

CALENDAR

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Email: christine.foo@terrapinn.com

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Email: coordinadora@expomin.cl

■ **LatAm Mining Congress 2010**

April 27 – 29, 2010
Westin Colonnade
Coral Gables, Florida
Email: stephanie.baronoff@terrapinn.com

■ **2010 CIM Conference and Exhibition**

May 9 – 12, 2010
Vancouver Convention Centre
Vancouver, BC, Canada
Email: cmurphy@cim.org

Bankable Information for Lenders' Evaluation

The Bankable Feasibility Study (BFS) is a critical document for the development of a mineral deposit into an operating mine, in that it demonstrates the economic and technical feasibility of the project. The content and focus of the BFS required by a Lender evaluating a mining project for bank finance may likely be different from that of other stakeholders such as owners, shareholders, or other investors. This article provides a discussion of the information typically required for a Lender's evaluation of a mining project for debt finance.

BFS or 43-101 Technical Report

A question that sometimes arises is - "Does a technical report prepared to meet the requirements of Canadian National Instrument 43-101 (43-101) also meet the requirements of a BFS?"

National Instrument 43-101 provides the following definition for a Feasibility Study: "feasibility study" means a comprehensive study of a mineral deposit in which all geological, engineering, legal, operating, economic, social, environmental and other relevant factors are considered in sufficient detail that it could reasonably serve as the basis for a final decision by a financial institution to finance the development of the deposit for mineral production.

Form 43-101F1 states the following relative to a 43-101 compliant Technical Report: The objective of the technical report is to provide a summary of scientific and technical information concerning mineral exploration, development and production activities on a mineral property that is material to an issuer.

Table 1, page 4, presents a summary comparison of the 43-101 compliant Technical Report and a BFS prepared for project financing. While it is possible to prepare a single document to be both "a summary of the scientific and technical information" and "a comprehensive study of a mineral deposit," it is not an easy task.

What Makes a Bankable Feasibility Study "Bankable"

There is no industry-wide standard definition of the scope, detail and content of a "Bankable" Feasibility Study developed by an industry recognized professional society. But there is a good consensus within the industry as to what needs to be included in one.

PAH has prepared a document that summarizes what, in our opinion, is the minimum content of Conceptual,

Prefeasibility and Feasibility studies. This was first prepared in 1994 and has been updated several times since. The most recent was presented in our Pincock Perspectives Issue No. 95, March 2009 – “Minimum Engineering Study Requirements Update” which is available through our website: www.pincock.com.

Relative to the requirements of a BFS for Lender’s evaluation of a project, it is important to remember the study is the basis for evaluating the risk associated with the project. This risk can be associated with estimation of reserves, with the efficiency of mining and process plant operations, with economic performance (capital and/or operating costs), with the country, or with meeting environmental, health and safety regulations or other standards. The BFS must provide sufficient information and detail to allow the Lender’s due-diligence team to make an assessment of these risks relative to the proposed financing.

The following summarizes observations of key points, based on our experience with various projects going through a due-diligence review.

Geology

- ◆ Resources are estimated and classified by international standards (JORC, SME, CIM).
- ◆ Industry accepted procedures are used for all assaying and sample analysis.
- ◆ Third-party audit of database and resource estimation prior to the due-diligence is a good idea.

Mining

- ◆ Mine plans and production schedules on annual basis for pre-production and at least first 5 years of production, and then 5 year intervals for Life of Mine.
- ◆ Geotechnical and hydrogeologic analyses to support mine design.
- ◆ Proven reserves make up a significant part of the production for the first period of operation (that is, the loan period) and production does not include any inferred resources.
- ◆ Costs are estimated to the appropriate level of accuracy (+/- 15% typically).

Metallurgy/Process Engineering

- ◆ Metallurgical samples are representative of the ore and were taken from within the portion of the deposit to be mined.
- ◆ Metallurgical test-work substantiates the project flowsheet and assumed recoveries and consumables quantities.
- ◆ Process flowsheet is accepted and proven technology. Lenders typically do not want to finance research and development projects.
- ◆ Has detailed flowsheet, major equipment list, consumables and power demand estimate, and water and material balances.
- ◆ Process plant design is to a minimum of 1 to 2 percent of detail design.

Infrastructure

- ◆ Power, water, site access, communication and product shipping is well defined.

- ◆ In cases where critical infrastructure such as power or roads rely on investment or construction by other companies or government agencies, very well defined agreements with specific cost and schedule commitments are required.

Project Implementation Plan

- ◆ Detailed and up-to-date project schedule for design, construction, commissioning and start-up, performance test period, ramp-up and steady-state production.
- ◆ Plan and schedule for integration of operations people into design and construction process, prior to commissioning.
- ◆ Staffing plan and key persons for each phase and the transition plan.
 - Owner’s Engineering, Construction and Operations Teams
 - Engineering, Procurement, and Construction Management (EPCM) Contractor’s Team; as EPCM contractor is usually selected at the time the due-diligence review is completed.
- ◆ Construction phase cashflow to support schedule for loan draws.

Economic Analysis

- ◆ Operating and Capital costs estimated from the engineering design to +/-15 percent accuracy. Some companies are setting a higher level of completeness, often reaching 5 percent of final design with +/- 10 percent accuracy.
- ◆ Capital costs are based on vendor quotes for major

- equipment purchases, with contingency.
- ◆ Project construction costs, with contingency.
- ◆ Commodity prices based on long-term contract commitments, rolling historic price average (3 year minimum), or detailed market studies.
- ◆ Sensitivity analysis to key project variables.
- ◆ Reclamation and closure costs included in the economic analysis.

Project Risk Evaluation

- ◆ Quantitative or qualitative.
- ◆ All project aspects – geology, engineering, environmental, regulatory, country, business, and financial.

Social and Environmental

- ◆ Demonstrate the project will Do No Harm.
- ◆ List of key permits and authorizations by agency and schedule for obtaining.
- ◆ Social and Environmental Impact Assessment with baseline studies prepared to International Standards.
 - Can be included as Appendix to Feasibility Study or more commonly as a stand-alone document.
 - Typically should be complete and submitted to regulatory agency(s) to begin approval process.
 - Addresses Sustainable Development
- ◆ Demonstrate, at a minimum, compliance with Equator Principals and International

Finance Corporation (IFC) Performance Standards on Social and Environmental Sustainability, unless project is in a high income Organization for Economic Co-operation and Development (OECD) country.

- ◆ Feasibility Level Social and Environmental Management Plans
 - Community relations/ development plan.
 - Broad community support.
 - Action Plan to mitigate impacts.
 - Ongoing community engagement and consultation.
 - Grievance mechanism.
 - Monitoring and reporting.
 - Tailings and waste rock management.
 - Independent technical review of dams as required by IFC Performance Standard 4 – Community Health, Safety and Security.
 - Solid and hazardous waste management.
 - Monitoring and reporting plans.
 - Emergency response plans.
 - Surface water and sediment control plans.
 - IFC EH&S Guidelines for mining has specific discharge water quality criteria.
 - All plans need to address construction phase of project and transition to operational phase.
- ◆ Environmental Staffing and Organization
 - Construction phase.
 - Operational phase.

- How do environmental management responsibilities of Owner and EPCM contractor interface during construction and start-up – Who owns the Site during construction?
- ◆ Closure and Reclamation Plan
 - To a feasibility level of detail and cost estimation.
 - Post-closure monitoring and maintenance period.
 - Post-reclamation property ownership plan.
 - Sustainability aspects of closure process.
 - Demonstrate financial feasibility – how is reclamation and post-closure care going to be funded?
 - IFC Environmental Health and Safety Guidelines for Mining says cash accrual or financial guarantee is required, not just an accrual on the books.

Use of the BFS

The scoping, preparation, editing, and review of the BFS is important in that this document forms the basis for key decisions on the project. It provides the Project Sponsor's management team with a document to make a go-no go decision. It also serves to focus the Project Sponsor's team on what needs to be addressed or refined as the project advances through basic engineering, detail engineering, construction and commissioning.

From a Lender's perspective, it provides the Lender's team the technical and economic information to complete a due-diligence to assess project risk for making lending decisions. Equally important to both

the Sponsor and Lender, the BFS provides the basis for establishing terms and conditions in the loan agreement, including the criteria for completion certification (physical, mechanical, production, recovery, economic, environmental, etc.) after project start-up.

But it is important to always remember that “Bankable” is a reference to the Feasibility Study content and does not mean the project is guaranteed financing.

This article is based on a presentation made at the recent BNP Paribas’ conference “Mining in Peru and Colombia: The Future is Now!” Jeff Stufsky’s suggestion of the topic and his feedback are appreciated. Article provided by Darrel Buffington, P.E., Director of PAH-Brazil
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**TABLE 1
Comparison of Technical Reports for Disclosure and BFS for Project Finance**

Technical Report prepared for disclosure to equity investors:	Bankable Feasibility Study prepared for project finance:
<ul style="list-style-type: none"> • Disclosure document to support investment decisions in a company, not necessarily a single project. • Investors have a liquid position, shares can generally be sold at investors discretion. • Investors have upside opportunity and downside risk. • Assumption is the audience is non-technical. • In general, focus is on validation of resource and reserves to industry accepted standards. • No specific requirements for social and environmental standards beyond meeting regulatory requirements. 	<ul style="list-style-type: none"> • Presented to demonstrate the technical and economic viability of a single project for financing. • For evaluation of PROJECT RISK. • Lenders have more or less a set position for life of the loan. • Lender’s position has downside risk, but limited upside reward. • Lender’s team will include experts to review all aspects of the study. • Focus is on demonstrating the viability of the entire project down to quality of product and ability to operate at a level of profit that will support debt repayment. • Social and environmental standards applied may well exceed regulatory requirements.



Pincock, Allen & Holt is a consulting and engineering firm serving the international mineral resource industry. Your comments and suggestions are always welcome. Contact Pincock, Allen & Holt • 165 S. Union Blvd., Suite 950, Lakewood, Colorado 80228 • TEL 303.986.6950 • FAX 303.987.8907 • www.pincock.com. Pincock Perspectives is published as a free information service for friends and clients.