

EXPOSURE DRAFT OF PROPOSED INTERNATIONAL VALUATION GUIDANCE NOTE – EXTRACTIVE INDUSTRIES

Comments to be received by 31 March 2004

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Exposure Draft of Proposed International Valuation Guidance Note

Extractive Industries

1.0 Introduction

- 1.1 The purpose of this Guidance Note (GN) is to provide clarification and guidance on the valuation of interests held by entities involved in *Extractive Industries*. It discusses concepts that should be understood by financial reporting and regulatory authorities, financiers, investors, participants in resource transactions, and other users of *Extractive Industries* valuation services.
- 1.2 ***Extractive Industries* comprise the *Minerals Industry* and the *Petroleum Industry*, but do not include activities focused on the extraction of water from the earth.**
- 1.3 A distinguishing aspect of a valuation involving the *Extractive Industries* is that the Valuer almost always must rely heavily on information provided by (a) *Technical Expert(s)* or other accredited specialist(s) specific to the industry.
- 1.4 A key characteristic of the *Extractive Industries* that sets them aside from other industries or economic sectors is the depletion or wasting of natural resources that cannot be replaced in their original state following extraction. The agent of production is extraction from the earth.
- 1.4.1 The ultimate quantity and quality of material of economic interest that might be extracted from a property is often not known at the Effective Date of Valuation.
- 1.5 Examples of depleting or wasting natural resources include, but are not limited to:
- 1.5.1 metallic *Mineral* deposits containing metals such as copper, aluminium, gold, iron, manganese, nickel, cobalt, zinc, lead, silver, tin, tungsten, uranium, and platinum group metals;
- 1.5.2 non-metallic *Mineral* deposits such as coal, potash, phosphates, sulphur,

magnesium, limestone, salt, mineral sands, diamonds and other gemstones;

1.5.3 construction materials such as sand, gravel, crushed stone, and dimension stone;

1.5.4 *Petroleum* deposits including oil, natural gas, natural gas liquids, other gaseous products, heavy oil, and oil sands.

1.6 There are contrasts between the production and transportation phases of the *Minerals* and *Petroleum Industries* that must be understood:

1.6.1 Points 1.5.1 - 1.5.3 above include products of the *Minerals Industry*, which extracts valuable product, generally by mining in a surface mine (open pit, open-cast, open-cut, or strip mine; a quarry used to produce construction material is also considered a surface mine), or an underground mine. Some extraction is undertaken through wells, for example, sulphur extraction, and in situ leaching (solution mining) of various salts and uranium products. Some extraction is also done by dredging the floors of bodies of water, such as for gravel, mineral sands, and alluvial gold. Extraction of mineral products from water, such as halite (common salt) and magnesium, is also part of the *Minerals Industry*;

1.6.2 The *Minerals Industry* generally has a planned extraction phase, though this phase is often extended through *Mineral Reserve* additions. Once extraction is completed, no more known economically recoverable asset remains in place at that time;

1.6.3 The materials cited in para.1.5.4 above are produced by the *Petroleum Industry*, which extracts valuable product generally through wells drilled into the earth's crust. Some extraction is also undertaken using mining methods, for example, open pit mining of oil sands and oil shales. The extraction of a solid asset is more labour intensive than the extraction of a fluid asset. A single person may operate oil and gas extraction by pumps or valves, with the occasional need for well maintenance or well work-over crews;

- 1.6.4 The *Petroleum Industry* frequently has more than one economical extraction phase for crude oil. At the conclusion of the initial (primary) extraction phase, much of the initial crude oil Reserve may remain. Secondary and/or enhanced recovery methods are often applied to recover more oil and gas. Generally, a large percent of the initial oil in place remains in place at the conclusion of production operations;
- 1.6.5 Another significant difference between the *Minerals* and *Petroleum Industries* relates to land surface requirements for processing plant and infrastructure. Relatively little surface area is required for oil or gas well operations. A mining operation often requires a larger land area for stockpiles and disposal of waste material, as well as an open pit if applicable;
- 1.6.6 Crude oil, natural gas, and refined Petroleum products are more often than not transported to market or port by pipeline. In contrast, a mined product is generally transported to market or port by rail or truck, resulting in differing start-up costs and environmental impacts.
- 1.7 The *Minerals* and *Petroleum Industries* are both major industries throughout the world. Their products are essential in all modern economies by provision of raw materials for other downstream industries such as construction, manufacturing, transport and communications.
- 1.8 Exploration of Minerals and Petroleum properties is a high-risk activity. Considerable work and study must be undertaken to determine the technical and economic viability of production. The large majority of Mineral and Petroleum properties do not reach the production stage.
- 1.9 The projected net earnings derived or potentially derived from an *Extractive Industry* property is its main source of value. The net earnings may vary from year to year, depending on the type of natural resource commodity, the cyclical nature of the commodity markets and prices, variations in production rate and costs.

- 1.10 Mineral and Petroleum properties are valued primarily based on *Reserves/Resources* or the potential for discovery of *Resources*. The quantity and quality of such *Reserves/Resources* may vary over time due to changing economic and technical advances as well as exploration success. Nevertheless, they are ultimately finite and will deplete over time.
- 1.11 The fixed assets and specialised plant and equipment used in the extraction and processing of *Extractive Industries* products often retain relatively little or no value when separated from production at the site.
- 1.12 ***Exploration Properties* have asset value derived from their potential for the existence and discovery of economically viable Mineral or Petroleum deposits contained within. *Exploration Property* interests are bought and sold in the market. Many of these transactions involve partial interest arrangements, such as farm-in, option or joint venture arrangements.**
- 1.12.1 The value of an *Exploration Property* is largely dependent upon surface and subsurface geological and related information and its interpretation.
- 1.12.2 *Extractive Industries* deposits are often located in remote areas and are generally substantially or completely buried below the land surface, and sometimes below the floor of bodies of water or under the sea.
- 1.13 **The residual value of the property, plant and equipment, and environmental reclamation costs are pertinent factors in the valuation process for *Extractive Industries* properties.**

2.0 Scope

- 2.1 Reliable valuations of *Extractive Industries* assets and interests are essential to ensure the availability of capital necessary to support the continuity of an important component of the world's economic base, to promote the productive use of the Mineral and Petroleum natural resources, and to maintain the confidence of capital markets.

2.2 This Guidance Note provides specific guidance for valuation of assets and interests of the *Extractive Industries*. It provides supplemental guidance for application of the International Valuation Standards (IVS 1, 2 and 3), International Valuation Applications (IVA 1 and 2) and Guidance Notes (GNs). In doing so, it specifically supplements the following GNs for their application to the *Extractive Industries*;

GN 1 Valuation of Real Property;

GN 2 Valuation of Lease Interests;

GN 3 Valuation of Plant and Equipment;

GN 4 Valuation of Intangible Assets;

GN 6 Business Valuation;

GN 8 Depreciated Replacement Cost (DRC).

GN 9 Discounted Cash Flow (DCF) Analysis for Market and Non-Market Based Valuations.

2.3 **The ownership or rights to an industrial water supply and water storage often form an important component of the value of a Mineral property. This GN does not provide specific guidance for valuation of water ownership, rights and storage. However, access to an adequate water supply is often essential for viable operation, and a valuer must give this proper consideration.**

2.4 Where mark-to-market financial reporting procedures apply or are contemplated, Valuers should observe the provisions of IVA 1 (Valuation for Financial Reporting) in conjunction with this GN. In some States, securities exchanges and administrations may have specific reporting requirements for the *Minerals* and *Petroleum Industries* that override IVS provisions.

2.5 While providing supplemental guidance for the conduct and reporting of valuations of *Extractive Industries* property and interests in accordance with 2.2 above, the provisions of this GN do not replace provisions elsewhere in the current edition of the International Valuation Standards.

3.0 Definitions

- 3.1 *Extractive Industries* are defined as those industries involved in the finding, extracting and associated processing of natural resources located on, in or near the earth's crust. They are composed of the *Minerals Industry* and the *Petroleum Industry*. They do not include the industry sector focused on extraction of water from the earth.
- 3.2 *Exploration Property* or area means a Mineral or Petroleum real property interest that is being actively explored for Mineral deposits or Petroleum fields, but for which economic viability has not been demonstrated.
- 3.3 *Feasibility Study* in the *Extractive Industries* refers to a comprehensive study of a Mineral or Petroleum deposit, in which all geological, engineering, operating, economic, marketing, environmental and other relevant factors are considered in sufficient detail. The study could reasonably serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the prospective property for Mineral or Petroleum production. See also *Prefeasibility Study*.
- 3.4 A *Mineral* is any naturally occurring material useful to and/or having a value placed on it by humankind that is found in or on the earth's crust. For the purposes of this GN, Minerals includes metallic minerals, industrial minerals, aggregates, precious stones and fuel minerals, but Minerals do not include Petroleum which is defined separately.
- 3.5 A *Mineral Reserve* is defined by the Combined [Mineral] Reserves International Reporting Standard Committee (CRIRSCO) as "the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined. Appropriate assessments that may include *Feasibility Studies*, have been carried out, and include consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction is justified. Mineral Reserves are subdivided in order of increasing confidence into Probable Mineral Reserves and Proved Mineral Reserves."

- 3.6 *A Mineral Resource* is defined by CRIRSCO as “a concentration or occurrence of material of intrinsic economic interest in or on the earth’s crust (a deposit) in such form and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge. Mineral Resources are subdivided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories. Portions of a deposit that do not have reasonable prospects for eventual economic extraction must not be included in a Mineral Resource.”
- 3.7 The *Minerals Industry* includes entities involved in exploration for Minerals, and the mining, processing and marketing of Minerals.
- 3.8 *Petroleum* designates any naturally occurring hydrocarbon, whether in a gaseous, liquid or solid state. Raw Petroleum products are primarily crude oil and natural gas.
- 3.9 The *Petroleum Industry* includes entities involved in exploration for Petroleum, and the extraction, processing and marketing of Petroleum.
- 3.10 *Petroleum Reserves* are defined by the Society of Petroleum Engineers (SPE) and the World Petroleum Congress (WPC), as “those quantities of Petroleum which are anticipated to be commercially recovered from known accumulations from a given date forward. All (Petroleum) Reserve estimates involve some degree of uncertainty. The uncertainty depends chiefly on the amount of reliable geologic and engineering data available at the time of the estimate and the interpretation of these data. The relative degree of uncertainty may be conveyed by placing reserves into one of two principal classifications, either Proved or Unproved. Unproved Reserves are less certain to be recovered than Proved Reserves and may be further sub-classified as Probable and Possible Reserves to denote progressively increasing uncertainty in their recoverability.” (Capital letters added). Proved Reserves can be categorised as Developed or Undeveloped.
- 3.11 *Petroleum Resources*, for the purposes of this GN, are defined as being comprised only of *Petroleum Reserves* and Contingent Resources. Contingent Resources are defined by SPE/WPC, in conjunction with the American Association of Professional Geologists (AAPG), as being “those quantities of petroleum which are estimated, on a given date, to

be potentially recoverable from known accumulations, but which are not currently considered to be commercially recoverable.”

- 3.12 *Prefeasibility Study* in the *Extractive Industries* refers to a study of a Mineral or Petroleum deposit, in which all geological, engineering, operating, economic, environmental and other relevant factors are considered in sufficient detail to serve as the reasonable basis for a decision to proceed to a *Feasibility Study*.
- 3.13 *Royalty* or “*Royalty Interest*” in the *Extractive Industries* is the landowner's or lessor’s share of production, in money or product, free of charge for expenses of production. An “*Overriding Royalty Interest*” is an interest in mineral or petroleum produced, free of the expense of production, and in addition to any lessor's *Royalty*.
- 3.14 *Technical Expert* in the *Extractive Industries* (stated elsewhere in this GN as *Technical Expert*) is a person who is responsible for all or part of the Technical Assessment that supports an *Extractive Industry Valuation*. A Technical Expert must have appropriate experience relevant to the subject matter and in States where required by statute or regulation, must be a member or license-holder in good standing of a professional organisation that has the authority to sanction members or licensees. An accredited specialist may not take responsibility for all or part of a Technical Assessment without also being a Technical Expert.
- 3.15 *Technical Assessment* refers to a technical document prepared by (a) *Technical Expert(s)* that supports the *Extractive Industry Valuation* and is appended to, or forms part of, a Valuation Report.

4.0 Relationship to Accounting Standards

- 4.1 Under IAS 16, Property, Plant and Equipment, “...mineral rights and mineral reserves such as oil, natural gas and similar non-regenerative resources...” are currently excluded from the provisions of the Standard. IAS 16 otherwise allows for revaluation of property, plant and equipment to Fair Value as an alternative accounting treatment to the Historical Cost convention.

4.2 **Amongst national GAAPs there are currently several approaches to the measurement of “Upstream Activities” that include the exploration, finding, acquiring or developing of Mineral or Petroleum Resources up to a point that the Reserves are first capable of being sold or used. The extreme high-risk element in expenditure on these activities has led to two main approaches to Historical Cost accounting for the Extractive Industries, those being:**

- (a) **all exploration and evaluation costs to be written off unless such costs are expected to be recouped or the activities have not yet established whether the costs are economically recoverable (i.e., variations of a “successful efforts” approach). In applications of this approach there are variations as to which types of cost are permitted to be capitalised and the treatment of costs prior to the determination of ‘success’ or otherwise of the exploration and evaluation activities; and**
- (b) **all expenditures incurred in finding and developing Mineral and Petroleum Reserves to be capitalised and treated as a part of the cost of whatever Reserves may have been found (i.e., “full cost” approach).**

4.3 This Guidance Note recognises that the Historical Cost of finding and developing Mineral and Petroleum Reserves is usually not indicative of the realisable value of such Reserves once they have become established.

5.0 Guidance

5.1 Valuation Concepts

5.1.1 **The provisions of this GN are designed to assure application of Generally Accepted Valuation Principles (GAVP) to *Extractive Industries Valuations*, in accordance with the valuation fundamentals expressed in the IVS General Valuation Concepts and Principles.**

5.1.2 **The standard of value is Market Value defined in IVS 1, Market Value Basis of Valuation. If some other type of value is to be determined in accordance**

with IVS 2, Valuation Bases Other Than Market Value, a clear definition of that value should be provided by the Valuer and highlighted in the Valuation Report as prescribed in IVS 3, and a clear and conspicuous explanation provided.

5.1.3 A Market Valuation of an *Extractive Industry* property as Real Property must be based on the Highest and Best Use (HBU) of the property. This may require consideration of a non-Minerals or non-Petroleum use for the property. Consideration must also be given to a change in exploration, development or operating strategy, or potential for leasing the property, in order to maximise its economic benefit.

5.1.3.1 In determining the HBU, the Valuer should determine the most probable use that is physically possible, appropriately justified, legally permissible, financially feasible, and results in optimum economic productivity.

5.1.4 A key aspect of the valuation of an Extractive Industries property is the proper identification of the property rights involved.

5.1.5 In conducting a Market Valuation, the three Valuation Approaches are generally available for consideration:

- (a) Income (Capitalisation) Approach including market-related discounted cash flow;**
- (b) Sales comparison Approach (termed Market Approach for Business Valuations) generally by indirect means (see 5.3.1 below);**
- (c) Cost Approach (termed Asset-Based Approach for Business Valuations), including Depreciated Replacement Cost and Equivalent Cost Analysis.**

5.1.6 Where one or more of the above Valuation Approaches has not been applied, the reason must be stated.

5.1.7 As applied to Mineral and Petroleum real property interests, the appropriate Valuation Approaches and methods applied depend upon the stage of exploration or development of the property. For convenience, such Mineral and Petroleum properties can be categorised as four main types, though the categorisation is sometimes the subject of expert opinion.

- Exploration properties;
- Resource properties;
- Development properties;
- Production properties.

5.1.8 *Exploration Properties* are defined at Clause 3.2.

5.1.9 Resource properties contain a *Mineral Resource* or *Petroleum Resource* but have not been demonstrated by a *Prefeasibility Study* or a *Feasibility Study* to be economically viable.

5.1.10 Development properties, in general, have been demonstrated by a *Feasibility Study* to be economically viable but are not yet in production.

5.1.11 Production properties contain a Mineral or Petroleum producing operation active at the time of Valuation.

5.1.12 The different stages of exploration and development carry different levels of risk. The risk pertains to the likelihood of eventual or continued Mineral or Petroleum production. As a property is advanced from the Exploration stage to the Resource stage to the Development stage to the Production stage, more technical information is collected, enabling technical studies, including *Prefeasibility* and *Feasibility Studies*, to be carried out, and thereby reducing the risk factor.

5.1.13 **The results from the Valuation Approaches and methods employed must be weighed and reconciled into a concluding opinion of value. The reasons for giving a higher weighting to one method or Approach over another must also be stated.**

5.2 **Competence and Impartiality**

5.2.1 Valuations prepared under this Guidance Note shall comply with all provisions of the IVS Code of Conduct.

5.2.2 To develop a Valuation of an *Extractive Industry* asset or interest, the Valuer must have competence relevant to the subject asset or interest, or retain the services of (an) appropriately skilled *Technical Expert(s)*.

5.2.3 Providing a reliable and accurate valuation typically requires the Valuer to have specialised training, or assistance from (a) *Technical Expert(s)* or other accredited specialists(s), in geology, Resource and Reserve estimation, engineering, economic and environmental aspects relevant to the subject natural resource type and geographic setting. The defined term *Technical Expert* includes “Competent Person”, “Independent Valuer”, and similar requirements that may apply in some States if the intended use of the Valuation Report is related to public financial reporting or other regulatory purpose.

5.2.4 **The Valuer is responsible for the decision to rely on a *Technical Assessment*, data, or opinion provided by other experts or specialists. The valuer must have a reasonable basis that those persons are competent and their work is credible.**

5.3 **Special Considerations of Extractive Industries Valuations**

5.3.1 Each Mineral deposit, Petroleum field and *Exploration Property* is unique. Therefore, direct comparison of Mineral or Petroleum property transactions is generally not appropriate. However, sales analysis is an important valuation tool.

Sales adjustments or ratio analysis can frequently be applied for indirect sales comparison purposes. Sales analysis and other market analysis can often yield market factors such as a market discount rate, a risk factor or uncertainty factor, for use in the Income Approach.

- 5.3.2 The method most commonly used for investment decision-making within the *Extractive Industries* is net present value analysis/discounted cash flow analysis (NPV analysis/DCF analysis). The Valuer is cautioned that this and other methods, such as those based on option theory, will yield non-Market Value estimates of Investment Value or Value in Use, unless great care is taken to assure that a Market Value estimate is obtained. For the Valuer to report a Market Value estimate resulting from such an analysis, all inputs and assumptions must reflect available market evidence and current expectations and perceptions of market participants, in accordance with GN 9.
- 5.3.3 The Market Value of *Extractive Industries* properties and business are usually not the value of the sum of their parts or component values. For example, the Market Value of a Mineral property owned in fee simple is rarely the sum of the independent values of the Minerals, land surface, and plant and equipment. Similar situations may occur in the *Petroleum Industry*.
- 5.3.4 In both Mining and Petroleum operations there may be separate ownership rights over component parts of the enterprise, such as the *Reserve, Royalties*, and plant and equipment. There may be a requirement to provide valuations of the separate ownership interests
- 5.3.5 **Material data that will be relied on in developing the value estimate should be verified for accuracy whenever reasonable to do so. This may include selective review of drill hole information and samples and related analytical data for the subject property, and confirmation of published information pertaining to transactions on other properties.**
- 5.3.6 **If there is more than one estimate of the quantity and quality of *Resources* and *Reserves* for the subject property, the Valuer shall decide which estimates**

it is appropriate to disclose and discuss, and which estimate to use as the basis in the Valuation process, and shall state the reasons.

5.3.7 The Valuer shall take account of, and make reference to other matters that have a material impact on the Valuation. These may include:

- the status of tenements, rights and other interests;
- all Mineral or Petroleum deposits within the boundaries of the tenures or rights;
- access to markets and the quality and quantity of product that can be sold;
- services and infrastructure, and any toll arrangements, fees or liabilities related thereto;
- environmental assessments and rehabilitation liabilities;
- any Native Title aspects;
- capital and operating costs;
- timing and completion of capital projects;
- residual value estimates;
- material agreements and statutory/legal requirements;
- taxation and *Royalties*;
- liabilities and financial exposures;
- site rehabilitation, reclamation and closure costs;
- any other aspect that has a material bearing on the Valuation.

5.4 Disclosure in Extractive Industries Valuation Reports

5.4.1 **The Valuation Report shall disclose the name, professional qualifications and relevant industry experience of the Valuer, and other *Technical Expert(s)* whose *Technical Assessment* has been relied upon to support the Valuation.**

5.4.2 **The Valuation Report should be supported by disclosure of relevant Extractive Industries Codes, Standards or Rules of Practice applicable to the Valuation and supporting *Technical Assessment*.**

5.4.3 **Relevant technical information supporting the Valuation, including estimates of *Resources* and *Reserves*, for the property(s) being valued shall be disclosed and discussed in a *Technical Assessment*. Maps, geological sections, diagrams and photographs shall be included if possible to aid the communication of information.**

5.4.4 **The Valuation Report shall disclose whether or not the entity employing/retaining the Valuer, or the owner of the subject asset or its operating management, has provided the Valuer with a statement that all available data and information requested by the Valuer or otherwise relevant to the Valuation has been supplied to the Valuer.**

6.0 Effective Date

6.1 This International Valuation Guidance Note became effective on