Developing a Company Maker Mine in the Democratic Republic of Congo - a work in progress

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Abstract

Anvil first went to Africa in late 1995 with the corporate objective of becoming a gold and/or copper mining company with medium sized, but high quality resources, in one or more of the newly emerging countries of sub-Saharan Africa. Opportunities were initially sought in politically less attractive countries that were not the focus of attention, at the time, by competitor companies.

Anvil commenced negotiations on the high-grade Dikulushi deposit with the Government of Zäire (now Democratic Republic of Congo or DRC) in mid 1996, and during 1997 and early 1998 completed a drilling and feasibility study program which was curtailed by the emergence of political instability in mid-1998. As a result of the delays experienced in the DRC, Anvil sought advanced projects in politically more stable regions of sub-Saharan Africa eventually focussing on opportunities in Ghana. Anvil and joint venture partner Golden Star Resources Ltd of Canada acquired the Bogoso gold mine in September 1999. Tragic and unexpected events in the DRC in early 2001 have now redirected Anvil's efforts back to the DRC and the development of the Dikulushi deposit.

Anvil has a 90% interest in the Dikulushi copper-silver deposit in the DRC and a 7.3% interest in Golden Star Resources Ltd, owner and operator of the Bogoso gold mine in Ghana and equity owner of interests in other gold producing and exploration properties in South America.

Anvil's experiences in the Democratic Republic of Congo and Ghana demonstrate that mining company strategies in sub-Saharan Africa must have a great deal of flexibility as well as tactful perseverance to be successful. External factors, in Anvil's case, largely related to political risk issues, demand flexibility in terms of how projects in less than optimal political environments are progressed and an ability to identify and secure new projects elsewhere, when needed, in order to reduce the company's overall political risk profile, and to be able to continue to pursue the company's corporate objectives.

INTRODUCTION

Anvil in 1995 was a junior explorer with a number of relatively grass-roots gold exploration properties in Western Australia, some cash though not a great deal, and limited prospects of turning any of its properties into mines in the medium term. The board had taken the decision to move out of grass-roots exploration in Western Australia, with its high discovery risk, and to seek more advanced opportunities in Third World and Developing Country environments, primarily in sub-Saharan Africa. The latter environments were considered to have lower discovery risk, but were expected to be accompanied by a higher degree of political risk, which at the time the Company was willing to assume.

CORPORATE OBJECTIVES & INITIAL STRATEGY

In late 1995, Anvil's **corporate objective** was to become a gold and/or copper mining company with medium sized but high quality resources, in one or more of the emerging countries of sub-Saharan Africa. High quality was broadly defined in terms of resource grade, technical simplicity (uncomplicated metallurgy, preference for open pit mining etc), and cost of production (lower quartile).

The establishment of this corporate strategy was initially prompted by the conclusion that the chances of a junior exploration company, with limited financial resources, securing or discovering a significant resource in the mature and highly competitive Australian environment were severely constrained.

Anvil's **strategy** for achieving this corporate objective involved seeking resources in an advanced stage of evaluation and in geological environments that offered attractive upside for the discovery of additional resources. The initial search was focussed on those countries that were not attracting a great deal of exploration attention by competitor exploration and mining companies at the time, thereby limiting the potential competition.

The **technical justification** for an Australian exploration company to adopt such a strategy included the following:

- Geological prospectivity of Africa has been long recognised,
- Geological terranes of many sub-Saharan African countries and those of Australia, particularly Western Australia, have a number of similarities, and therefore reasonably familiar in geological terms,
- Near surface lateritic weathering profiles are also rather similar, allowing the easy transfer of advanced geochemical and geophysical exploration techniques, recently developed in Australia, and
- Recent systematic geological and exploration effort in many sub-Saharan countries was seriously lacking.

A further justification was the structure of the mining industry throughout most of sub-Saharan Africa where it was at the time, but less so now, dominated by large players, eg: AngloAmerican, Iscor, in South Africa, Ashanti in Ghana and the largely government owned companies in the emerging countries, ZCCM in Zambia, Gecamines in Zaire, Debswana in Botswana.

In marked contrast, the Australian industry was structured completely differently, with a full range of players from large (CRA, WMC, MIM, North) to medium (Sons of Gwalia, Straits Resources) to small (Equinox, Anvil) and was and still is characterised by being a technically and logistically mature and very competitive environment.

The key aspect of this structural difference was that the equivalent of the medium and small sized mining companies, so prevalent in Australia, particularly in the gold industry, were missing in sub-Saharan Africa, and this meant that deposits most suited to development by companies of this size range, had most likely been passed over in favour of the larger targets.

IMPLEMENTATION OF INITIAL STRATEGY

In late 1995, exploratory visits were made to five countries in southern Africa and several encouraging copper and gold projects were identified in Zaire and Zambia, the most promising and accessible of which was the Dikulushi project in Zaire (now the Democratic Republic of Congo).

Location of Dikulushi Project, DRC

Acquisition of Dikulushi

From a technical viewpoint, Dikulushi clearly met Anvil's corporate objectives. It was an advanced project, medium sized, high-grade, initially open pittable resource with relatively simple technical requirements, and furthermore, it was on open ground. The low technical risk was, however, offset by what was at the time, an uncertain measure of political risk, which the company was willing to accept, given the potential rewards from this project.

By way of background, Dikulushi had been discovered by the BRGM in the early 1970s and during the following 15 years, it was diamond drilled (48 drill holes) and extensively evaluated. The BRGM had established a resource of 1,656,000 tonnes at 10.46% copper and 310 g/t silver down to a depth of 220m, but had withdrawn from the project and from Zaire around 1988, some 8 years before Anvil entered the project. Dikulushi was a drilled up resource, open at depth, on open ground, with a contained metal value of approximately US$400 million, and on which no previous mining had taken place.

Following a field visit and a review of the existing data on the project, an application to secure the Dikulushi deposit and a surrounding large exploration area through a Mining Convention with the Government of Zaire was made in March 1996. The terms and conditions of the Mining Convention were negotiated during August 1996, and signed off by the three relevant ministers in January 1997. By that time, Zaire had begun to experience some political unrest in the east of the country. The only remaining significant documentation to be completed at the time was a Decree ratifying the Mining Convention to be issued by the Prime Minister. Political events subsequently overtook this process.

POLITICAL RISK EMERGES (Round 1)

By early 1997, Anvil found itself in a very precarious situation. The Mining Convention for Dikulushi had been signed, but the Decree ratifying the Convention had not been issued and there was considerable distraction in the Government and increasing threat that they could be toppled.

President Mobutu had held power in Zaire for more than 30 years, and there was growing public sentiment that a change was needed. Laurent Kabila had emerged as the leader of the opposition forces in the east of the country, which were now beginning to form a cohesive force under the banner of the Alliance of Democratic Forces for the Liberalisation of Congo (AFDL). By March 1997, the AFDL had begun moving south towards the Copperbelt capital of Lubumbashi with a stronger sense of purpose.

Managing Zairian/DRC Political Risk

Given the status of the Mining Convention documentation and the deteriorating political situation, Anvil took the view that a permanent presence was urgently needed in country, preferably on site in order to protect the company's interests in the Dikulushi project. A London based security and logistics company already active in the Copperbelt of Zaire was contracted in March 1997 to provide someone to monitor the situation and make preparations for establishing a presence at the Dikulushi site at the earliest possible time. Then, with unexpected speed, the AFDL took Lubumbashi by force in early April 1997 after only a few days of fighting. The following week, an Anvil director travelled to Lubumbashi to meet the AFDL, introduce the Dikulushi project to the new authorities and obtain AFDL support to proceed with the project. This was provided in writing on the condition that at an appropriate time, the terms and conditions of the Mining Convention would need to be reviewed by what was expected to soon be the new Government.

Only 5 weeks later, the AFDL had successfully taken the capital Kinshasa, almost without firing a shot. Laurent Kabila was proclaimed President and soon afterwards, the country changed its name from Zaire to the Democratic Republic of Congo (DRC).

During the following six weeks, Anvil moved quickly to hire the people and mobilise the equipment to site to establish a presence at Dikulushi. Drill rigs from Zambia were mobilised in August 1997 and a drill program on the Dikulushi resource was commenced, aimed at confirming the results of the previous workers and laying the foundation for the start of a pre-feasibility study. The program comprised 4,420m of diamond and RC drilling and was completed within 10 weeks, without incident, notwithstanding the large military presence in many parts of the country.

During the course of the field program, numerous attempts were made to finalise the documentation for the Mining Convention, however the new leadership had other priorities with establishing a new Government. It was not until the end of October 1997, that Anvil was invited to formally review the terms and conditions of the Dikulushi Mining Convention. A number of minor modifications were agreed to, but these had minimum impact on the economics of the project from Anvil's point of view. The revised Mining Convention was finally signed off by the relevant ministers in late January 1998, for an area of 20,000 km^2 and subsequently ratified by a Decree, this time issued by President Laurent Kabila.

There had been some worrying times concerning political risk financial risk exposure during the course of the military events of 1997. The company had taken a bold step to proceed with the drill evaluation of Dikulushi without actually having a finalised Mining Convention with the new government. In order to attempt to address the political risk issue, Anvil set about developing broad based relationships with middle and senior bureaucrats in the relevant ministries, presenting itself as a serious and committed junior player in the industry. In the end, it proved to be the right strategy.

Dikulushi Pre-feasibility Study

The field program carried out in the latter half of 1997 provided the basic data for the Pre-feasibility Study (PFS) which was completed by Signet Engineering in May 1998. The results of the PFS envisaged the development of a combined open pit and underground mining operation with an eight year life, including crushing and grinding circuits, and oxide and sulphide flotation producing a concentrate grading 60% copper and +60 ozs/t silver.

The Pre-feasibility study demonstrated that the Dikulushi project had very attractive economics including strong project cash flows, a short payback period and high debt service ratios and subsequently attracted a good response from South African financial institutions immediately following the release of the Pre-feasibility results in May 1998.

POLITICAL RISK RE-EMERGES (Round 2)

At the beginning of August 1998, less than 3 months after the completion of the PFS, the DRC unfortunately began experiencing some political and military unrest, which quickly developed into a broader conflict involving a number of other sub-Saharan African countries.

By early October 1998, it was clear that this conflict would not be resolved quickly and the company turned to alternate scenarios for developing Dikulushi. At about the same time, the resources market for junior companies had weakened making it difficult to raise equity capital to fund the bankable feasibility study.

In the light of these developments, the Company began seeking ways to reduce the strong focus on what was becoming an increasingly risky and damaging political situation in the DRC. The Company turned its attention to reviewing its strategy.

REVISED STRATEGY AFTER SECOND PHASE OF POLITICAL UNREST

In the latter half of 1998 the Company began an internal study aimed at a lower-cost development strategy for Dikulushi and commenced a search for advanced projects elsewhere, in order to lessen the Company's sensitivity to the situation in the DRC.

Dikulushi

The lower-cost development strategy for Dikulushi involved open pit mining only (rather than a combination of open pit and underground), the use of second-hand equipment, the establishment of minimal infrastructure and greater use of contractors and out-sourcing. Subsequent expansion of the project would be funded out of project cash flows, with the aim of minimising dilution for existing shareholders. Internal estimates indicated that a significant reduction in the capital cost could be achieved.

This new development strategy was viewed as representing a more robust and pragmatic approach to the development of the project that would be more likely to attract capital, given the perceived level of political risk in the DRC and the then situation in the equity markets.

Search for New Projects

In addition to reviewing the development strategy for Dikulushi, an investigation of possible opportunities to acquire late stage development or producing assets elsewhere in Africa was commenced. The focus continued to be on copper and precious metal projects and the target countries were those that met a range of conservative criteria that represented relatively ideal investment destinations.

Acquisition of Bogoso, Ghana

In January 1999 Anvil began due diligence on two projects in Ghana and four months later, in May 1999, Anvil announced that it had entered into an agreement for the purchase of a 20% interest in Bogoso Gold Ltd, owner and operator of the 100,000 ounce per year Bogoso gold mine, from a consortium of banks led by the International Finance Corporation (IFC).

Unfortunately, Anvil's access to capital at the time was inadequate to contemplate the acquisition in its own right and therefore a joint venture partner that had similar vision to Anvil was sought to earn the majority share of Bogoso in exchange for funding Anvil's share of the purchase price.

The acquisition was carried out in joint venture with Canadian company, Golden Star Resources Ltd, who acquired a 70% interest, with the remaining 10% held by the Government. The acquisition was financed by Golden Star on a non-recourse basis to Anvil and was completed on 30 September 1999.

At the time of the acquisition, Bogoso had oxide resources sufficient for 2 years of production and a drill indicated but undeveloped sulphide resource of approximately 1.2 million ounces. A Pre-feasibility Study was quickly commenced soon after the acquisition on the potentially open pittable sulphide resource, and before the end of 1999 a major drilling program was commenced as the first stage of a Bankable Feasibility Study.

Ghana Strategy

The acquisition of Bogoso with its modern 2Mtpa oxide processing plant was viewed as the strategic asset in this part of the Ashanti Gold Belt. Immediately to the south and adjacent to the Bogoso lease is the Prestea gold property held by JCI and on which JCI had spent some US$22 million on acquisition payments, exploration expenditures and feasibility study costs. Historical recorded gold production from Prestea was some 7 million ounces, making it the second largest historical producer in Ghana after Obuasi. Most of this production had come from underground with very little mining from surface gold deposits. The open pittable drill indicated resources at Prestea identified by JCI were located with between 6 and 18 km from the Bogoso plant.

The acquisition of Prestea would result in a) an immediate and significant extension to the oxide mine life at Bogoso, b) a postponement of the decision to develop the Bogoso sulphide resource, c) a significant increase in the sulphide resources available for the Bogoso sulphide project, and d) provide significant exploration blue-sky as a result of the consolidation of the tenement position covering some 40 km of the Ashanti Gold Belt.

Acquisitions on Akropong Trend

In a further move to consolidate Anvil and Golden Star's position on the Ashanti Gold Belt, Golden Star completed option agreements and made applications in its own right for a total of six concessions on the Akropong gold trend located approximately 18 km west of the Bogoso plant. Anvil had participation rights in these areas through its Bogoso joint venture with Golden Star.

EMERGENCE OF DRC PEACE (Stage 1)

Lusaka Cease Fire Agreement

In the DRC, the eventual signing of the Lusaka Peace Accord in August 1999 by all the parties involved in the conflict, promoted by a greater involvement of external parties (bilateral and multilateral) provided the Company with the confidence to revisit the development strategy for Dikulushi.

Revised Dikulushi Strategy

In September 1999, attention was refocussed on the concept of a low-cost development option for Dikulushi, this time with a staged development approach, but again with subsequent expansion of the project financed by project cash flows. The experience of major shareholder First Quantum Minerals Ltd in developing low capex mining projects in Zambia and Zimbabwe provided the impetus for further reductions in the anticipated capital cost. A three staged approach was considered.

Stage I would involve open pit mining, crushing and heavy media separation to produce a marketable (but not optimised) product. Key issues would include:

- Establishing an offtake agreement for a 35-40% copper concentrate with a downstream smelter and refinery,
- Establishing a barging facility to access the project across Lake Moero from better developed infrastructure in Zambia,
- Outsourcing the mining operation, and possibly on-site power generation, and
- Establishing adequate security arrangements for personnel and property on site.

Stage II would involve adding milling and flotation circuits to enable the production of an optimal marketable high-grade concentrate as well as establishing the remaining infrastructure facilities for the longer term operation.

Stage III would involve initiating an underground mining operation.

The above staged development strategy envisaged financing Stage I by a combination of debt and equity and Stages II and III from project cash flows. This would minimise dilution of existing shareholders, particularly at this time when the equity markets were so weak for junior companies and equity raising was so expensive.

Dikulushi Scoping Study

A Scoping Study was commissioned in September 1999 to assess the viability of the staged development strategy for Dikulushi, the likely processing options and establish the likely economics for each approach.

The study, undertaken by Metallurgical Design & Management (MDM) showed that the most attractive starter operation would comprise, open pit contract mining, crushing and screening to a size range of 1mm to 25mm, followed by Heavy Media Separation (HMS) using ferro-silicon dense medium, at a throughput rate of approximately 260,000 tonnes of ore per year. This approach would produce over 40,000 tonnes of concentrate per year grading approximately 37% copper and 1,000 g/t silver. The concentrate would be shipped to one of the Zambian copper smelters, most likely the Mufulira smelter, for toll smelting and refining. Anvil's major shareholder, First Quantum Minerals Ltd and Glencore have been the majority owners of the

Mufulira smelter and other mining assets in Zambia since March 2000.

The contemplated HMS approach would recover approximately 66% of the copper and silver to the concentrate. Discarded fine-grained material, which is expected to grade approximately 3.2% copper with significant silver credits, would be stockpiled for subsequent re-treatment through a milling/flotation circuit to be established at a later stage.

- Capital Cost

The Company has continued to look for ways to reduce the capital costs for the HMS processing option, which are now US$2.5 million (excluding contract mining establishment costs, and road construction and barge facility costs). The benefits of using in-country earth moving and mining contractors has been flagged to avoid the need for political risk insurance cover on mining equipment.

The currently contemplated capital costs represent a marked improvement on the earlier capital cost estimates and reflect a paring down of the project to the requirements needed to achieve early production for the lowest possible financial exposure.

It is expected that the Dikulushi project will attract the attention of funds with a focus on sub-Saharan Africa because of the potentially high returns, the modest Stage I funding requirements, and the willingness of such funds to take an equity position. Anvil is well positioned in this regard with a 90% equity position in the Dikulushi project.

- Operating Costs

The estimated operating costs for the HMS option, assuming an ore processing rate of 260,000 tonnes per annum were comparable with previous estimates of between 33 and 38 US cents per pound of copper, after silver credits.

Transportation costs for the HMS option (concentrate grading 37% copper) from site to a smelter in Zambia would be higher than those for the higher capital cost option in the earlier completed pre-feasibility study (in which the concentrate grades 60% copper), but these were expected to be favourably offset by toll smelting and refining charges which have fallen since the earlier study was completed.

The Scoping Study showed that the HMS option would see Dikulushi put into production at considerably lower capital costs that previously indicated and at operating costs well in the lower quartile of the world production cost curve.
From the time of completion of the Scoping Study up until early 2001, the Company continued to be frustrated by ongoing political and military events.

EMERGENCE OF DRC PEACE (Stage 2)

Unexpected and tragic events in the DRC in January 2001 saw Joseph Kabila become the country's new president. Soon after his inauguration, Joseph Kabila began delivering on his promises to re-establish the Lusaka Peace Accord, to facilitate the more effective deployment of the UN Observer Force, to speed up the Congolese National Dialogue and to revise the mining legislation. The principal aims of these initiatives were to find a political rather than a military solution to restoring peace, and to move towards a more democratic form of government. His actions have been strongly endorsed by those governments most willing to provide support and include the USA, Belgium, France, UK, the European Union and South Africa.

The change in leadership in January appears to have ushered in a new willingness for the various Congolese parties to cooperate with the UN deployment and to actively pursue a dialogue that will accelerate the move towards democratic elections. The deployment of the 3,000 UN Observer and Support Force has been stepped up since March 2001, with the recent deployment of 120 UN soldiers into the city of Kisangani, a long troubled area in the northeast of the country. Ugandan and Rwandan forces have continued to withdraw from front line positions with many returning home. However, much still remains to be done.

The new president has endorsed the involvement of Ketumile Masire, former President of Botswana, as mediator chosen to organise an inclusive Congolese National Dialogue to chart the political future of the DRC. Even long time opposition leader, Etienne Tshisekedi returned to Kinshasa in April 2001 to take part in the Congolese National Dialogue, following a 15-month absence abroad. The European Union has pledged 120 million Euros (US$109 million) in fresh financial aid to the DRC, subject to satisfactory progress with the peace process.

A new cabinet of ministers was announced on 14 April 2001, and this will now enable the Company to take more concrete steps to advance the development of the Dikulushi project.

The new mining legislation was introduced at the end of June 2001 and is expected to pass into law in the coming weeks with the implementing regulations to be in place before the end of 2001. Holders of existing Mining Conventions will have the option of continuing with their Conventions, or converting to the new mining legislation.

A proposal goes before the World Bank board on 17 July 2001 for a US$50 million grant to the DRC. The IMF will re-establish a presence in Kinshasa in September 2001 after a long absence.

The worst of the situation in the DRC now appears to be coming to an end and the Company has recently commenced the pre-implementation work required to enable the Dikulushi project to be in production during the third quarter of 2002.

Rationalisation of Bogoso Ownership

In April 2001, Anvil and Golden Star agreed to rationalise the ownership of Bogoso Gold Ltd with Golden Star acquiring Anvil's 20% interest at the project level (taking Golden Star to 90%), in exchange for Anvil taking 3 million shares in Golden Star. This action provided Anvil with significantly greater financial flexibility to be ready to progress the development of the Dikulushi project in the DRC. It also provided relief from any debt burdens that might have been incurred in the future as a result of Bogoso's strategy of regional consolidation to acquire additional ore reserves, while maintaining an indirect interest for Anvil in these developments.

For Golden Star, the 90% interest in Bogoso Gold Ltd provided better access to capital to pursue the strategy of regional consolidation with the intent of creating a long-lived gold producing entity on the Ashanti Gold Belt. The key target on the horizon at this moment is the Prestea gold property for which a number of important milestones have been achieved in recent weeks.

Window of Opportunity

At this time, Anvil is at a cross-roads as far as its future is concerned. The successful development of Dikulushi will provide a solid financial base for future growth. Failure for either technical reasons (within the Company's control) or political reasons (largely outside the Company's control) will very likely spell the end of Anvil as a company. The approach to developing the Dikulushi deposit is therefore of the critical importance to the Company's future.

Given the current political risk profile of the DRC and the weakened financial position of the company, a staged development approach is considered to be the most appropriate. It is the view in Anvil that the political risk has been reduced to the extent that we can now gear up to meet it. We are not about waiting for the political risk to be reduced to a level where everybody is comfortable. We are about monitoring the political risk and when it reduces to a level we and our partners are able to manage, we will move in. We believe this window of opportunity has arrived.

The current capital cost estimate is US$5 million. The staged development approach being pursued minimizes the need for currently high-cost equity capital, provides the opportunity to use the strong cashflows from the project to fund the subsequent stages of the development, and is likely to provide the best returns to shareholders.

CONCLUSIONS

Notwithstanding that there are significant mineral development opportunities in sub-Saharan Africa for Australian and other junior mining and exploration companies, and that these opportunities are reasonably accessible, the Anvil experience has shown that in some countries, there is a level of political risk that needs careful and patient management. The weakness for juniors, is the inability to go on funding the holding costs of projects that are delayed for political or other reasons outside their control.

Countries such as the DRC are still in transition from essentially dictatorial rule and economies that are centrally planned, to more democratic forms of government and economies which will operate according to free market principles. Such a transition is not easy to make in a country which is desperately poor and with a population of over 50 million. Political instability during such a transition, although disappointing for investors, should not be entirely unexpected.

Ghana on the other hand, represents a considerably more stable investment destination, though it too has had its complications. Ghana is characterised by a higher level of competition and limited access to highly attractive, advanced resources such as Dikulushi. An interest in Ghana however, does provide an appropriate balance to the higher-risk higher-reward opportunities available in the DRC.

For those who are persistent, projects such as Dikulushi will eventually produce substantial returns. The key is to have the flexiblity to adjust, particularly in terms of staffing levels and company expenditures, and to at times significantly modify one's strategy, to have a large measure of perseverance, patience and tact and to believe in the long-term future of these slowly emerging resource rich nations. To a significant degree, this is the competitive advantage of technically capable, well-supported junior mining companies in the sub-Saharan Africa environment.