oyu Tolgoi will assess opportunities to promote wider benefits of the power plant, for example through utilising a proportion of plant electricity generation capacity to meet community demand for electrical power, and to consider broader initiatives in support of renewable energy at the Oyu Tolgoi site and in the southern Gobi region.

Oyu Tolgoi has undertaken a detailed feasibility study for the power plant in parallel with the preparation of a DEIA in accordance with Mongolian regulatory requirements. As planning for the power plant is still ongoing and complete information is not available for incorporation into the ESIA, Oyu Tolgoi will prepare a supplemental ESIA for the power plant. It will be subject to the same project standards and the same independent review process implemented by project lenders. This will include an independent expert technical opinion on technically and economically viable fuel sources, technology choices related to thermal efficiency and emission standards given design constraints, and the potential to use renewable energy in the energy supply mix.



6

SAFE AND COMPREHENSIVE MANAGEMENT SYSTEMS

Management systems and plans ensure continued priority is placed on environmental and social issues through all project phases from construction through to operations and eventual closure.



Proud workers who have completed a training programme – an ongoing priority at Oyu Tolgoi



Section 6

The safety and health of Oyu Tolgoi's workers as well as a strong approach to environmental management are top priorities. Oyu Tolgoi uses recognised HSE management systems to ensure exceptional HSE performance and continual improvement in its operations. Oyu Tolgoi's commitment to meeting the myriad national and international environmental and social requirements is managed through the establishment and implementation of the ESMS, which will also support the implementation of the plans detailed in Section 5, Environmental and Social Management.

STAGE 1: CONSTRUCTION PHASE

For the construction phase of the project the management systems comprise:

- A Health and Safety Management System (HSMS)
- An Environmental Management System (EMS)
- A Social Management System (SMS).

Management of environmental and social issues will be implemented through the social and environmental management plans. At site level, the ESMS will be implemented through the social and environmental management plans, job-specific standard operating procedures, work instructions, on-the-job instruction, workplace meetings where required, contract requirements, and service agreements.

The effectiveness of physical operational controls, such as alarms and public safety measures (eg,

fences) will be reviewed according to preventative maintenance and review procedures and schedules. Oyu Tolgoi has undertaken ongoing reviews of the management systems during construction.

STAGE 2: OPERATIONS PHASE

The Rio Tinto health, safety, environment quality (HSEQ) management system standard was released in 2007 and replaced the individual HSE management standards. Rio Tinto requires all its businesses and sites to implement an integrated management system that conforms to this standard. This will be the basis for managing HSE issues in the operations phase.

The standard sets out the minimum requirements to address HSE management across both business activities as well as products. The system is designed along the principles of Plan, Do, Check and Review as a continual improvement cycle. The standard's requirements are mandatory and their implementation will be verified during HSEQ business conformance audits. The development of the Oyu Tolgoi HSEQ management system began in 2011 and is planned to be completed in 2012.

In addition, Oyu Tolgoi has been developing and implementing the Rio Tinto Multi-Annual Communities Standard since 2009 to develop processes, organisational structures and capabilities to manage community relations and social performance issues. This includes the use of

The health and safety of all employees is paramount at Oyu Tolgoi

socio-economic analysis, stakeholder consultation and participatory engagement methods to ensure that the project anticipates and responds to community issues in a proactive and transparent manner. The objective is to maintain and strengthen the project's social licence to operate with local communities and other stakeholders.

During the project operations, decommissioning and closure phases, the HSMS and EMS will be combined into an integrated Health, Safety and Environment Management System (the 2012 Oyu Tolgoi HSEMS) that will be implemented in 2012 in line with standard Rio Tinto management practice to meet the Rio Tinto Environmental Management System Standard and the Rio Tinto Safety Standards (Management Systems) – being the first mine in Mongolia to implement such stringent international standards. In accordance with Rio Tinto practice, the project operations EMS will be certified to ISO 14001. Certification is planned to be in place prior to the commencement of commercial project operations. In addition, the 2012 Oyu Tolgoi HSEMS will incorporate project quality management processes, and elements of the SMS (which will continue to be aligned to meet the requirements of the Rio Tinto Communities Standard).

Operations-phase management plans will be detailed plans that control the environmental and social management aspects of all project activities following the commencement of production,

including both production activities and any construction activities from this stage onwards. Oyu Tolgoi will undertake six-monthly reviews of the management systems during the first two years of operations. Thereafter, reviews will be undertaken annually in line with reporting requirements to the Government of Mongolia.

These management systems will promote continual improvement and to ensure that:

- Impacts identified by the ESIA are managed appropriately
- The project and the management systems are subject to periodic review to ensure that the correct impacts have been identified
- Impact management is co-ordinated effectively across the full spectrum of project activities and that inter-linkages are managed appropriately.



Contractors are expected to work in accordance with Oyu Tolgoi HSE standards

The Rio Tinto HSEQ Management System

The Rio Tinto HSEQ management system standard was released in 2007 and replaced the individual management standards for HSE. Rio Tinto requires all its businesses and sites to implement an integrated management system that conforms to this standard.

The standard sets out the minimum requirements to address the management of HSE, both across business activities as well as products. The standard's requirements are mandatory and their implementation will be verified during HSEQ business conformance audits.

The HSEMS provides a structured method to identify, assess and control HSE risks. The system is designed along the principles of Plan, Do, Check and Review as a continual improvement cycle.

The management system standard is divided into seventeen elements. Each element sets out to achieve a specific objective that enables a business or site to best identify and manage its various HSEQ threats and opportunities. Many of the elements are inter-related.

Every element includes a number of clauses, which spell out the minimum requirements to meet each objective. Some of the elements refer to set processes that must be followed, and these are defined in additional documents called 'work cycles'. All elements are supported by individual guidance notes and other supporting references.

Figure 14 shows four phases and 17 elements of the continual improvement cycle of Rio Tinto's HSEQ management system.



Figure 14: Four phases and 17 elements of the continual improvement cycle of Rio Tinto's HSEQ management system.



Continual monitoring is critical in determining the effectiveness of Oyu Tolgoi's performance

KEY OPERATIONS PLANS

Mining operations generate significant volumes of waste material in the form of waste rock (that contains no economically extractable copper or gold) and tailings. Three key plans under development include:

Waste Rock Management

Waste rock from the open pit will be transferred to the adjacent WRD, which is located within the MLA, adjacent to the open pit to reduce haulage distances. It will form a semi-circular structure around the southern part of the open pit and reach an ultimate height of 90 m above the surrounding land surface, and will be armoured with rock to prevent wind erosion.

Some waste rock has the potential to generate acidic run-off when in the presence of both air and water but this is unlikely to be a frequent occurrence due to the arid nature of the southern Gobi environment – even in the wettest months evaporation is 15 times greater than precipitation.

The base and cover of the WRD will comprise a 3 m layer of NAF rock. Potentially-acid forming rock will only be located in the WRD areas which are away from underlying stream sediments (such as those associated with the Undai) and in the areas

where there is a greater proportion of clay in the underlying sediments.

Tailings Management

Oyu Tolgoi has opted to use conventional (wet slurry) tailings. This choice represents an optimised combination of practicality, reduction in water use, year-round operability, low permeability, dust control and recovery of water from the surface of the TSF. The selected TSF site is adjacent to the open pit for operational reasons and to maximise the use of suitable land within the MLA that will not compromise future mining activities.

The TSF will be constructed with an engineered natural clay liner and equipped with a seepage capture ditch to minimise the potential for any impacts to underlying groundwater resources. A clay liner is considered to be the most technically and environmentally effective solution given the presence of in-situ clay materials, the extreme weather conditions encountered, the logistical and technical difficulties in importing and installing an effective synthetic liner and the extensive area of the TSF.

The TSF design has been developed to withstand extreme weather events and earthquakes, and an Independent Tailings Review Board of international

experts has been established in accordance with GIIP to provide independent review and oversight of TSF design and operational management on behalf of Oyu Tolgoi.

Mine Closure and Reclamation

The closure vision for Oyu Tolgoi is to leave a positive social, environmental and economic legacy at eventual closure. A Mine Closure and Reclamation Plan is under development as a guide to this process. The objectives of this Plan will be to:

- Outline the regulatory and GIIP standards with regards to mine closure (both national and international standards) which are relevant to Oyu Tolgoi
- Define Oyu Tolgoi requirements and procedures to guide Oyu Tolgoi management and contractors
- Define mitigation measures to manage and minimise adverse impacts
- Define roles and responsibilities
- Define monitoring and reporting procedures
- Define training requirements.

Oyu Tolgoi's short-term reclamation objectives (during construction and operations) can be summarised as follows:

- Progressively reclaim disturbed areas as soon as they are no longer active
- Minimise the risk and impact of wind and water erosion and sediment transportation through careful design and siting of activities
- Stabilise slopes
- Restore drainage
- Cover ground to prevent soil drifting and dust.

The long-term objectives are to:

- Reclaim the land to a condition where long-term environmental degradation does not take place with minimal care and maintenance
- Reclaim the land to a condition where safety risks associated with the mine to the public are minimised

- Reclaim the land to a condition where local communities can use the site for pastureland or other uses
- To the extent practical, create an aesthetically pleasing environment
- Ensure public health and safety is protected
- Minimise adverse socio-economic impacts and provide positive social-economic benefits.

PROJECT PERFORMANCE MONITORING

Oyu Tolgoi is committed to acting on its promises and commitments consistent with its values and in line with the goal of creating a world-class operation that works towards meeting international standards. Monitoring and reporting of the project's social and environmental impacts and performance in managing identified impacts are critical in determining the effectiveness of mitigation strategies. Oyu Tolgoi will demonstrate that it is fulfilling its commitments and is meeting Mongolian regulatory requirements and GIIP through internal and external monitoring and reporting, with routine monitoring plans set out in detail in the relevant management plans.

Independent consultants will be engaged to undertake external reviews of the project's compliance with regulatory requirements and against the commitments made in the management plans during the construction and operations phases of the project. Compliance with priority action items (developed as the Environmental and Social Action Plan for the project or ESAP) will also be reviewed by independent consultants.

Oyu Tolgoi will publish an Annual Social and Environmental Performance Report summarising project performance, impacts and impact management, and new developments. This will be available in both Mongolian and English languages.

GLOSSARY

Abbreviation/ Acronym	Description
ADB	Asian Development Bank
CHP	Central heating plant
DEIA	Detailed Environmental Impact Assessment
DPS	Diesel power station
EBRD	European Bank for Reconstruction and Development
EHS	Environment, health and safety
EIA	Environmental Impact Assessment
EMS	Environmental Management System
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESMS	Environmental and Social Management System
FIFO	Fly-in fly-out
GDP	Gross domestic product
GIIP	Good international industry practice
HDI	Human Development Index
HSE	Health, safety and environment
HSEMS	Health, Safety and Environment Management System
HSEQ	Health, safety, environment, quality
HSMS	Health and Safety Management System
IA	Investment Agreement
IBA	Important Bird Area
IFC	International Finance Corporation
IFI	International Finance Institution
ISO	International Standards Organisation
IUCN	International Union for Conservation of Nature
LBED	Local Business and Economic Development (Programme)
LRPI	Local and Regional Planning and Infrastructure (Programme)
MASIA	Mongolian Academy of Sciences, Institute of Archaeology
MLA	Mine Licence Area
MNET	Ministry of Nature, Environment and Tourism
MoU	Memorandum of understanding
MSDS	Material safety data sheet
NAF	Non-acid forming
NGO	Non-government organisation
NPI	Net positive impact
NTS	Non-technical Summary
Oyu Tolgoi LLC	Oyu Tolgoi Limited Liability Company (Oyu Tolgoi)
PEM	Participatory Environmental Monitoring (Programme)
PWM	Participatory Water Monitoring (Programme)
RAP	Resettlement Action Plan

Abbreviation/ Acronym	Description
SGRDC	South Gobi Regional Development Council
SGSPA	Small Gobi Strictly Protected Area
SME	Small and medium-size enterprise
SMS	Social Management System
TSF	Tailings storage facility
TVET	Technical and vocational education and training (college)
USEPA	United States Environmental Protection Agency
WHO	World Health Organisation
WRD	Waste rock dump

UNITS OF MEASUREMENT

Abbreviation/ Acronym	Description
£	Pound sterling
km	kilometre
km ²	square kilometre
kV	kilovolt
l/s	litre per second
m	metre
m ³	cubic metre
MNT	Mongolian tugrug
MW	megawatt
t	tonne
tpd	tonnes per day
US\$	United States dollar