

AN ANALYSIS: Estimated versus Actual Costs to Develop Phase 1 of the Oyu Tolgoi mine

I. INTRODUCTION

Oyu Tolgoi is the biggest investment in Mongolian history. The future success of the company will impact all areas of Mongolian life, with the potential to create greater prosperity for families today and a brighter future for our children. Oyu Tolgoi recognizes that its operations are of key interest to everyone in Mongolia including the Government, South Gobi residents, the media, the general public and other stakeholders.

Recently, several different numbers have been cited publicly regarding the costs to develop the first phase of the mine. This has led to concern regarding differences between actual costs incurred and estimated costs reported in the 2009 Feasibility Study, approved by the Mongolian Minerals Council in March 2010.

Oyu Tolgoi recently submitted to the Government of Mongolia an interim report that summarises the actual costs to develop Phase I as of 31 December 2012, and compares them with the estimated costs submitted in the 2009 Feasibility Study.

Regular updates on costs incurred (to date) have been provided during 2011 and 2012 to the Oyu Tolgoi Board of Directors and Erdenes Oyu Tolgoi (the Government shareholders). We also provided an update to the Feasibility Study to the Government in the first quarter of 2012. In response to feedback and a request from Erdenes Oyu Tolgoi, Rio Tinto (as Oyu Tolgoi's manager) has engaged an independent international accounting firm, The mine is being built in two phases:

• **The first phase** includes the open pit mining operations, construction of the concentrator, initial development of the underground mine, infrastructure (e.g. roads, airport, buildings, etc.), utilities and water pipelines, and off-site development for Oyu Tolgoi.

• The second phase begins development of the underground section of the mine, where 80% of its value lies. The underground mine will be developed in multiple stages over many years.

Ernst & Young, to conduct a detailed analysis of Phase 1 costs. Ernst & Young is also working with representatives of various Government Ministerial Departments as an integrated team to review and verify. costs. Thus, the cost analysis report submitted to the Government should be viewed as an interim report until the integrated team's work is completed.

This document provides a summary of the cost analysis.

1. The 2009 Feasibility Study estimated Phase 1 would cost \$5.7 billion; it assumed construction would begin July 2009, and targeted commercial production by end of June 2013.

The 2009 Feasibility Study estimated the project would begin in July 2009 with a 45-month period for construction, commissioning and commercial production. The \$5.7 billion estimate includes indirect costs of VAT, other taxes, Customs and Management fees.

In fact, construction commenced March 2010 – 13 months later than planned due to delays in the completion and signing of the Investment Agreement and permitting-related issues.

2. Phase 1 will cost about \$6.49 billion; accelerated construction began in March 2010, but commercial production still estimated at end of June 2013.

The \$6.49 billion actual cost is an increase of 13.8% or \$786 million from the 2009 Feasibility Study, which did not factor in any increased costs stemming from delays in project construction. Like the 2009 Feasibility Study estimate, the \$6.49 billion includes indirect costs of VAT, other taxes, Customs and Management fees.

Accelerating the project schedule cost more, but it means commercial production and revenue will begin this year.

By any measure, this is effective cost management for a project of this size – initial estimates were made a long time before actual

construction. This means Phase I was completed well within the accuracy threshold typically assigned to a feasibility study estimate (plus or minus 20%) by international standards and under Mineral Resources Authority of Mongolia (MRAM) guidelines. And this was accomplished despite changes in scope, industry-wide cost escalation, schedule impacts, and an average annual Mongolian rate of inflation of 10.8%.

Given the delayed start of the project, a plan was developed to accelerate the construction/ commissioning phases in order to begin commercial production and secure revenues as soon as possible. As a result of careful project management, Phase I construction was completed in 33 months – 12 months earlier than the original, 45-month construction schedule in the original 2009 Feasibility Study schedule. The project is now positioned to produce revenues and royalties in the second half of 2013, subject to timely receipt of permits and other permissions that are still not delivered.

The financial benefits stemming from expedited development reduce the impact of cost increases.

Different numbers regarding the cost to build Oyu Tolgoi have been reported. The following provides a brief explanation of the different numbers:

• Total cost to build Phase 1: Because of different accounting treatments of exploration and non-direct project costs, Turquoise Hill Resources Ltd. reports total capital expenditures as \$6.2 billion; Oyu Tolgoi LLC reports \$6.49 billion. These include indirect costs such as VAT, Customs and Management fees.

NOTE: Earlier this year, Oyu Tolgoi reported capital costs were \$6.6 billion at December 2012; this is an incorrect number caused by a rounding error, where VAT and customs payments are rounded to \$0.6 billion instead of \$0.5 billion. The accurate number is \$6.49 billion.

- **Oyu Tolgoi 2012 Financial Statement:** Oyu Tolgoi's 2012 Financial Statements reported total assets of \$7.4 billion, which includes \$6.49 billion of Phase 1 development, interest costs on loans (US\$0.5 billion), early Phase 2 capital (US\$0.3 billion) and costs of further exploration (US\$0.1 billion).
- **Costs in addition to Phase 1 development scope.** Oyu Tolgoi incurred costs totaling about \$1.3 billion that were not included in the Phase 1 assumptions outlined in the 2009 Feasibility Study. These expenditures were required to commission and prepare for operations and commence development of the underground, i.e. Phase 2.These costs were all approved by the Oyu Tolgoi Board in its normal course of business. (Note: all of these costs are included in the 2012 Financial Statement with the exception of nearly \$5 million in operating costs).

3. The cost increase was driven by delay in construction and subsequent acceleration of schedule; some increases were offset by savings by deferring some projects to Phase 2.

Delays in securing permits as well as the project start date had a significant impact on Phase 1 costs. The 2009 Feasibility Study estimates were approved by the Mongolian Minerals Council in March 2010 before any allowance was made for cost increases related to these delays¹.

Industry-wide cost increases during the same time period it took to build the mine averaged about 18% a year or 60% over three years for comparable large projects. Oyu Tolgoi's cost increases above the 2009 Feasibility Study averaged about 4.6% per year or 13.8% over three years. By way of comparison, the average annual Mongolian rate of inflation between the approval of the Feasibility Study in March 2010 and December 2012 was 10.8%

To help offset some of the cost increases, Oyu Tolgoi reduced the scope of the underground development and transferred that to Phase 2. It also deferred construction of a coal-fired power plant until Phase 2.

Examples of increased costs that were caused by the delay and subsequent acceleration of schedule included:

- **Labour**, both in terms of increasing labour rates and numbers employed
- Increasing size of the **fleet of equipment** (for example, 27 haul trucks purchased versus 19 per the 2009 Feasibility Study)
- Cost increases related to power supply

value to the project, including:

- Price increases in **materials** experienced during that period, industry-wide
- **Project holding costs**, especially for de-mobilisation/re-mobilisation of personnel

Industry-wide cost increases are estimated to have averaged 18% a year (or 60% over three years) for comparable projects during the same time it took to build Oyu Tolgoi. Oyu Tolgoi's cost increase was 13.8% above the estimated in the 2009 Feasibility Study.

During construction, the Oyu Tolgoi Board agreed to a number of scope additions that bring additional

¹ An updated "control estimate" of \$6 billion USD (that includes all indirect costs including VAT, Customs and management fees) was completed in November 2010, six months after construction mobilisation commenced. This was provided to the Board of Directors in December 2010. It is international practice to provide a "control estimate" shortly after commencement of construction.

- **Increase in equipment fleet size** to match the increased production capacity of the project and change in pre-strip quantities. A change in number and type of equipment was necessary.
- **Bagging plant** constructed to allow concentrate bagging on site. This gives the project flexibility to better meet customer needs and capture marketing opportunities.
- **Sealing of Oyu Tolgoi-to-Border** road plans brought forward into the scope of Phase One. This involves sealing the entire road as opposed to just segments as outlined in the Feasibility Study, and will increase operational efficiency and reduce potential safety and environmental risks.
- **Permanent Airport** constructed at site. A permanent airport was not included in the scope of the original feasibility study, but will improve operational efficiency and safety.
- **GSK Border facilities** upgraded to include laboratory, dedicated lanes and other support facilities which were not included in the original feasibility study. These scope changes will improve efficiency of operations at the border crossing.

One important aspect of the Oyu Tolgoi Project which often is overlooked is the contribution the project makes to the overall development of Mongolia. Whilst this contribution is not defined in the feasibility study, these nation-building initiatives are of immense value to Mongolia, and include:

- **Skills/capability development** vocational training, school building and refurbishment, in-house training.
- **Supplier development** supplier qualification and improvement, South Gobi supplier development.
- **Regional development**, such as the cultural heritage program and social infrastructure.