



ASX Listing Rules Review Issues Paper: Reserves and Resources Disclosure Rules for Mining and Oil & Gas Companies

ASX Public Consultation

5 October 2011

Table of Contents

Introduction.....	5
The Australian Listed Resources Sector	6
Guiding principles for the review	7
Contents of this Consultation Paper	7
Part A: Mining Company Mineral Resources and Ore Reserves Reporting.....	9
Executive Summary	10
Background.....	12
Current regulatory arrangements	12
Overview of reporting regimes in other jurisdictions.....	14
Canadian reporting regime	14
South African reporting regime	16
Key Issues for Review.....	17
Issue 1: Disclosure of Exploration Results	17
Current requirements.....	17
Requirements in other relevant jurisdictions.....	18
Possible option to facilitate greater disclosure of exploration information	18
Consultation questions	19
Issue 2: Disclosure of exploration targets.....	20
Current requirements.....	20
Requirements in other relevant jurisdictions.....	21
Possible option to improve the disclosure of exploration targets	21
Consultation questions	22
Issue 3: Disclosure of key assumptions underpinning an initial, or an materially upgraded, Mineral Resource and Ore Reserve estimate	23
Current requirements.....	24
Possible options to facilitate greater disclosure of key assumptions	26
Consultation questions	29
Issue 4: Minimum level of study for an initial Ore Reserve estimate	31
Current requirements.....	31
Requirements in other relevant jurisdictions.....	31
Proposal to introduce a minimum level of study requirement	32
Consultation question	33
Issue 5: Disclosure of production targets	34
Current requirements.....	34

Requirements in other relevant jurisdictions	35
Possible options to improve disclosure practices in relation to production targets and forecast financial information derived from production targets	36
Consultation questions	39
Issue 6: Annual reporting and reconciliation of Mineral Resources and Ore Reserves	40
Current requirements	40
Requirements in other relevant jurisdictions	40
Possible options to facilitate improved annual reporting of Mineral Resources and Ore Reserves	41
Consultation questions	42
Part B: Oil and Gas Company Petroleum Reserves and Resources Reporting	43
Executive Summary	44
Background	46
Current regulatory arrangements	46
Previous proposal for hydrocarbon reporting requirements under the Listing Rules (2007)	47
Overview of reporting regimes in other jurisdictions	48
Canadian reporting regime	48
US SEC reporting regime	49
SPE-PRMS	51
Key Issues for Review	54
Issue 1: Reserves and Resources definitions & a common classification system	54
Current requirements	54
Requirements in other relevant jurisdictions	55
SPE-PRMS	55
Proposal to facilitate greater consistency in reserves and resources classification	57
Consultation questions	58
Issue 2: General reporting requirements applicable to the reporting of petroleum resources	59
Current requirements	59
Requirements in other relevant jurisdictions	59
Proposals for updating the general reporting requirements applicable to petroleum reserves and other petroleum resources	60
Consultation questions	62
Issue 3: Annual Reserves and Resources Reporting	64
Current requirements	64
Requirements in other relevant jurisdictions	64
Proposal for annual reserves and resources reporting	65
Consultation questions	66
Issue 4: Disclosure of drilling progress and exploration information	67
Current requirements	67
Requirements in other relevant jurisdictions	68

Proposal to update the requirements for reporting on exploration activities & results	68
Consultation questions	69
Issue 5: Disclosure of key assumptions underpinning reserve & resource estimates	71
Current requirements.....	71
Requirements in other relevant jurisdictions.....	71
Options for facilitating greater disclosure of key assumptions and information	71
Consultation questions	73
Issue 6: Disclosure of production targets	75
Requirements in other relevant jurisdictions.....	75
Possible option to improve disclosure practices in relation to production targets and related forecast financial information.....	76
Consultation questions	77
Issue 7: Qualified reserves and resources evaluator requirements.....	78
Current requirements.....	78
Requirements in other relevant jurisdictions.....	78
Proposal to update the requirements for a qualified reserves and resources evaluator	79
Consultation questions	80

Introduction

1. Greater stakeholder interest in improving standards of public reporting of reserves, resources and exploration information and the evolution of reporting standards that has been witnessed globally over the last decade or so, is the main driver for examining the opportunities for enhancing disclosure by listed mining and oil and gas companies in this review.
2. In response to the large increase in demand for (and the prices of) key Australian export commodities, significant investments in expanding the capacity of the mining and oil and gas industries to supply such commodities is in the pipeline. The RBA estimates that mining sector¹ capital investment has increased from 2 to 4 per cent of GDP over the last 25 years and that mining sector investment could further increase by another 1-2 per cent of GDP over the next couple of years. If the additional investment projects that are currently planned are realised over the next few years, the level of capital investment in the resources sector would represent, by far, the largest such capital expenditure in the sector in Australia's modern history².
3. To fund such capital investment, mining and oil and gas companies will need to compete not only with other mining and oil and gas companies, but with all public companies in other industries that are seeking funds in capital markets. Communicating adequately with investors about the most significant assets and the source of future cash flows of most mining and oil and gas companies – reserves and resources – is integral to accessing capital to finance such investment. By seeking to address any weaknesses in the public reporting of reserves, resources and exploration information in the Australian market and by seeking to ensure that the reporting requirements under the ASX Listing Rules (Listing Rules) continue to represent international best reporting practice, this review aims to facilitate improvements in listed mining and oil and gas companies' access to, and cost of, capital.
4. One of the key findings to come out of the Extractive Activities Research Project undertaken by the International Accounting Standards Board (IASB) is that the most important information about a company involved in extractive activities is that relating to the quantity and quality of the minerals or petroleum reserves and resources under the control of the company.³ A user survey undertaken by the Extractive Activities Research Project in 2007 to better understand the information needs of analysts specialising in mineral and oil and gas companies also found that analysts expressed very limited interest in these companies either placing a valuation of their resources and reserves on their balance sheets or disclosing such a valuation more generally. Instead, it was found that analysts had a preference for greater and improved disclosure of the key valuation inputs, such as, resource and reserve estimates (volumes), production schedules and capital and operating expenses, to provide a better basis for company valuation⁴.
5. In the mining industry, the JORC Code and the Listing Rules have played a significant role in addressing the information asymmetry related to Mineral Resources and Ore Reserves and have provided for greater consistency and confidence in the public reporting of these important assets by listed mining companies. In light of the globalisation of the mining industry and the rapid pace of change in the reporting requirements applicable to Mineral Resources and Ore Reserves that has occurred around the world over the last decade, it is both timely and important for the reporting requirements under the Listing Rules to be reviewed to ensure that they continue to respond to investor and listed company stakeholder needs.
6. In relation to the reporting of petroleum reserves and other petroleum resources by listed oil and gas companies, there is a considerable opportunity to update the reporting requirements under the Listing Rules to take account of recent developments in international reporting standards and practices. This includes the adoption of standardised technical definitions and a comprehensive petroleum resource classification system to underpin the public reporting of petroleum reserves and other petroleum resources.

¹ The 'mining sector' as defined by the RBA for the purpose of these statistics also captures the upstream activities of oil and gas companies.

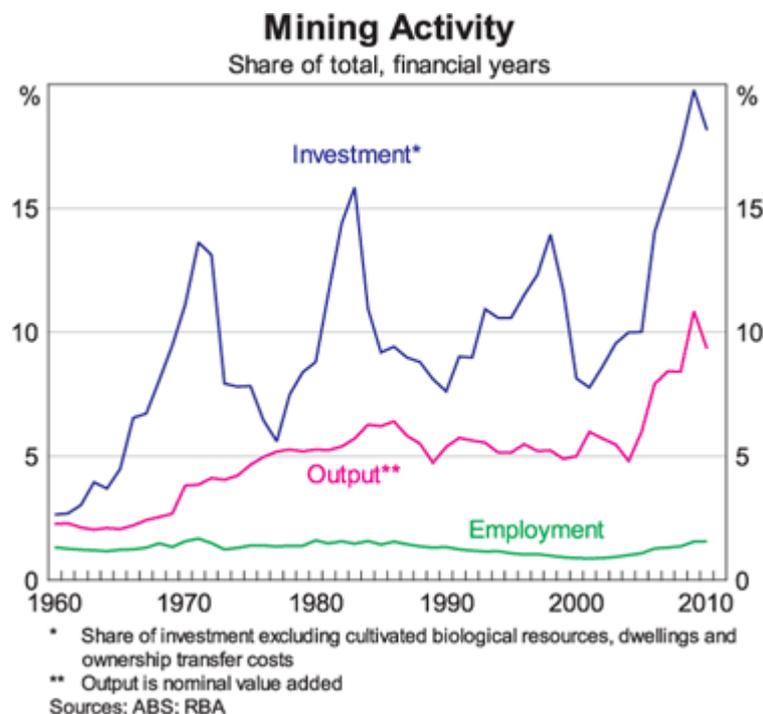
² Stevens, Glenn (2011), 'The Resources Boom' Remarks at the Victoria University Public Conference on The Resources Boom: Understanding National and Regional Implications, Melbourne.

³ IASB (2010), 'Extractive Activities' Discussion Paper DP/2010/1.

⁴ IASB Staff Paper for the Extractive Activities Research Project 'Summary of findings of 2007 user survey' for the IASB Board Meeting of 19 September 2008.

The Australian Listed Resources Sector

7. The metals and mining industry is the largest industry group amongst ASX listed companies by number of companies listed with 830 companies involved in mineral exploration, development and production. The Australian listed oil and gas industry is significantly smaller with 130 upstream oil and gas companies listed on ASX. By number, listed mining and oil and gas companies represent approximately 45 per cent of all ASX listed companies.
8. As at 31 August 2011, the metals and mining industry and the oil and gas industry had market capitalisations of approximately \$365 billion and \$78 billion respectively. Combined, listed mining and oil and gas companies represent approximately 32 per cent of the total listed equity market capitalisation.
9. Australian listed resource companies include several of the world's largest diversified resource companies, including BHP Billiton and Rio Tinto and many potential future industry leaders in the mid-tier producers and junior explorers.
10. The equity market has been the primary external source of finance to fund the capital investment required for the development of mineral and oil and gas projects or to fund higher risk exploration to locate new deposits and petroleum accumulations. Investors in the Australian market have supported over 400 new junior resource company floats over the last 5 years.
11. During 2010, investment in the mining and oil and gas industries accounted for nearly 20 per cent of total investment in Australia. This share of total investment in the economy is significantly higher than that recorded in previous decades experiencing mining booms. See the graph below.



12. The RBA has also indicated that, based on Australian Bureau of Statistics data, firms' investment plans imply an increase in investment spending in the mining sector of over 50 per cent in 2011/12, which, if it did occur, would represent over a quarter of all investment spending in the Australian economy over the course of the financial year⁵.

⁵ Lowe, Philip (2011), 'Changing Relative Prices and the Structure of the Australian Economy' Address to the Australian Industry Group 11th Annual Economic Forum, Sydney.

Guiding principles for the review

13. The review, and any proposals developed to amend the Listing Rules to achieve the regulatory objectives, will be guided by the following principles:
 - 13.1. greater international alignment and harmonisation should be pursued where feasible and appropriate given the domestic regulatory framework;
 - 13.2. greater alignment with the best practice reporting requirements in other developed mining and oil and gas markets would reduce the compliance costs associated with different or inconsistent reporting requirements for companies operating in and dual listed in these markets. It would also help ensure that ASX continues to operate an internationally competitive market for mining and oil and gas companies to list and raise capital;
 - 13.3. the compliance burden for listed mining and oil and gas companies is an important consideration and proposals that achieve the regulatory objectives with the lowest compliance burden should be pursued to ensure regulatory efficiency;
 - 13.4. the need to protect commercially sensitive information to ensure that existing shareholders are not disadvantaged by a company complying with the reporting requirements;
 - 13.5. the importance of broadly maintaining a principles and disclosure based approach to the reporting requirements in recognition of the fact that they apply across commodities, throughout the different stages of development of a project from exploration to production and that they apply to a range of different types of companies from junior explorers to globally diversified producers; and
 - 13.6. the importance of consulting with all key stakeholders to ensure that the review addresses the main needs and concerns of investors and listed mining and oil and gas companies and that any new reporting requirements that are developed are both efficient and effective.

Contents of this Consultation Paper

14. This paper is divided into two parts.
15. Part A examines the scope for enhancing disclosure of exploration information, Mineral Resources, Ore Reserves and associated production targets by reference to evolving international reporting requirements and emerging reporting issues that have been identified in the Australian market. The review aims to ensure that listed mining company Mineral Resources and Ore Reserves reporting continues to represent international best reporting practice and that the disclosure facilitated by the Listing Rules contributes to the ability of mining companies listed on ASX to compete for and gain access to capital in the Australian and global capital markets.
16. In preparing Part A of this paper, ASX has benefited enormously from the very active contribution of members of the Joint Ore Reserves Committee (JORC) of the Australasian Institute of Mining and Metallurgy (the AusIMM), Australian Institute of Geoscientists and Minerals Council of Australia, which are the sponsors of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code). Whilst the proposals are those of ASX alone, the issues canvassed in this paper have been the subject of extensive discussion with JORC over an extended period and more intensively with a working group of JORC over the last 12 months. ASX records its appreciation for that assistance. It is envisaged that ASX and the JORC professional bodies will give further consideration as to how best to seamlessly integrate revised Code provisions into the standard listing rules so as to produce an appropriate disclosure framework.
17. Part B examines the scope for promoting greater consistency and confidence in the public reporting of petroleum reserves, other petroleum resources and related production targets by adopting standardised technical definitions, a comprehensive petroleum resources classification system and updated general reporting requirements in the Listing Rules. The review aims to ensure that petroleum reserves and other petroleum

resources reporting is aligned with international best reporting practice and that the disclosure facilitated by the Listing Rules contributes to the ability of oil and gas companies listed on the ASX to access capital in the Australian and global capital markets.

Invitation to comment

ASX is seeking comments on the key reporting issues and the options for improving the public reporting of exploration information, resources and reserves, and production targets by listed mining and oil and gas companies examined in this paper by 27 January 2012. Submissions should be forwarded to:

Regulatory and Public Policy
ASX Limited
20 Bridge Street
Sydney NSW 2000

Or

diane.lewis@asx.com.au

ASX prefers to receive comments in electronic form.

For enquiries, please call Diane Lewis on +61 2 9227 0154.

Confidentiality

It will be assumed that submissions are not confidential and may be made publicly available. If you would like your submission, or any part of it, to be treated as 'confidential' please indicate this clearly in your submission.

Part A: Mining Company Mineral Resources and Ore Reserves Reporting

Executive Summary

18. ASX has commenced a comprehensive review of the requirements for the public reporting of exploration information, Mineral Resources, Ore Reserves⁶ and production targets by listed mining companies under its Listing Rules, which incorporates the *Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves* (JORC Code).
19. The primary objective of the review is to enhance the quality of reporting of information relevant to exploration programmes, Mineral Resource and Ore Reserve estimates and any associated production targets to promote greater efficiency in the capital formation process for listed mining exploration and production companies. More specifically, the review is aimed at ensuring that the reporting requirements under the Listing Rules:
 - 19.1. promote the disclosure of sufficient information relevant to Exploration Results and the key technical parameters and other key assumptions underlying Mineral Resource and Ore Reserve estimates for investors and their advisors to make informed investment decisions;
 - 19.2. promote balanced disclosure of Exploration Results, Mineral Resources and Ore Reserves to enable investors and their advisors to understand both the significance of the results and the estimates reported, but also the risks and the limitations of the data;
 - 19.3. reduce the potential for the disclosure of information that may confuse or mislead investors and their advisors, in particular, in relation to the disclosure of exploration targets and production targets or forecast financial information derived from production targets based on mineralisation with a low level of geological confidence;
 - 19.4. promote greater consistency in the reporting of Mineral Resources and Ore Reserves and provide ease of comparison between projects; and
 - 19.5. promote confidence in the reported Mineral Resource and Ore Reserve estimates.
20. In seeking to achieve the regulatory objectives of enhancing disclosure and promoting greater efficiency in the capital formation process for listed mining companies, the review is focused on ensuring the adequacy of information reported such that the regulatory burden is proportionate to the issues being addressed and unintended consequences are avoided. The review is also seeking to ensure that any proposals would be of net-benefit by taking into account compliance costs for issuers and focussing on the disclosure of information that will be useful to investors at a time when it would be most relevant for the purpose of evaluating and assessing Exploration Results, Mineral Resource and Ore Reserve estimates, such as, when they are initially disclosed to the market.
21. The key issues examined in this paper are:
 - 21.1. **Disclosure of Exploration Results** – whether particular drill-hole and intercept information should be disclosed when an issuer is reporting Exploration Results to improve the ability of investors to assess the significance of those results (see pages 17-19);
 - 21.2. **Disclosure of exploration targets** – whether a stricter application of the current requirement for proximate cautionary statements would sufficiently mitigate the risks of investors being misled by the reporting of exploration target ranges (see pages 20-22);
 - 21.3. **Disclosure of key assumptions underpinning Mineral Resource and Ore Reserve estimates** – whether a requirement for the key assumptions made and a summary of information relating to a prescribed subset of criteria from Table 1 of the JORC Code to be disclosed to support the disclosure of initial, or materially changed, Mineral Resource and Ore Reserve estimates would

⁶ Exploration Results, Mineral Resources (including the Measured, Indicated and Inferred categories of Mineral Resources) and Ore Reserves (including the Proved and Probable categories of Ore Reserves) are defined terms in the JORC Code. See pages 13-14 for the meaning of these terms.

provide for greater disclosure of information to support reported estimates across the industry and facilitate due diligence assessments by investors and their advisers. Consideration is given to the introduction of a minimum reporting requirement for the disclosure of information relating to the following Table 1 criteria - geology, sampling techniques, quality of assay data and laboratory tests, drilling techniques, logging, data spacing and distribution, estimation and modelling techniques, cut-off parameters, mining factors or assumptions, metallurgical factors or assumptions, and cost and revenue factors - in addition to the current obligation to discuss all other criteria from Table 1 that are assessed by the competent person as being material to understanding the reported estimates (see pages 23-30);

21.4. **Defining the level of study underpinning an initial Ore Reserve estimate** – whether the completion of at least a preliminary feasibility study to support an initial Ore Reserve determination should be required, in order to provide for greater international harmonisation with respect to the level of study that must be satisfied in converting Mineral Resources to Ore Reserves (see pages 31-33);

21.5. **Disclosure of production targets** – whether, when reporting a production target or forecast financial information derived from a production target, an issuer should be required to:

21.5.1. disclose the key assumptions underpinning the production target;

21.5.2. disclose the key contingencies and risks in converting any Measured or Indicated Mineral Resources into an Ore Reserve or putting any Measured or Indicated Mineral Resources into production in order for the issuer to achieve the production target; and

21.5.3. disclose the proportion of the production target based on Inferred Mineral Resources and/or an exploration target and include a proximate cautionary statement highlighting the low level of geological confidence of these estimates and the implications for realising the production target,

to ensure that investors are provided with information to assess the risks, reliability and basis for the reported production target or forecast financial information derived from a production target (see pages 34-39);

21.6. **Annual reporting and Reconciliation of Mineral Resources and Ore Reserves** – whether issuers should be required to report the results of their annual review of their Mineral Resources and Ore Reserves and their aggregated Mineral Resources and Ore Reserves holdings, together with a reconciliation with the estimates from the previous year, in their annual report or a separate document released concurrently with, and cross-referenced in, the annual report to provide for additional transparency and investor accessibility of this information (see pages 40-42); and

22. This paper provides a concept release of a range of possible options for enhancing disclosure by listed mining companies and seeks feedback from stakeholders on the expected benefits, costs and any unintended consequences of the various options. While questions have been included in the main section of the paper setting out a range of possible options, any other feedback considered relevant to this review is welcome.

23. Following the receipt of submissions in response to this paper, ASX will analyse the feedback received and discuss with the JORC Committee and the professional bodies how best to seamlessly integrate revised JORC Code provisions into the standard listing rules so as to produce an appropriate disclosure framework. The proposed amendments will then be made publicly available for a further round of stakeholder input prior to being submitted to ASIC for its review and advice to the relevant Minister as to the consistency of the proposed changes with the objectives of the listing rules.

Background

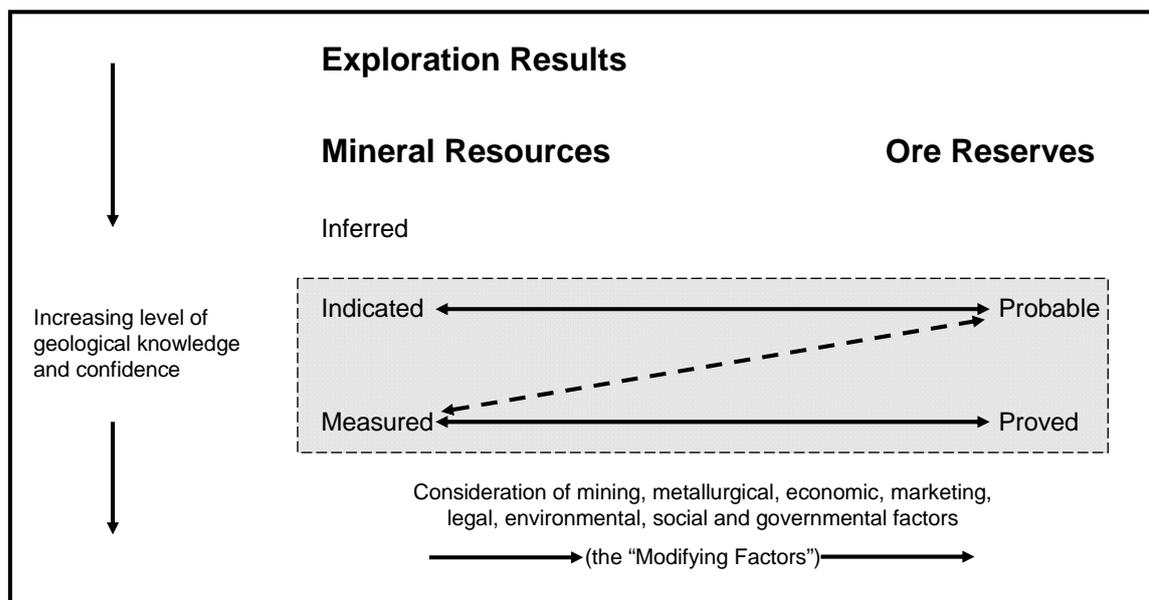
Current regulatory arrangements

24. The main listing rule requirements specific to listed mining companies are set out in Chapter 5 of the Listing Rules.
25. Listed mining production and exploration companies are required under Chapter 5 of the Listing Rules to release specific quarterly reports to the market on ASX's company announcements platform. Mining production and exploration companies are required to report on their mining production, development and exploration activities and provide a brief summary of the expenditure incurred on these activities over the quarter. Mining exploration companies are also required to release to the market a quarterly cash flow report in accordance with Appendix 5B of the Listing Rules. In the quarterly cash flow report, mining exploration companies are required to provide the details of their cash flows for the quarter and provide the details of estimated cash outflows for the next quarter in relation to expected exploration and evaluation, development, production and administration expenses.
26. Listed mining exploration companies are also required under Listing Rule 4.10.15 to provide a list of its interests in mining tenements, the location of the tenements and the interest held in each tenement in their annual reports.
27. All listed mining companies or other listed companies with an interest in a mining tenement are also required under Chapter 5 of the Listing Rules (Listing Rule 5.6) to comply with the JORC Code when reporting their Exploration Results, Mineral Resources and Ore Reserves⁷. The JORC Code forms part of the Listing Rules, having been set out as Appendix 5A of the Listing Rules.
28. The JORC Code was first published and incorporated in the Listing Rules in 1989. It has been revised several times, with the latest version published in 2004. Three professional and industry organisations sponsor the JORC Code and make up the membership of the Joint Ore Reserves Committee (JORC) - The Australasian Institute of Mining and Metallurgy (AusIMM), Australian Institute of Geoscientists (AIG) and Minerals Council of Australia (MCA). The AusIMM and AIG have also formally adopted the JORC Code and made it binding on their members.
29. The JORC Code sets out the minimum standards, recommendations and guidelines for the public reporting of Exploration Results, Mineral Resources and Ore Reserves. The JORC Code also provides a system for the classification of tonnage and grade of estimates of Mineral Resources and Ore Reserves according to different levels of geological confidence and different degrees of technical and economic evaluation.
30. While a public report concerning a listed company's Exploration Results, Mineral Resources or Ore Reserves is the responsibility of the company, any such report must be based on and fairly reflect the information and supporting documentation prepared by a Competent Person(s). Any public report concerning Exploration Results, Mineral Resources and Ore Reserves must be issued with the written consent of the Competent Person with respect to the form and context in which the results and estimates are represented in the disclosure. The name of the Competent Person and the name of their employer must also be disclosed.
31. The JORC Code specifies the qualifications and the experience required to be a Competent Person and provides a summary list of the main criteria – Table 1: Check List of Assessment and Reporting Criteria – which the Competent Person should consider in preparing public reports. However, the JORC Code does not regulate the procedures used by Competent Persons to estimate and classify Mineral Resources or Ore Reserves. This is primarily because the JORC Code is principles-based and is designed to apply across mineral commodities, accommodate the circumstances of different projects and apply throughout the different stages of development of a project from exploration to production.
32. The JORC Code is applicable to all solid minerals including diamonds, other gemstones, industrial minerals and coal. Mineral deposits can vary significantly from project to project - they can be very large scale involving billions of tonnes or small scale involving hundreds of tonnes. Deposits can have continuous mineralisation or there can be an erratic distribution of mineralisation. Some deposits may have mineralisation at a high grade and others

⁷ The JORC Code is available at: http://www.jorc.org/pdf/jorc2004print_v2.pdf and http://www.asxgroup.com.au/media/PDFs/Appendix_05A.DOC

with a low grade and the mineralisation may be deep or at surface. The larger the scale and less erratic the deposit, the wider the drill hole spacing required to confidently estimate Mineral Resources and Ore Reserves. Related to this, the Competent Person will determine the appropriate mining method depending on the type of mineral deposit. The main mining methods are surface mining (e.g. open cut, strip mining, quarry), underground mining (e.g. black caving, open stoping, cut-and-fill, hand held) and in-situ leaching.

33. Figure 1 from the JORC Code reproduced below sets out the framework for classifying the different categories of Mineral Resources and Ore Reserves according to the level of geological confidence and the application of technical and economic considerations.



34. A **Mineral Resource**, as defined in Clause 19 of the JORC Code, " is a concentration or occurrence of material of intrinsic economic interest in or on the Earth's crust in such form, quality 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"⁸.

34.1. An **Inferred Mineral Resource**, as defined in Clause 20 of the JORC Code, "is that part of a Mineral Resource for which the tonnage, grade and mineral content can be estimated with a low level of confidence. It is inferred from geological evidence and assumed but not verified geological and/or grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes which may be limited or of uncertain quality and reliability."⁹

34.2. An **Indicated Mineral Resource**, as defined in Clause 21 of the JORC Code, "is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a reasonable level of confidence. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological and/or grade continuity but are spaced closely enough for continuity to be assumed."¹⁰

⁸ Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy (AusIMM), Australian Institute of Geoscientists (AIG) and Minerals Council of Australia (2004), *Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves*, page 10.

⁹ *ibid*, page 11.

¹⁰ *ibid*, page 11.

- 34.3. A **Measured Mineral Resource**, as defined in Clause 22 of the JORC Code, "is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade, and mineral content can be estimated with a high level of confidence. It is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, workings and drill holes. The locations are spaced closely enough to confirm geological and grade continuity."¹¹
35. An **Ore Reserve**, as defined in Clause 28 of the JORC Code, "is 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 and 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 could reasonably be justified. Ore Reserves are sub-divided in order of increasing confidence into Probable Ore Reserves and Proved Ore Reserves."¹²
- 35.1. A **Probable Ore Reserve**, as defined in Clause 29 of the JORC Code, "is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource."¹³ A Probable Ore Reserve has a lower level of confidence than a Proved Ore Reserve but is of sufficient quality to serve as the basis for a decision on the development of the deposit.
- 35.2. A **Proved Ore Reserve**, as defined in Clause 30 of the JORC Code, "is the economically mineable part of a Measured Mineral Resource."¹⁴ A Proved Ore Reserve represents the highest confidence category of reserve estimate. The style of mineralisation or other factors could mean that Proved Ore Reserves are not achievable in some deposits.
36. The definitions of the different categories of Mineral Resources and Ore Reserves provided above have been included to help readers understand the paper. However, for the complete definitions of these terms and to understand the context please see the JORC Code.

Overview of reporting regimes in other jurisdictions

37. The reporting regimes in the majority of major mining countries are generally based on reporting standards and codes similar to the JORC Code, which are referred to as the CRIRSCO family of standards and codes. The jurisdictions that have adopted CRIRSCO style reporting systems include Canada, South Africa, Chile, Philippines, Peru and the United Kingdom and Europe. In the United States, the Society of Manufacturing Engineers (SME) has prepared the SME Guide (this is also a CRIRSCO style reporting system). However, the Securities and Exchange Commission (SEC) in the United States requires that mining company reporting is in accordance with Industry Guide 7. It is worth noting here that the SEC disclosure rules only allow the reporting of Reserves and not Resources.
38. Greater alignment with the best practice reporting requirements in other developed mining markets would be expected to reduce the compliance costs associated with different or inconsistent reporting requirements for companies operating in and dual listed in these markets. The reporting regimes in Canada and South Africa, as the most developed and relevant reporting regimes, are discussed below and specific sections are referenced briefly for comparison in each of the sections examining the key issues.

Canadian reporting regime

39. The Canadian reporting regime for the disclosure of mineral exploration, development and production by listed mining companies is comprised of:

¹¹ *ibid*, page 11.

¹² *ibid*, page 14.

¹³ *ibid*, page 15.

¹⁴ *ibid*, page 15.

- 39.1. a suite of instruments implemented by the Canadian Securities Administrators (the Canadian equivalent of ASIC, comprising provincial and territorial regulators):
 - 39.1.1. National Instrument 43-101 *Standards of Disclosure for Mineral Projects* (NI 43-101), which sets out the mineral project disclosure and filing rules that must be followed¹⁵;
 - 39.1.2. Companion Policy 43-101CP (Companion Policy) to National Instrument 43-101, which sets out how certain provisions of NI 43-101 will be interpreted and applied¹⁶; and
 - 39.1.3. Form 43-101 *Technical Report* (Form 43-101), which sets out specific requirements for the preparation and content of a Technical Report that must be filed with the securities regulators¹⁷.
 - 39.2. the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) *Definition Standards - For Mineral Resources and Ore Reserves 2010* (CIM Definition Standards) and the CIM *Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines 2003* (CIM Best Practice Guidelines)¹⁸; and
 - 39.3. the Toronto Venture Exchange Listing Rules Appendix 3F *Mining Standards Guidelines* and the Toronto Stock Exchange Listing Rules Appendix B *Disclosure of Standards for Companies Engaged in Mineral Exploration, Development and Production*¹⁹.
40. NI 43-101 applies to all companies listed in Canada with an interest in a mineral property. However, many of the requirements in NI 43-101 only apply to a company's material mineral properties. NI 43-101 includes Mineral Resource and Mineral Reserve (equivalent to Ore Reserves under the JORC Code) definitions and categories substantively similar to that in the JORC Code and it also requires that each category of Mineral Resources and Mineral Reserves are reported separately.
 41. NI 43-101 includes requirements for the filing of Technical Reports on material properties to support other formal disclosure documentation in certain circumstances, including for particular significant transactions, particular securities offerings and reporting for the first time of Mineral Resources and Mineral Reserves. Form 43-101 must be followed in preparing such Technical Reports.
 42. Similar to the situation under the JORC Code and the Listing Rules, all disclosure of scientific or technical information must be based upon information prepared by or under the supervision of a Qualified Person (broadly equivalent to a Competent Person under the JORC Code) and all written disclosure of such information on a material mineral property must include the name and the relationship to the company of the Qualified Person.
 43. Under NI 43-101 there are a range of circumstances that trigger the filing of a Technical Report prepared by a Qualified Person that is independent from the issuer.
 44. NI 43-101 also prohibits certain disclosures involving low confidence mineralisation that cannot be classified as a Mineral Resource or a Mineral Reserve.
 45. The Canadian Securities Administrators (CSA) published draft amendments to NI 43-101, the Companion Policy and Form 43-101 in April 2010 seeking comments from stakeholders on the proposals. On 8 April 2011, CSA released the revised NI 43-101, Companion Policy and Form 43-101, which came into force on 30 June 2011. The CSA has indicated the amendments to the rules are aimed at:
 - 45.1. eliminating or reducing the scope of certain reporting requirements to reduce the compliance burden;

¹⁵ NI 43-101 *Standards of Disclosure for Mineral Projects* is available at: [http://www.bsc.bc.ca/uploadedFiles/securitieslaw/policy4/43-101_\[NI\].pdf](http://www.bsc.bc.ca/uploadedFiles/securitieslaw/policy4/43-101_[NI].pdf)

¹⁶ Companion Policy 43-101CP is available at: [http://www.bsc.bc.ca/uploadedFiles/securitieslaw/policy4/43-101CP\[CP\].pdf](http://www.bsc.bc.ca/uploadedFiles/securitieslaw/policy4/43-101CP[CP].pdf)

¹⁷ Form 43-101 *Technical Report* is available at: [http://www.bsc.bc.ca/uploadedFiles/securitieslaw/policy4/43-101F1\[F\].pdf](http://www.bsc.bc.ca/uploadedFiles/securitieslaw/policy4/43-101F1[F].pdf)

¹⁸ NI 43-101 incorporates by reference the definitions and categories of Mineral Resources and Ore Reserves and the Companion Policy indicates that the CIM Best Practice Guidelines should be followed when mineralisation is being classified. The CIM Definition Standards are available at http://www.cim.org/UserFiles/File/CIM_DEFINITON_STANDARDS_Nov_2010.pdf and the CIM Best Practice Guidelines are available at: <http://www.cim.org/committees/estimation2003.pdf>.

¹⁹ This paper focuses on the reporting requirements provided by NI 43-101 and associated instruments and the CIM Definition Standards and Best Practice Guidelines.

- 45.2. providing more flexibility to mining issuers and Qualified Persons in certain areas;
 - 45.3. providing more flexibility to accept new foreign professional associations and reporting codes as they are developed or evolve;
 - 45.4. reflecting changes in industry practice; and
 - 45.5. clarifying or correcting the unintended consequences that have arisen under the existing rules²⁰.
46. All references to NI 43-101, the Companion Policy and Form 43-101 in this paper will be in relation to those released on 8 April 2011.

South African reporting regime

47. The Johannesburg Stock Exchange (JSE) Listing Requirements set out the main disclosure requirements applicable to Minerals Companies and, in certain circumstances, non-Minerals Companies with substantial mineral assets that are listed or are seeking to list on the JSE. Under the JSE Listing Requirements, Minerals Companies and non-Minerals Companies with significant mineral assets are required to file a Competent Persons Report and disclose the details of any direct or indirect beneficial interest that each director, Competent Person or Competent Valuator holds in the issuer when lodging pre-listing statements and to support other formal disclosure documentation required when undertaking significant transactions and particular securities offerings.
48. The JSE Listing Requirements prescribe the minimum content requirements for the Competent Persons Report. It also sets out the timetable for which Competent Persons Report must be submitted to the JSE for approval by the Readers Panel. The Readers Panel is a panel of experts established by the JSE to advise the JSE on the compliance of Competent Persons Reports (but not other public reports) with the Listing Requirements.
49. The JSE Listing Requirements incorporate by reference the South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves (the SAMREC Code) and the South African Code for the Reporting of Mineral Asset Valuation (the SAMVAL Code)²¹. Competent Persons Reports and announcements by Mineral Companies and non-Mineral Companies in respect of substantial mineral assets must comply with the SAMREC Code insofar as they report or refer to exploration results, Mineral Resources and Mineral Reserves. These disclosures must also comply with the SAMVAL Code when reporting or referring to a valuation of mineral assets. The disclosures are also required to include the consent and details of the Competent Person/Valuator.
50. The SAMREC Code is very similar to the JORC Code. The main differences between the two codes have been discussed under each of the key issues for review.

²⁰ Ontario Securities Commission. 'REPEAL AND REPLACEMENT OF NATIONAL INSTRUMENT 43-101 *STANDARDS FOR DISCLOSURE FOR MINERAL PROJECTS*, FORM 43-101F1 *TECHNICAL REPORT*, AND COMPANION POLICY 43-101CP' *Supplement to the OSC Bulletin*, Volume 34, Issue 14 (Supp-2), 2011, page 1.

²¹ The SAMREC Code is available at: <http://www.samcode.co.za/downloads/SAMREC2009.pdf>

Key Issues for Review

Issue 1: Disclosure of Exploration Results

51. Drill hole and intercept information is not consistently disclosed across the industry when Exploration Results are reported to the market.
52. The level of geoscientific confidence associated with Exploration Results in relation to mineralisation not classified as a Mineral Resource or an Ore Reserve would not generally be sufficient for the purpose of estimating the economic value of what has been identified. However, the disclosure of certain data and information related to mineralisation widths and drill hole intercepts generated by exploration programmes is useful for investors seeking to understand the significance of the Exploration Results and assess the likelihood that a Mineral Resource may be identified following further work. In addition, the identification of mineral deposits is one of the main drivers of value creation for listed junior explorers.
53. While the disclosure of drill hole and intercept information should generally be reported under Table 1 of the JORC Code through the application of the principles of transparency and materiality, the JORC Code does not explicitly set out that specific drill hole and intercept data - the drill hole location, azimuth, the dip, the down hole widths and depths and the end of hole - should be disclosed when Exploration Results are reported. The lack of specific guidance and clarity around what drill hole and intercept information should be disclosed when Exploration Results are reported has led to a significant variation in the information that is disclosed to the market across the industry. This is likely to be largely the result of issuers adopting differing interpretations of the transparency and materiality principles underpinning Table 1, with some giving insufficient weight to the importance of the disclosure of this information for investors and their advisers seeking to assess the significance of the Exploration Results.

Current requirements

54. Clause 16 of the JORC Code defines Exploration Results as including data and information generated by exploration programmes that may be of use to investors. It provides that Exploration Results may or may not be part of a formal declaration of Mineral Resources or Ore Reserves and indicates that the reporting of Exploration Results is common in the early stages of a project when the quantity of data available is generally not sufficient to allow any reasonable estimates of Mineral Resources.
55. Clause 17 of the JORC Code requires that public reports of Exploration Results must contain sufficient information to allow a considered and balanced judgement of the significance of the results. It prescribes that public reporting of Exploration Results must include relevant information, such as: exploration context; type and method of sampling; sampling intervals and methods; relevant sample locations; distribution, dimensions and relative location of all relevant assay data; data aggregation methods; land tenure status; and any other information relevant to the criteria listed in Table 1 that is material to the assessment.
56. Additionally, Clause 17 sets out a number of requirements in relation to how assay and analytical results are reported to minimise the potential for misleading investors through selective disclosure of isolated assays and drill holes. It also requires that an appropriate qualification must be included in the disclosure of Exploration Results if the true widths of mineralisation are not reported.
57. Table 1 includes a number of criteria relevant to the reporting of Exploration Results that would capture drill-hole and intercept information. In particular, the criterion 'Diagrams' suggests that tabulations of intercepts should be reported for any material discovery if such diagrams would significantly clarify the report. However, Table 1 does not identify specific drill hole and intercept information that should generally be disclosed when reporting Exploration Results.

Requirements in other relevant jurisdictions

Canadian requirements

58. Under NI 43-101, an issuer that discloses exploration information²² about a mineral project on a material property is required to disclose a summary of: the material results of surveys and investigations regarding the property; the interpretation of the exploration information; and the quality assurance program and quality control measures applied to the work undertaken. NI 43-101 also requires that where an issuer discloses sample or analytical or testing results on a material property, it must disclose the following:
- 58.1. the location and type of the samples;
 - 58.2. the location, azimuth, and dip of the drill holes and the depth of the sample intervals;
 - 58.3. a summary of the relevant analytical values, widths, and to the extent known, the true widths of the mineralised zone;
 - 58.4. the results of any significantly higher grade intervals within a lower grade intersection;
 - 58.5. any drilling, sampling, recovery, or other factors that could materially affect the accuracy or reliability of the data; and
 - 58.6. a summary description of the type of analytical or testing procedures utilised, sample size, the name and location of each analytical or testing laboratory used, and any relationship of the laboratory to the issuer²³.
59. In fulfilling their obligations to disclose a Technical Report, issuers are required under Form 43-101F1 to disclose specific drill-hole and intercept information (similar to that required under NI43-101 discussed in the paragraph above) when they are reporting on a property other than an advanced property.

South African requirements

60. The provisions in the SAMREC Code on the reporting of Exploration Results are broadly similar to the requirements set out in the relevant clauses of the JORC Code. However, the SAMREC Code is slightly less prescriptive than the JORC Code as it requires that the reporting of Exploration Results must include all relevant information, including the location of the deposit, but it does not set out a list of specific information that is required to be included in such public reports.
61. However, where an issuer is required to disclose a Competent Persons Report, the JSE Listing Requirements require matters included in Table 1 of the SAMREC Code to be mandatorily reported²⁴.

Possible option to facilitate greater disclosure of exploration information

Option 1A – Introduction of a requirement for the disclosure of key drill hole and intercept information

62. Under option 1A, a requirement would be introduced that explicitly requires that the following drill-hole and intercept information be disclosed when Exploration Results are reported:
- 62.1. the easting;

²² Under NI 43-101, exploration information is defined as “geological, geophysical, geochemical, sampling, drilling, trenching, analytical testing, assaying, mineralogy, metallurgical, and other similar information concerning a particular property that is derived from activities undertaken to locate, investigate, define, or delineate a mineral prospect or mineral deposit”.

²³ Section 3.3 National Instrument 43-101 *Standards of Disclosure For Mineral Projects*.

²⁴ Listing Requirement 12.8(a)(i) JSE Limited Listings Requirements.

- 62.2. the northing;
 - 62.3. the elevation;
 - 62.4. dip;
 - 62.5. azimuth;
 - 62.6. down hole width and depth; and
 - 62.7. the end of hole.
63. This is the preferred option because it clearly sets out the minimum reporting requirements and will facilitate consistent disclosure across the industry of drill-hole and intercept information that is generally considered material to understanding the significance of Exploration Results. If this proposal is implemented, the existing requirements for the information identified in Clause 17 and the information material to understanding the disclosed Exploration Results from Table 1 will continue to apply.
64. Implementation of this option would not be expected to involve significant compliance costs for issuers because this data would be included in internal documentation.

Consultation questions

- Q1. Do you agree that specific drill hole and intercept information, such as, the easting, northing, elevation, dip, azimuth, down hole width and depth, and the end of hole, is generally relevant and useful for the purpose of assessing the significance of Exploration Results and, as such, should be required to be disclosed when Exploration Results are publicly reported?
- Q2. Does information on the easting, northing, elevation dip, azimuth, down hole width and depth, and the end of hole capture the key information relating to drill-hole intercepts that should be disclosed when reporting Exploration Results?
- Q3. Are there cases where this information would not be applicable or relevant to the reporting of particular Exploration Results? If so, would it be more appropriate for the disclosure of this information to be specifically encouraged through guidance rather than be a mandatory reporting requirement?
- Q4. Should consideration also be given to requiring disclosure of a summary of the quality of sampling and the sub-sampling techniques and sample preparation?

Issue 2: Disclosure of exploration targets

65. It is common practice for a company to comment on and discuss its exploration in terms of a target size and type. Clause 18 and the concept of an 'exploration target' was introduced in the 2004 edition of the JORC Code to allow companies to discuss their exploration plans in public reports prior to a physical exploration programme being commenced. As such, an 'exploration target' for the purposes of Clause 18 was considered to be conceptual in nature, with the exploration results ultimately serving to confirm or deny its existence. Clause 18 provides for the reporting of an initial exploration target size in terms of the potential quantity and grade expressed as ranges. It was not intended to provide an opportunity for reporting preliminary low confidence estimates of tonnes and grade before there was sufficient data and confidence to report an Inferred Mineral Resource.
66. A number of issuers have inappropriately interpreted Clause 18 of the JORC Code as enabling them to report preliminary low confidence resource estimates based on initial drilling results or pre-existing historical wide spaced drilling conducted for other purposes (for example, coal occurrences in historical oil wells). In these circumstances, ASX Compliance has contacted the relevant issuer and requested a corrective disclosure that is in compliance with the Listing Rules as these estimates are clearly not capable of being classified by the Competent Person as Inferred Mineral Resources consistent with the JORC Code.
67. Clause 18 and in conjunction with parts of Clause 16 potentially also create some blurring or ambiguity with respect to the inability to report estimates of tonnage and grade of low confidence mineralisation that can't be classified as a Mineral Resource. The introduction of Clause 18 was not intended to provide for the ability to disclose estimates of low confidence mineralisation presented as an exploration target because there is a significant risk that investors and their advisers may not understand the limitations of the data.
68. In addition, the disclosure of information relating to exploration targets that does not include a clear cautionary statement that is consistent with Clause 18 and is proximate to the stated exploration target is not only in breach of the JORC Code, but could be construed as misleading.

Current requirements

69. Clause 18 of the JORC Code facilitates the disclosure of exploration targets in public reports subject to a number of reporting conditions being satisfied. The reporting conditions applicable to the disclosure of exploration targets under Clause 18 are:
- 69.1. any information disclosed relating to an exploration target must be expressed in a way that it cannot be misrepresented or misconstrued as an estimate of Mineral Resources or Ore Reserves, with the use of the terms resource(s) or reserve(s) prohibited in this context; and
 - 69.2. any statement referring to potential quantity and grade of the target must be expressed as ranges and must include:
 - 69.2.1. a detailed explanation of the basis for the statement; and
 - 69.2.2. a proximate statement that the potential quantity and grade is conceptual in nature, that there has been insufficient exploration to define a Mineral Resource and that it is uncertain if further exploration will result in the determination of a Mineral Resource.
70. Part of Clause 16 states that 'If a company reports Exploration Results in relation to mineralisation not classified as a Mineral Resource or an Ore Reserve, then estimates of tonnage and average grade must not be assigned to the mineralisation unless the situation is covered by Clause 18, and then only in accordance with the requirements of that clause'.
71. ASX issued Companies Update 03/08 on 18 March 2008 on the reporting requirements that must be satisfied when an issuer is reporting an exploration target under Clause 18. Companies Update 03/08 provided guidance on the requirement for the cautionary statement to be of the same prominence and proximate to the stated

exploration target. The Companies Update also indicated that cautionary statements must be included in presentation slides when they include exploration targets.

Requirements in other relevant jurisdictions

Canadian requirements

72. Under NI 43-101, an issuer is prohibited from disclosing the quality, grade, or metal or mineral content of a deposit that has not been classified as one of the mineral resource or mineral reserve categories. However, notwithstanding this prohibition, NI 43-101 does allow an issuer to disclose the potential quantity and grade, which must be expressed as ranges, of a target for further exploration subject to the disclosure including a cautionary statement (with equal prominence) and stating the basis on which the disclosed potential quantity and grade has been determined.
73. The Companion Policy specifies that, when an issuer reports an exploration target, a cautionary statement, of equal prominence to the rest of the disclosure, must be included each time the exploration target is disclosed. Equal prominence is interpreted to mean equal font size and type. The cautionary statement is also required to be located proximate to the disclosed exploration target, which is considered to mean the same paragraph or immediately following the reported exploration target.

South African requirements

74. The SAMREC Code requires that the same reporting conditions be satisfied for the disclosure of exploration targets as those included in Clause 18 of the JORC Code.

Possible option to improve the disclosure of exploration targets

Option 2A – Introduction of additional disclosure requirements for the reporting of exploration targets

75. Under option 2A, additional disclosure requirements would be introduced relating to the placement and prominence of the cautionary statement relative to the reported exploration target be introduced. It is proposed that the disclosure requirements relating to the public reporting of exploration targets provide greater clarity that the cautionary statement must be disclosed with the same prominence as, and in a proximate location to, the reported exploration target.
76. It is proposed that the 'same prominence' be defined as the same font type and size and 'proximate location' be defined as the cautionary statement being included in the same paragraph as or immediately following the reported exploration target. The new rules will also clarify that including a cautionary statement by way of a footnote or a general disclaimer elsewhere in the disclosure document will not satisfy the requirement.
77. Where the exploration target is reported in a headline statement, a footnote on the same page containing the cautionary statement would be acceptable. However, subsequent reporting and discussion of the exploration target in the body of the disclosure document would require the inclusion of a proximate cautionary statement of the same prominence.
78. It is also proposed that the disclosure rules provide greater clarity with regard to the disclosure of preliminary and low confidence estimates of mineralisation, including those estimates which are based on initial drilling or pre-existing historical drilling, being prohibited under the Listing Rules. In this regard, additional guidance may be required to make it clear that the purpose of Clause 18 in the JORC Code is to report an initial exploration target in terms of potential tonnage and grade, which are expressed as ranges and not as estimates of mineralisation, for further exploration from an established or a proposed exploration programme.

Consultation questions

- Q5. Are there any other reasons behind the non-compliance with Clause 18 that has been observed?
- Q6. Should consideration be given to prohibiting the public disclosure of exploration targets?
- Q7. Should consideration be given to prohibiting the reporting of the quantity of an exploration target in a headline statement?

Issue 3: Disclosure of key assumptions underpinning an initial, or a materially upgraded, Mineral Resource and Ore Reserve estimate

79. The key assumptions underpinning initial, or materially upgraded, Mineral Resource and Ore Reserve estimates reported to the market are not consistently disclosed across the industry. Some issuers provide considerable disclosure of the key assumptions when they disclose their initial, or materially upgraded, Mineral Resource and Ore Reserve estimates to the market. However, the principles-based approach is heavily reliant on competent persons faced with the same circumstances making broadly similar judgments as to which data and assumptions are material. There is considerable scope for public reports on Mineral Resource and Ore Reserve estimates with minimal information on the key assumptions and key technical information from Table 1 to be explained away by reference to the Competent Person's judgement that the information was not relevant or material to the understanding of the reported estimates.
80. More consistent disclosure of the key assumptions underpinning Mineral Resource and Ore Reserve estimates would facilitate due diligence assessments by analysts, institutional investors and the public and is important for these users to be able to understand and evaluate the nature and the extent of the main risks and uncertainties associated with the estimates and the relevant mining project. Greater disclosure across the industry of the key assumptions may also provide for greater scrutiny of the basis of Mineral Resource and Ore Reserve estimates and, as a result, may provide for additional discipline to the estimation and disclosure process. It is expected that this would translate into greater investor confidence in the reported estimates.
81. The way in which the disclosure of the key assumptions underpinning these estimates is currently dealt with under the JORC Code poses some challenges in facilitating greater disclosure of this information. Currently, the JORC Code sets out a 'Check List of Assessment and Reporting Criteria' in Table 1 and requires the Competent Person to consider the matters in Table 1 and report on those matters that may materially affect a reader's understanding or interpretation of the results or estimates being reported.
82. The guidance in the JORC Code clearly indicates that it is not necessary to report on every item in Table 1 and that what is reported is a matter of a materiality judgement by the Competent Person. While the JORC Code includes guidance which indicates that it is particularly important that there is disclosure where there is inadequate or uncertain data that may affect the reliability of the estimate (for example, poor sample recovery), it does not set out minimum disclosure requirements or provide guidance encouraging the disclosure of what could be expected to represent the key assumptions underpinning Mineral Resource and Ore Reserve estimates.
83. As a result of the JORC Code mainly encouraging disclosure in connection with the Table 1 criteria where there are materially adverse findings and results, there has been significant variation in disclosure practices by issuers in relation to the disclosure of key assumptions. Without some minimum requirements or guidance as to the key assumptions and information that should be disclosed when initial, or materially upgraded, Mineral Resource and Ore Reserves estimates are disclosed, it is difficult for stakeholders to be confident that the materiality judgment has been properly exercised.
84. Some stakeholders have expressed the view that the disclosure of a technical report, similar to that required under the Canadian regime, is worthy of consideration as a way of promoting greater disclosure of the key assumptions and key technical information to support the disclosure of initial, or materially changed, Mineral Resource and Ore Reserve estimates. It has been suggested that the main benefit of requiring the disclosure of a technical report (notwithstanding that the technical report is not provided until after 45 days after the estimates have been reported) is that the transparency it provides may promote greater discipline in relation to the Mineral Resource and Ore Reserve estimates disclosed and, as a result, promote greater confidence in the reported estimates.
85. In examining this issue and any proposed new disclosure requirements, it is important to focus on what technical and scientific information is relevant and useful for investors and their advisors for the purpose of making informed investment decisions. This is important in ensuring that any new disclosure requirements do not simply result in the disclosure of large quantities of technical information that may not be useful to, or be understood by, investors and their advisors. Another important consideration is the extent of compliance costs for companies in preparing such reports.

Current requirements

86. In the guidance associated with Clause 19 of the JORC Code, it is suggested that “Any material assumptions made in determining the ‘reasonable prospects for eventual economic extraction’ should be clearly stated in the public report”. Guidance is provided as to how the term ‘eventual’ could be interpreted and that any adjustment to the data relevant to making a Mineral Resource estimate (for example, by cutting or factoring grades) should be disclosed in a public report. However, no additional guidance is provided as to what information, at a minimum, should be disclosed in relation to what could generally be considered material assumptions.
87. Clause 26 of the JORC Code indicates that Table 1 provides the main criteria which should be considered in preparing reports on Exploration Results, Mineral Resources and Ore Reserves. It also indicates that these criteria do not need to be discussed in public reports unless they materially affect estimation or classification of the Mineral Resources. The guidance associated with Clause 26 does suggest that it is essential to discuss any matters relevant to the Table 1 criteria that might materially affect the reader’s understanding or interpretation of the results or estimates being reported. Other than the guidance provided that suggests that inadequate or uncertain data or materially adverse findings should be disclosed, there is no additional guidance encouraging the disclosure of specific information relating to the material assumptions made in making Mineral Resource estimates.
88. Similar to Clause 26, Clause 35 indicates that Table 1 provides the main criteria which should be considered in preparing reports on Exploration Results, Mineral Resources and Ore Reserves, but that these criteria do not need to be discussed in Public Reports unless they materially affect estimation or classification of the Ore Reserves. The Clause also indicates that changes in economic or political factors alone may be the basis for significant changes in Ore Reserves and should be reported accordingly. However, beyond this, there is no additional guidance encouraging the disclosure of specific information relating to the material assumptions underpinning Ore Reserve estimates.
89. The commentary in Table 1 and Clause 2 of the JORC Code indicate that Table 1 forms part of the guidelines, but is not mandatory for reporting purposes. The Table 1 criteria are grouped into categories reflecting a logical progression from exploration to estimation and reporting of Ore Reserves, with the criteria listed in preceding groups often being applicable to succeeding groups. The criteria groupings are: Sampling techniques and data; Reporting of exploration results; Estimation and reporting of Mineral Resources; Estimation and reporting of Ore Reserves; and Estimation and reporting of diamonds and gemstones.
90. The commentary in Table 1 states that the check list is not prescriptive and that relevance and materiality are overriding principles that determine what information should be publicly reported. Consistent with the guidance associated with Clause 26, the commentary also suggests that matters relevant to the Table 1 criteria that might materially affect the reader’s understanding or interpretation of the results or estimates should also be included in the report.
91. Beyond the guidance referred to in the paragraphs above, no additional guidance is provided as to what information, at a minimum, should be disclosed with regard to the material assumptions when initial, or materially upgraded, Mineral Resource and Ore Reserve estimates are reported to the market.

Canadian requirements

92. Under NI 43-101, any issuer that discloses Mineral Resources or Mineral Reserves (equivalent to Ore Reserves under the JORC Code) on a property that is material to the issuer must also disclose the key assumptions, parameters, and methods used to estimate the Mineral Resources and Mineral Reserves.
93. The Companion Policy suggests compliance with the CIM Guidelines, which suggest the disclosure of: metal price assumptions; cut-off grades; ore losses and dilution; mill recoveries; and estimation methodologies. The CIM Guidelines also indicate that where Mineral Reserve estimates are reported, commodity price projections, operating costs, mineral processing/metallurgical recovery factors and, in cases where the Mineral Reserve is mineable by open pit methods, the waste-to-ore ratio should be disclosed.

94. NI 43-101 requires the disclosure of a technical report to support a number of other specific disclosures including in relation to: the initial disclosure of, and a material change to, Mineral Resource and Ore Reserve estimates and a preliminary assessment; an Annual Information Form; various offering documents; and a takeover bid.
95. A Technical Report must be prepared by a Qualified Person (broadly equivalent to a Competent Person under the JORC Code) and it must be filed or made publicly available at the same time (with some exceptions) as the disclosure document it is supporting is provided to the market. One of the main exceptions to the requirement that the Technical Report be filed at the same time as the relevant disclosure relates to the disclosure of initial, and material changes to, Mineral Resource and Mineral Reserve estimates and preliminary economic assessments. In such cases, the Technical Report must be filed within 45 days of the initial (and material changes to) Mineral Resource and Mineral Reserve estimates being reported to the market.
96. Form 43-101F, which prescribes the preparation and content requirements of a technical report, provides for standardised reporting of specific technical and scientific information. Technical reports include a range of subject material (some of which only apply to advanced properties) including: a property description and location; geological setting and mineralisation; exploration; drilling; sampling method; data verification; metallurgical processes; mining methods; recoverability; infrastructure; and environmental studies. Form 43-101F also requires the disclosure of information relating to market studies and contracts, capital and operating costs and an economic analysis. In addition, 43-101F1 requires that a Technical Report disclosing Mineral Resources must:
- 96.1. provide sufficient discussion of the key assumptions, parameters and methods used to estimate the mineral resources, for a reasonably informed reader to understand the basis of the estimate and how it was generated; and
 - 96.2. include a general discussion on the extent to which the Mineral Resource estimates could be materially affected by any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other relevant factors.
97. Similarly, 43-101F1 requires that a Technical Report disclosing Mineral Reserve estimates must also:
- 97.1. provide sufficient discussion and detail of the key assumptions, parameters and methods used in the preliminary feasibility or feasibility study for a reasonably informed reader to understand how the qualified person converted the Mineral Resources to Mineral Reserves; and
 - 97.2. discuss the extent to which the Mineral Reserve estimates could be materially affected by mining, metallurgical, infrastructure, permitting and other relevant factors.

South African requirements

98. In relation to Mineral Resources reporting, the SAMREC Code requires that for each category of Mineral Resource the basis of classification and the method of determining the confidence levels must be disclosed.
99. In relation to Mineral Reserves reporting, the SAMREC Code requires that all modifying factors - mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors – must be disclosed when Mineral Reserves are reported.
100. In relation to disclosing the economic modifying factors, the guidelines included in the SAMREC Code suggest that commodity prices and exchange rates used for Mineral Reserve estimation should be disclosed.
101. Under the South African reporting regime, there is no requirement for the disclosure of a technical report to support the disclosure of Mineral Resource and Mineral Reserve estimates that is comparable to that under the Canadian regime in terms of the breadth and depth of technical information that must be reported and the circumstances that trigger reporting. However, there is a requirement under the JSE Listing Requirements for the disclosure of a Competent Person's Report by issuers with substantial mineral assets in particular circumstances. Where the JSE Listing Requirements require a Competent Person's Report, that report must, among other things, include a brief description of the individual key modifying factors and the key assumptions used in deriving the Mineral Resource and Mineral Reserve estimates. It is also worth noting here that under the JSE Listing

Requirements, a Competent Person's Report is not required when initial, or materially changed, Mineral Resource and Mineral Reserve estimates are reported to the market.

102. While the Competent Person's Report requires the disclosure of, among other things, information relating to the geological setting, the exploration programme and the key assumptions used in deriving the Mineral Resource and Mineral Reserve estimates, it is not focused on and does not prescribe the disclosure of other specific technical and scientific information such as that prescribed under the Canadian regime.

Possible options to facilitate greater disclosure of key assumptions

Option 3A – Introduction of a requirement for the disclosure of key information from Table 1

103. Under option 3A, a requirement would be introduced for information relating to a subset of the criteria from Table 1 in the JORC Code to be disclosed when an initial, or a material change to a, Mineral Resource and/or Ore Reserve estimate is reported. It is proposed that the said subset of Table 1 criteria would represent the key assumptions and types of information that, at a minimum, must be disclosed when initial, or materially changed, Mineral Resources and Ore Reserves are reported. If this requirement is introduced, issuers would also be expected to disclose information relating to any of the other Table 1 criteria that are material to understanding or interpreting the reported Mineral Resources/Ore Reserves estimates.
104. Under this option, it is proposed that issuers be required to provide a summary of information relating to the following Table 1 criteria when reporting initial, or materially changed, Mineral Resource and Ore Reserve estimates:
- 104.1. geology;
 - 104.2. sampling techniques;
 - 104.3. quality of assay data and laboratory tests;
 - 104.4. drilling techniques;
 - 104.5. logging
 - 104.6. data spacing and distribution;
 - 104.7. estimation and modelling techniques;
 - 104.8. cut-off parameters;
 - 104.9. mining factors or assumptions;
 - 104.10. metallurgical factors or assumptions; and
 - 104.11. cost and revenue factors.
105. Some of the key issues that would need to be considered in implementing this option are:
- 105.1. issuers would not be expected to have considered the economic, mining and metallurgical assumptions in as much depth when declaring initial or materially changed, Mineral Resources relative to when declaring initial, or materially changed, Ore Reserves. As such, this would be expected to be reflected in a lower level of detail in the disclosure when Mineral Resource estimates are reported. In situations where certain mining or metallurgical assumptions have not been made when an initial or materially changed Mineral Resource is reported, the company would be required to disclose that fact and indicate that it is an area where further work would be undertaken prior to converting the Mineral Resource to an Ore Reserve. Consideration could also be given to separately setting out specific minimum reporting requirements that are applicable to

the reporting of initial or materially changed Mineral Resources from those applicable to the reporting of initial or materially changed Ore Reserves;

- 105.2. whether, when an issuer reports a materially upgraded Mineral Resource estimate or a materially upgraded Ore Reserve estimate, it may be appropriate to allow the issuer to cross-reference the information disclosed on the key assumptions when it reported the initial Mineral Resource or Ore Reserve and only require that it disclose information relating to the key assumptions that are relevant to the material change and where there have been new findings or developments;
- 105.3. how to take account of any commercial sensitivities associated with pricing assumptions related to particular commodities and still promote the disclosure of more information about the pricing assumptions underpinning Mineral Resource and Ore Reserve estimates. An approach similar to that adopted under the SAMREC Code could be adopted such that guidance is provided that indicates that the pricing assumptions should be disclosed where the commodity is exchange traded. For those commodities that aren't exchange traded, guidance could be provided that indicates that the price assumptions could be disclosed as a range of prices within which no material change to the Mineral Resource/Ore Reserve estimates would occur. In addition, these companies could also be required to disclose the methodology used to determine the price assumptions used;
- 105.4. whether there is a need to identify any additional key assumptions specific to particular non-metallic minerals, such as, diamonds and other gemstones, industrial minerals and coal, in lieu of metallurgical assumptions for which disclosure would be similarly beneficial in assisting investors in understanding the Mineral Resource and Ore Reserve estimates; and
- 105.5. what guidance, if any, to issue to make it clear that, notwithstanding any prescribed minimum reporting requirements relating to a subset of Table 1 information, any other criteria and information from Table 1 that is relevant and material to understanding the reported Exploration Results and estimates of Mineral Resources and Ore Reserves must also be reported.

Option 3B –Introduction of a requirement for the disclosure of all key assumptions relied on in a relevant study

106. Under option 3B, a requirement would be introduced for the disclosure of the key assumptions relied on in the relevant study underpinning the Mineral Resource and Ore Reserve estimates when initial, or a material change to, Mineral Resource and Mineral Reserve estimates are reported. Issuers would not be required to publicly release the study underpinning the Mineral Resource/Ore Reserve estimates, but they would be required to disclose a summary of the key assumptions relied on in the study when initial, or a material change to, Mineral Resource and Mineral Reserve estimates are reported.
107. The main benefits of this option are that it provides a positive and clear requirement for issuers to disclose the key assumptions relied on in the relevant study undertaken to estimate the Mineral Resources/Ore Reserves and it would be expected to involve the lowest compliance cost burden for issuers since it would largely be a matter of summarising information already included in the relevant study. The other main strength of this option is that it is focused only on the disclosure of information that is relevant and material to the particular Mineral Resource/Ore Reserve project.
108. However, under this option, there is likely to be greater variation in terms of what information is disclosed across the industry when initial or materially changed Mineral Resource and Ore Reserve estimates are reported than under option 3A, given it involves a judgement by individual issuers in relation to what constitutes a 'key assumption'. This could be addressed to some extent by the inclusion of some high level guidance (as distinct from the mandatory approach in Option 3A) on the types of key assumptions – such as, the cut-off parameters and the key mining, metallurgical/processing and economic assumptions - that issuers should consider disclosing.
109. Similar to option 3A, if this option was implemented, consideration would need to be given to what would be considered adequate disclosure in relation to the pricing assumptions where the relevant commodity is not exchange traded and the pricing assumptions are commercially sensitive. Consideration would also need to be given to whether disclosures relating to materially upgraded Mineral Resource and Ore Reserve estimates could

cross-reference the previous disclosure of the key assumptions for the initial Mineral Resource or Ore Reserve estimate with respect to any key assumptions and information that is still relevant and remains unchanged.

110. Another key implementation issue to consider relates to the fact that there is no requirement for a formal study be undertaken to declare and report initial Mineral Resources estimates. It is not intended that a requirement for the disclosure of the key assumptions relied on in the relevant study underpinning the estimates would introduce a de facto requirement for the completion of a formal study to report Mineral Resources. Disclosure of the key assumptions used in a scoping study, which may or may not be completed, may be sufficient when reporting Mineral Resource estimates.

Option 3C – Introduction of an ‘if not, why not’ reporting requirement for Table 1 criteria

111. Under option 3C, a requirement would be introduced for issuers reporting initial or materially changed Mineral Resource and Ore Reserve estimates to disclose a brief summary of the information elicited under each of the criterion under Table 1 or, if a particular criterion is not relevant or material, disclose that it is not relevant or material and provide a brief explanation of why this is the case.
112. Some stakeholders have suggested this option as a way to promote greater disclosure of Table 1 criteria.
113. The requirement for issuers to address every criterion in Table 1 and, in particular, provide a brief explanation as to why certain criteria are not relevant or material, may add an additional compliance burden for which the disclosure of some of the information may not provide a commensurate benefit. Implementation of this option may lead to the disclosure of information that is not material or useful to investors. It may also result in issuers disclosing non-material information rather than explain why it is not material.

Option 3D - Introduction of a requirement for the disclosure of a technical report

114. Under this option, it is proposed that a requirement be introduced for a technical report to be disclosed to the market to support the disclosure of an initial or materially changed Mineral Resource and Ore Reserve estimates on a mineral property material to an issuer. Under this option, the content of the technical report would be prescribed, similar to the way in which NI 43-101 sets out the requirements for a technical report under the Canadian regime. The information requirements for the technical report would be largely modelled off those set out in the NI 43-101.
115. The technical report would be limited to mineral properties that are material to the issuer in recognition that the compliance costs associated with compiling a technical report for properties not material to the issuer would significantly outweigh any benefits such disclosure would provide for the purpose of valuing the issuer.
116. Similar to the requirement under the Canadian regime, issuers would be required to disclose the technical report within 45 days of the disclosure of the relevant Mineral Resource/Ore Reserve estimates. The rationale for allowing a delay and not requiring the disclosure of the technical report at the same time the relevant Mineral Resource/Ore Reserve estimate is reported is to ensure that the disclosure of initial, or a material change to a, Mineral Resource and Ore Reserve estimates on a material mineral property is not delayed as a result of the issuer being required to prepare a technical report. Delaying release of a price-sensitive Mineral Resource/Ore Reserve estimate until the Technical Report had been prepared would be inconsistent with the continuous disclosure requirements under Listing Rule 3.1, which requires issuers to immediately disclose material and price sensitive information. Initial, or materially changed, Mineral Resource and Ore Reserve estimates for a material mineral property would be expected to be price sensitive information and subject to Listing Rule 3.1.
117. Given the need to allow for a delay in the disclosure of the technical report so that its preparation doesn't delay the disclosure of the initial or materially changed Mineral Resource and Ore Reserve estimates, consideration would need to be given to whether greater disclosure of the key assumptions underpinning these estimates should still be required when the estimates are reported. This is to help ensure that the information that would reasonably be required in understanding the basis for the estimates and in undertaking due diligence is available to investors and their advisors at the time when they would be expected to be assessing new material information and making investment decisions (i.e. when initial, or a material change to the, Mineral Resource and Ore Reserve estimates are reported to the market); and

118. In seeking to address the compliance costs associated with introducing a requirement for the compilation of a technical report similar to that in place in Canada, consideration was given to whether it would be feasible to simply require issuers to publicly release their internal 'technical report' used in classifying and estimating the relevant Mineral Resources and Ore Reserves when initial, or a material change to the, Mineral Resource and Ore Reserve estimates are reported. This approach was not adopted for the following reasons:
- 118.1. it is not consistent with current industry practice as all the relevant data and technical information collected and analysed by issuers in classifying and estimating the relevant Mineral Resources/Ore Reserves may not be compiled in a single internal document that could be disclosed;
 - 118.2. notwithstanding whether there is a single internal document that could be disclosed, any internal document would likely contain commercially sensitive information that would need to be edited/removed from the documentation by the issuer prior to public release to ensure the disclosure would not disadvantage existing shareholders. As a result of this issue and that discussed in the point above, issuers would incur a compliance cost in pulling together a suitable internal report to disclose; and
 - 118.3. issuers would be uncertain as to what information should be included in their technical reports, which would likely result in a significant variation in reporting practices across the industry.
119. Overall, this is not the preferred option for promoting the disclosure of greater information to support the disclosure of initial, or a material change to the, Mineral Resource and Ore Reserve estimates because it does not provide for the disclosure of the most relevant information at the time that investors would be seeking to understand and assess the estimates i.e. when the estimates are reported to the market. While a requirement to release a technical report following the disclosure of such estimates may provide for greater discipline in what is reported to the market and, as result, promote greater confidence in the estimates reported, it would involve a significant compliance burden for issuers, which may not be commensurate with the benefits of the additional disclosure. By comparison, a requirement for the disclosure of a summary of the key assumptions underpinning the estimates at the time that the estimates are reported may provide for a more balanced approach in terms of both the compliance burden for issuers and the disclosure of information that would be useful for the purpose of seeking to understand and assess the reported estimates.

Consultation questions

- Q8. Will a minimum requirement for the disclosure of a smaller subset of criteria and information from Table 1 of the JORC Code when initial, or materially upgraded, Mineral Resource and Ore Reserve estimates are reported be effective in addressing the problems identified, both in terms of providing investors with decision-useful information and from a compliance cost perspective for issuers?
- Q9. Please comment on the likely effectiveness of a requirement for 'if not, why not' reporting against Table 1 when initial, or materially upgraded, Mineral Resource and Ore Reserve estimates are reported.
- Q10. What are your views on whether a summary of the information identified under option 3A would provide a framework for the disclosure of the key information and assumptions underpinning Mineral Resource and Ore Reserve estimates that should, at a minimum, be disclosed when initial, or upgraded, Mineral Resource and Ore Reserve estimates are reported? Are there other criteria specific to diamond and other gemstones and other non-metallic minerals for which disclosure should be required when initial, or upgraded, Mineral Resource and Ore Reserve estimates are reported?
- Q11. For commodities that are not exchange traded and for which the price assumptions underpinning Mineral Resource and Ore Reserve estimates are commercially sensitive information, would a requirement for the disclosure of an explanation of the methodology used to determine the price assumptions and the disclosure of a range of prices for which there would not be a significant impact on the Mineral Resource/Ore Reserve estimate:
- Q11.1 provide for the disclosure of adequate information to allow analysts to understand and assess the Mineral Resource and Ore Reserve estimates? and

Q11.2 adequately address concerns about disclosing commercially sensitive information?

Q12. Would the requirement for the disclosure of projected capital and operating expenses raise commercial sensitivity concerns? If so, would a requirement that allows issuers to provide a narrative disclosure and a range of values address these concerns and, at the same time, provide useful information to the market?

Q13. In relation to the disclosure of materially upgraded Mineral Resource and/or Ore Reserve estimates, would it be feasible to allow issuers to cross-reference the relevant key assumptions (which remain unchanged) in the previous disclosure relating to the initial Mineral Resource/Ore Reserve reported? In particular:

Q13.1 would you generally expect that there would be significant changes to most of the key assumptions and information when Mineral Resources and Ore Reserves are materially upgraded? and

Q13.2 would allowing issuers to cross-reference the key assumptions and information in the disclosure of the initial Mineral Resource/Ore Reserve estimate create the potential for unnecessary confusion for users?

Q14. What are your views on the respective costs and benefits of a requirement for the disclosure of a technical report similar to that required in Canada to support the disclosure of initial, or a material change to, Mineral Resource and Ore Reserve estimates for material properties?

Q15. If a requirement for the disclosure of a technical report was to be implemented as proposed in option 3D, do you agree that:

Q15.1 the provision of a 45 day delay in the disclosure of the technical report is necessary and that 45 days provides an adequate period to be able to comply with the requirement?

Q15.2 the information to be included in the technical report should be prescribed, similar to that in NI 43-101F, to provide issuers with clear requirements and to promote standardised reporting?

Q15.3 the key assumptions relied on in the relevant studies undertaken to classify and estimate the relevant Mineral Resource and Ore Reserve estimates should be required to be disclosed at the time the relevant estimates are reported given the delay in the disclosure of the technical report?

Issue 4: Minimum level of study for an initial Ore Reserve estimate

120. Over recent years, a consensus has emerged within the industry and amongst regulators that a properly scoped preliminary feasibility study is adequate to support initial Ore Reserve declarations. Most jurisdictions with comparable reporting standards for the reporting of Mineral Resources and Ore Reserves define the different levels of study that are undertaken at different stages of development of a project. They also generally require that at least a pre-feasibility study is completed to support an initial declaration of Ore Reserves.
121. The introduction of a requirement for at least a preliminary feasibility study (pre-feasibility study) to support the declaration of an initial Ore Reserve estimate would provide greater clarity around the requirements that must be satisfied in reporting these estimates and it would also increase the alignment between Australian reporting requirements and comparable reporting standards in other jurisdictions.

Current requirements

122. Clause 28 of the JORC Code requires that appropriate assessments and studies, which include consideration of realistically assumed modifying factors, have been carried out in converting Mineral Resources to Ore Reserves. It provides that the relevant assessments and studies must take into account all modifying factors – mining, metallurgical, economic, marketing, legal, environmental, social and governmental - and they must demonstrate that extraction could reasonably be justified at the time of reporting in order to determine Ore Reserves.
123. While the JORC Code does not prescribe a particular level of study for the purpose of converting Mineral Resources to Ore Reserves, the guidance associated with Clause 28 indicates that it may not be necessary for these studies to be at the level of a final feasibility study. However, the guidance does suggest that the relevant studies will have determined a mine plan, which is technically achievable and economically viable, from which Ore Reserves can be derived.

Requirements in other relevant jurisdictions

Canadian requirements

124. Under the Canadian reporting regime, the completion of a pre-feasibility study is the minimum prerequisite for the conversion of Mineral Resources to Mineral Reserves. The CIM Definition Standards define a pre-feasibility study as “a comprehensive study of a range of options for the technical and economic viability of a mineral project that has advanced to a stage where a preferred mining method, in the case of underground mining, or the pit configuration, in the case of an open pit, has been established and an effective method of mineral processing is determined. It includes a financial analysis based on reasonable assumptions on mining, processing, metallurgical, economic, marketing, legal, environmental, social and governmental considerations and the evaluation of any other relevant factors which are sufficient for a Qualified Person, acting reasonably, to determine if all or part of the Mineral Resource may be classified as a Mineral Reserve”²⁵.
125. The CIM Definition Standards also define a feasibility study as “a comprehensive technical and economic study of the selected development option for a mineral project that includes appropriately detailed assessments of realistically assumed mining, processing, metallurgical, economic, marketing, legal, environmental, social and governmental considerations together with any other relevant operational factors and detailed financial analysis, that are necessary to demonstrate at the time of reporting that extraction is reasonably justified (economically mineable). The results of the study may reasonably serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the project. The confidence level of the study will be higher than that of a pre-feasibility study”²⁶.
126. NI 43-101 defines a preliminary economic assessment as “a study, other than a pre-feasibility study or feasibility study, that includes an economic analysis of the potential viability of mineral resources”²⁷.

²⁵ CIM, *CIM Definition Standards – For Mineral Resources and Mineral Reserves*, November 2010, page 3.

²⁶ *ibid*, page 3.

²⁷ Section 1.1 National Instrument 43-101 *Standards of Disclosure For Mineral Projects*

South African requirements

127. Under the SAMREC Code, appropriate assessments to a minimum of a pre-feasibility study for a project and a life of mine plan for an operation must have been completed to convert Mineral Resources to Mineral Reserves. The SAMREC Code refers to and defines the following different level of studies:
- 127.1. pre-feasibility study – “a comprehensive study of the viability of a range of options for a mineral project that has advanced to a stage at which the preferred mining method in the case of underground mining or the pit configuration in the case of an open pit has been established and an effective method of mineral processing has been determined. It includes a financial analysis based on realistic assumptions of technical, engineering, operating, economic factors and the evaluation of other relevant factors that are sufficient for a Competent Person, acting reasonably, to determine if all or part of the Mineral Resource may be classified as a Mineral Reserve. The overall confidence of the study should be stated. A pre-feasibility study is at a lower confidence level than a feasibility study”;
 - 127.2. feasibility study – “a comprehensive design and costing study of the selected option for the development of a mineral project in which appropriate assessments have been made of realistically assumed geological, mining, metallurgical, economic, marketing, legal, environmental, social, governmental, engineering, operational and all other modifying factors, which are considered in sufficient detail to demonstrate at the time of reporting that extraction is reasonably justified (economically mineable) and the factors reasonably serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the project. The overall confidence of the study should be stated”; and
 - 127.3. life of mine plan – “a design and costing study of an existing operation in which appropriate assessments have been made of realistically assumed geological, mining, metallurgical economic, marketing, legal, environmental, social, governmental, engineering, operational and all other modifying factors, which are considered in sufficient detail to demonstrate at the time of reporting that extraction is reasonably justified”²⁸.

Proposal to introduce a minimum level of study requirement

128. It is proposed that a requirement be introduced for the completion of a pre-feasibility study, at a minimum, for the conversion of the relevant estimated Mineral Resources to Ore Reserves. It is also proposed that scoping study, pre-feasibility study and feasibility study be defined as follows:
- 128.1. scoping study – a study, other than a pre-feasibility study or a feasibility study, that includes an economic analysis of the potential viability of mineral resources;
 - 128.2. pre-feasibility study - is a comprehensive study of a range of options for the technical and economic viability of a mineral project that has advanced to a stage where a preferred mining method, in the case of underground mining, or the pit configuration, in the case of an open pit, is established and an effective method of mineral processing is determined. It includes a financial analysis based on reasonable assumptions on the Modifying Factors and the evaluation of any other relevant factors which are sufficient for a Competent Person, acting reasonably, to determine if all or part of the Mineral Resource may be converted to a Ore Reserve. A pre-feasibility study is at a lower confidence level than a feasibility study.
 - 128.3. feasibility study - is a comprehensive technical and economic study of the selected development option for a mineral project that includes appropriately detailed assessments of realistically assumed Modifying Factors together with any other relevant operational factors that are necessary to demonstrate at the time of reporting that extraction is reasonably justified (economically mineable). The results of the study may reasonably serve as the basis for a final decision by a

²⁸ South African Mineral Resource Committee, *The South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves*, 2009, pages 2-3.

proponent or financial institution to proceed with, or finance, the development of the project. The confidence level of the study will be higher than that of a pre feasibility study.

129. The proposed definitions for pre-feasibility study and feasibility study are consistent with the CRIRSCO core standard definitions.

Consultation question

- Q16. What are your views on whether a pre-feasibility study, at a minimum, should be completed to support the determination of initial Ore Reserve estimates?

Issue 5: Disclosure of production targets

130. Whilst listing rules and the incorporated JORC Code provide the disclosure framework for most of the reporting obligations relevant to Mineral Resources and Ore Reserves, legislation – relating to the potential for forward looking statements prepared without a reasonable basis to be misleading – also needs to be considered. This is particularly relevant to the disclosure of production targets by mining companies and whether companies have a reasonable basis for disclosing production targets and forecast financial information, including net present value, internal rate of return and other cash flow information, derived from such production targets in certain circumstances.
131. Forward looking statements, such as production targets, must have a reasonable basis, otherwise the disclosure of such information risks being misleading to investors and may be in breach of the Corporations Act. Concern has been raised by some stakeholders about whether the disclosure of production targets where the company concerned has yet to commence mining or does not have declared Ore Reserves may potentially be misleading. In this context, the disclosure of sufficient information that underpins the disclosed production target may also be important to allow investors to be able to judge the reliability of the forecast information.
132. There have been a number of cases over the last 12 months where ASIC has required companies to issue corrective Mineral Resource disclosures to support the disclosure documentation for specific corporate actions because of concerns relating to the inclusion of production targets in the initial disclosure (made under Listing Rule 3.1) based on certain lower confidence estimates, in particular, estimates of Inferred Mineral Resources and exploration targets.
133. The key areas of concern regarding current disclosure practices for production targets and forecast financial information derived from such production targets relate to:
 - 133.1. issuers generally not disclosing sufficient information on the key assumptions underpinning the production targets/forecast financial information and the key risks associated with achieving the stated production target to enable investors and their advisers to properly evaluate the forward looking information. Disclosure of information on the key risks associated with realising the stated production targets/forecast financial information could be considered to be particularly important when the production target/financial forecast is based on Mineral Resources rather than Ore Reserves given that Mineral Resources are not deemed to be economically mineable at the time of reporting; and
 - 133.2. the risk that the disclosure of production targets and forecast financial information derived from production targets based on exploration results and exploration targets may mislead investors.
134. The Listing Rules and the JORC Code do not currently cover the reporting of production targets and forecast financial information derived from production targets. However, there may be merit in considering options to bring the reporting of production targets and forecast financial information derived from production targets within the scope of the Listing Rules to provide for improved disclosure practices in this area and to reduce the potential for such disclosures to confuse investors. Apart from seeking to provide for a better informed market, the other main benefit of such an approach is that it would provide for transparent reporting requirements applicable to all listed mining companies equally. It may also lead to the need for fewer corrective disclosures required by ASIC to support formal disclosure documentation.

Current requirements

135. As mentioned above, the Listing Rules and the JORC Code do not directly address the reporting of production targets and forecast financial information derived from productions targets. However, some of the core definitions and guidance included in the JORC Code do address the issue of when it may be appropriate from a geological confidence perspective to apply economic parameters to the different categories of mineralisation defined in the JORC Code. This may be a relevant factor for the purpose of considering when there may be a reasonable basis for the disclosure of production targets. The relevant definitions and guidance included in the JORC Code are:

- 135.1. the definition of a Mineral Resource for which there must be 'reasonable prospects for eventual economic extraction';
- 135.2. the definition of an 'Inferred Mineral Resource' and the associated guidance. The definition of an 'Inferred Mineral Resource' indicates that it is part of a Mineral Resource for which the tonnage, grade and mineral content can be estimated with a low level of confidence. The guidance associated with Clause 20 of the JORC Code also indicates that 'confidence in the estimate of Inferred Mineral Resources is usually not sufficient to allow the results of the application of technical and economic parameters to be used for detailed planning' and that 'caution should be exercised if this category is considered in technical and economic studies';
- 135.3. the definition of an 'Indicated Mineral Resource' and the associated guidance. The definition of an 'Indicated Mineral Resource' indicates that it is part of a Mineral Resource for which the tonnage, grade and mineral content can be estimated with a reasonable level of confidence. The guidance associated with Clause 21 of the JORC Code also indicates that 'confidence in the estimate is sufficient to allow the application of technical and economic parameters, and to enable an evaluation of economic viability';
- 135.4. the definition of a 'Measured Mineral Resource' and the associated guidance. The definition of a 'Measured Mineral Resource' indicates that it is part of a Mineral Resource for which the tonnage, grade and mineral content can be estimated with a high level of confidence. The guidance associated with Clause 22 of the JORC Code also indicates that the tonnage and grade of the mineralisation can be estimated to within close limits and that any variation from the estimate would be unlikely to significantly affect potential economic viability. The guidance indicates that 'confidence in the estimate is sufficient to allow the application of technical and economic parameters and to enable an evaluation of economic viability that has a greater degree of certainty than an evaluation based on an Indicated Mineral Resource'; and
- 135.5. the definition of an 'Ore Reserve' and associated guidance. The definition of an 'Ore Reserve' provides that an Ore Reserve is the economically mineable (at the time of reporting) part of a Measured and/or Indicated Mineral Resource. Appropriate assessments and studies, which include the application of economic factors, are required to have been undertaken to declare Ore Reserves; and
- 135.6. the reporting requirements included in Clause 18 of the JORC Code for the reporting of exploration targets, in particular, the requirement for a proximate statement which indicates that the 'potential quality and grade is conceptual in nature, that there has been insufficient exploration to define a Mineral Resource and that it is uncertain if further exploration will result in the determination of a Mineral Resource'.

Requirements in other relevant jurisdictions

Canadian requirements

136. Similar to the JORC Code, the CIM Definition Standards and the CIM Guidelines do not directly address the issue of production targets. The CIM Definition Standards also include guidance on when it is appropriate from a geological confidence perspective to apply economic parameters to the different categories of mineralisation. The main difference between the CIM Definition Standards and the JORC Code with respect to this guidance is that the CIM Definition Standards indicate that Inferred Mineral Resources must be excluded from estimates forming the basis of a feasibility or other economic study.
137. The provisions under NI 43-101, the Companion Policy and Form 43-101F that are relevant to the reporting of production targets and forecast financial information derived from production targets are:
 - 137.1. NI 43-101 prohibits the disclosure of the results of an economic analysis that includes or is based on an exploration target;

- 137.2. NI 43-101 prohibits the disclosure of the results of an economic analysis that includes or is based on Inferred Mineral Resources unless the following conditions are met: the disclosure describes the impact of the preliminary economic assessment on the results of any pre-feasibility or feasibility study in relation to the property; the disclosure states the basis for the preliminary assessment and the assumptions made; and it includes a cautionary statement (with equal prominence);
- 137.3. The Companion Policy indicates that a 'preliminary economic assessment' may be based on Measured, Indicated or Inferred Mineral Resources and that these types of economic analyses would include the disclosure of forecast mine production rates and projected cash flows;
- 137.4. As discussed earlier, NI 43-101 requires the disclosure of a technical report to support a number of specific disclosures including in relation to: the initial disclosure of, and a material change to, Mineral Resource and Ore Reserve estimates and the results of a preliminary economic assessment. In certain circumstances, the release of a technical report required to support the results of a preliminary economic assessment must be prepared by an independent 'qualified person';
- 137.5. Form 43-101F also includes 'Advanced Property Technical Report' requirements, which prescribes the disclosure of an economic analysis for the project that includes information on (among other things) the cash flow forecasts on an annual basis, an annual production schedule for the life of the project and the net present value (NPV) and internal rate of return (IRR) (this could be off the back of Mineral Resources and/or Mineral Reserves).

South African requirements

138. Similar to the JORC Code, the SAMREC Code does include provisions and guidance on when it is appropriate from a geological confidence perspective to apply economic parameters to the different categories of mineralisation. However, the main area of difference between the two codes is that the SAMREC Code includes a provision setting out the requirements for the reporting of the results of a mine design, mine planning or economic studies that include Inferred Mineral Resources.
139. Under the SAMREC Code, exploration targets cannot be included in mine design, mine planning and economic studies. Inferred Mineral Resources can only be included in the mine design, mine planning and economic studies if the issuer has a mine plan and a statement of Mineral Reserves that acknowledges that Inferred Mineral Resources have been used. It also requires full disclosure of the effect of the Inferred Mineral Resources on the results of the studies. In addition, where a material amount of mining in the mine plan includes Inferred Mineral Resources, a comparison of the results with and without the Inferred Mineral Resources must be disclosed, together with the rationale behind their inclusion.

Possible options to improve disclosure practices in relation to production targets and forecast financial information derived from production targets

Option 5A – Introduction of disclosure requirements applicable to the reporting of production targets and forecast financial information derived from production targets

140. Under this option, disclosure requirements would be introduced for the reporting of production targets²⁹ and forecast financial information derived from production targets. It is proposed that the following disclosure requirements be introduced:
 - 140.1. where an issuer reports a production target and/or forecast financial information derived from a production target, the issuer must disclose the key assumptions, including the financial assumptions, underpinning the production target/forecast financial information derived from the production target;
 - 140.2. where an issuer reports a production target and/or forecast financial information derived from a production target that includes or is based on Indicated and/or Measured Mineral Resources, the

²⁹ The term production target is being used broadly and also captures a production forecast.

issuer must disclose the key contingencies and risks associated with converting the relevant Mineral Resources into Ore Reserves or putting the relevant Mineral Resources directly into production as the case may be;

- 140.3. where an issuer reports a production target and/or forecast financial information that is derived from a production target that includes or is based on Inferred Mineral Resources, the issuer must:
 - 140.3.1. disclose the key contingencies and risks associated with converting the relevant estimated Inferred Mineral Resources to Indicated or Measured Mineral Resources;
 - 140.3.2. disclose the proportion of the production target that is based on the Inferred Mineral Resources and, if forecast financial information derived from the production target is reported, disclose the implications for the forecast financial information of including the Inferred Mineral Resources;
 - 140.3.3. include a proximate cautionary statement in the disclosure that highlights the low level of geological confidence connected with the Inferred Mineral Resource estimates and the uncertainty that further exploration will result in the determination of Indicated or Measured Mineral Resources and the realisation of the production target.
- 140.4. where an issuer reports a production target and/or forecast financial information that is derived from a production target that includes some exploration potential, the issuer must disclose:
 - 140.4.1. what proportion of the production target is based on an exploration target and, if forecast financial information derived from the production target is reported, disclose the implications for the forecast financial information of including the exploration target;
 - 140.4.2. the basis for reporting a production target and/or forecast financial information derived from the production target that includes estimates of potential tonnages and grades that represent a target for further exploration; and
 - 140.4.3. include a proximate cautionary statement in the disclosure that highlights that the production target and/or forecast financial information is partly derived from estimates of potential tonnages and grades that are conceptual in nature and that there has been insufficient exploration to determine a Mineral Resource and that it is uncertain if further exploration will result in the determination of a Mineral Resource and the realisation of the production target.
141. Under this option, an issuer would be prohibited from disclosing a production target or forecast financial information derived from a production target that is based solely on an exploration target (i.e. for a mineral project where the issuer has not determined a Mineral Resource or an Ore Reserve).
142. Overall, this is the preferred option for addressing the issues of concern identified around the disclosure of production targets and forecast financial information derived from production targets because it would provide for greater disclosure of information relevant to demonstrating the 'reasonable basis' for the statements. It would also require issuers to clearly identify:
 - 142.1. the main risks associated with converting Inferred Mineral resources to Indicated or Measured Mineral Resources, or converting Mineral Resources to Ore Reserves, or commencing production; and
 - 142.2. the limitations, in terms of the level of geological confidence, of including estimates of Inferred Mineral Resources and exploration targets in the stated production target.

143. The main benefits of this approach are:

- 143.1. investors would be provided with additional and relevant information for the purpose of assessing the risks, the reliability and the basis for the stated production target and any forecast financial information derived from the production target;
- 143.2. the disclosure of the main risks where estimates of Mineral Resources are included and the inclusion of a cautionary statement about the low level of geological confidence where estimates of Inferred Mineral Resources and exploration targets are included would reduce the potential for the reported production target and any forecast financial information derived from the production target to be confusing or misleading to investors; and
- 143.3. it is unlikely to prevent legitimate disclosure because it continues to allow an issuer to determine what a 'reasonable basis' is with regard to its own circumstances.

Option 5B – Introduction of disclosure requirements and a prohibition against including exploration targets

- 144. Under this option, the disclosure requirements set out at paragraph 140 in option 5A would be introduced, together with a prohibition on the disclosure of production targets and any forecast financial information derived from production targets where estimates of potential quantity and grade from an exploration target are included.
- 145. While option 5A is on balance the preferred option, there may be merit in considering whether prohibiting the disclosure of production targets and any forecast financial information derived from production targets that include exploration targets is justified. This is due to the very low level of geological confidence associated with the mineralisation and because the estimates are conceptual. While there are likely to be situations where it may be appropriate to include some exploration potential, such as, a project that has a producing mine or for which there is a feasibility study demonstrating Ore Reserves, there is potential for the disclosure of production targets and any forecast financial information derived from production targets that include exploration potential in many other situations to confuse and mislead investors (notwithstanding any requirement for the disclosure of a proximate cautionary statement).
- 146. While implementation of this option would reduce the potential for the disclosure of production targets and any forecast financial information derived from production targets to confuse or mislead investors, it may do so at a cost of preventing legitimate disclosure where the circumstances are such that the issuer has determined that it has a 'reasonable basis' for it.

Option 5C – Introduction of disclosure requirements and a prohibition against the disclosure of a production target based solely on Inferred Mineral Resources in a greenfield project

- 147. Under this option, the disclosure requirements set out at paragraph 140 in option 5A would be introduced, together with a prohibition on the disclosure of production targets and any forecast financial information derived from production targets based solely on Inferred Mineral Resources (or a combination of Inferred Mineral Resources and an exploration target) in a greenfield project.
- 148. Under this option, the disclosure of a production target and/or forecast financial information derived from a production target based solely on an Inferred Mineral Resources (or a combination of Inferred Mineral Resources and an exploration target) would not be permitted where the issuer is not a demonstrated producer and has not commenced mining on the tenement or does not have a history of mining on a proximate tenement.
- 149. This option seeks to directly address some of the concerns ASIC has raised in connection with exploration companies or pre-development companies that do not have a recent history of production reporting production targets and forecast financial information derived from production targets in the early stages of a project where there is a low level of geological confidence and there may have only been a preliminary consideration of the Modifying Factors.

150. While option 5A is on balance the preferred option, there may be merit in considering whether prohibiting the disclosure of production targets and any forecast financial information derived from production targets that are based solely on Inferred Mineral Resources (or a combination of Inferred Mineral resources and an exploration target) in a greenfield project is justified. This is due to the low level of geological confidence associated with Inferred Mineral resources and there is no relevant history of the issuer mining on the tenement or on a proximate tenement.
151. While implementation of this option would reduce the potential for the disclosure of production targets and any forecast financial information derived from production targets to confuse or mislead investors, it may do so at a cost of preventing legitimate disclosure where the circumstances are such that the issuer has determined that it has a 'reasonable basis' for it.
152. Overall, the preference for the introduction of option 5A is based on a general view that it is for issuers to determine whether they have a 'reasonable basis' for the disclosure of production target and/or forecast financial information derived from a production target consistent with their obligations under the law and having regard to their own circumstances. However, once an issuer determines that it has a 'reasonable basis' for making such a disclosure, it is proposed that the disclosure requirements set out under option 5A would provide for the disclosure of information that would assist investors in assessing the risks, the reliability and the basis for the reported production target and/or forecast financial information derived from the production target.

Consultation questions

- Q17. Would the proposal for the disclosure of the key assumptions, risks and a cautionary statement where relevant as outlined in option 5A provide investors with a better basis to evaluate the reported forward looking information and reduce the potential for it to confuse or mislead investors?
- Q18. What are your views on whether the specific disclosure requirements proposed in paragraph 140, including the requirement for a cautionary statement, would be effective in reducing the potential for the disclosure of production targets that include some exploration potential to confuse investors?
- Q19. What are your views on the proposal under option 5B for the introduction of a prohibition on the disclosure of a production target and/or forecast financial information derived from a production target that includes or is based on estimates of potential tonnage and grade from an exploration target? Do you agree that given these estimates are conceptual in nature and that there is a very low level of geological confidence associated with the mineralisation that there is potential for the disclosure of production targets including exploration potential to confuse or mislead investors in a wide range of circumstances such that a prohibition may be justified?
- Q20. Is the proposal under option 5C, which would prohibit an issuer from disclosing a production target and any forecast financial information derived from production targets based solely on Inferred Mineral Resources (or a combination of Inferred Mineral Resources and an exploration target) in a greenfield project, inconsistent with current industry practice?
- Q21. Can you envisage circumstances for which there may be a 'reasonable basis' for the disclosure of a production target based solely on Inferred Mineral Resources in a greenfield project and for which the market would be better informed if the information was disclosed?
- Q22. What are your views on whether a prohibition of the disclosure of a production target based solely on Inferred Mineral Resources (or a combination of Inferred Mineral Resources and an exploration target) in a greenfield project would make it more difficult for junior explorers and miners to raise the necessary finance to move the project into the next stage of development?

Issue 6: Annual reporting and reconciliation of Mineral Resources and Ore Reserves

153. Currently, it is not generally accepted industry practice for issuers to report on the results of an annual review of their Mineral Resources and Ore Reserves in their annual reports or report on their aggregated or total Mineral Resources and Ore Reserves holdings. While issuers are required to review and publicly report, at least annually, on their Mineral Resources and Ore Reserves, there is no requirement for them to report on the review in their annual report.
154. Given the Mineral Resource and Ore Reserve holdings are such significant assets for mining companies and that the value of such assets are generally not reflected on the balance sheet in current value, there would appear to be a strong case for requiring the inclusion of information relating to the Mineral Resource and Ore Reserve holdings (estimates of volumes/quantity) of an issuer either in the annual report or in a separate document cross-reference in the annual report and released at the same time as the annual report.
155. Annual reporting of the results of the annual review and of the issuer's total holdings of Mineral Resources and Ore Reserves in the annual report or in a separate document cross-referenced in the annual report would provide for additional transparency and investor accessibility to the estimates of all the Mineral Resources and Ore Reserves held by an issuer. It may also make it easier for investors to make year on year comparisons on the Mineral Resource and Ore Reserve holdings of the issuer and the issuer's performance in relation to converting exploration into Mineral Resources and converting Mineral Resources to Ore Reserves.

Current requirements

156. Clause 14 of the JORC Code requires issuers to review and publicly report on their Mineral Resources and Ore Reserves at least annually.
157. If an annual review finds a material change in the aggregate estimated Mineral Resources and Ore Reserves held by an issuer (where the main reasons for the changes had not previously been disclosed to the market), the issuer would be required to disclose this information immediately on becoming aware of it under Listing Rule 3.1.

Requirements in other relevant jurisdictions

Canadian requirements

158. The CIM Guidelines make a number of recommendations in relation to the reporting of Mineral Resources and Ore Reserves in annual reports, including that:
 - 158.1. the Mineral Resource and Ore Reserve estimates be reported as a tabulation;
 - 158.2. the date of the estimate of the Mineral Resource and Ore Reserve be reported; and
 - 158.3. the details of year-to-year changes in Mineral Resources and Ore Reserves, including an explanation of the reasons for the changes, be reported.
159. NI 43-101 does not include an explicit requirement for an annual review and annual reporting of an issuer's Mineral Resources and Ore Reserves. However, a Technical Report including estimates of Mineral Resources and Mineral Reserves is required to support an annual information form (AIF).

South African requirements

160. Neither the JSE Listing Requirements nor the SAMREC Code imposes a requirement on issuers to review and publicly report on their Mineral Resources and Mineral Reserves annually.
161. However, the SAMREC Code does require that where revised Mineral Resource and Mineral Reserve statements are publicly reported, they must be reconciled with previous statements. The SAMREC Code states that while a

detailed account of the differences between figures is not essential, it does indicate that the comment must be sufficient to enable significant variances to be understood by investors.

Possible options to facilitate improved annual reporting of Mineral Resources and Ore Reserves

Option 6A – Introduction of a requirement for issuers to report their Mineral Resources and Ore Reserves in their annual report

162. Under this option, a requirement would be introduced for issuers to report on the results of their annual review and on their total holdings of Mineral Resources and Ore Reserves as at their balance date in their annual report or in a separate document released concurrently with the annual report and cross-referenced in the annual report. It is also proposed that issuers would be required to report their estimates of Mineral Resources and Ore Reserves in tabular form by commodity (providing both tonnage and grade), by Mineral Resource and Ore Reserve category and at a level of disaggregation to be determined by the issuer based on materiality (i.e. the level of reporting could be by geographic region, continent, country or by project or deposit depending on the materiality of the relevant Mineral Resources and Ore Reserves to the issuer).
163. It is not proposed that the issuer be required to undertake the annual review at a specific time in the lead up to the release of the annual report, but the issuer would be required to disclose the date of the review.
164. The main reason for not prescribing when during the reporting period an issuer must undertake the review is that such a requirement would likely lead to significant supply constraints for consultants that would be commissioned to undertake these reviews for a large number of issuers at the same time.
165. It should be noted that the proposed requirement for issuers to report the results of the annual review and their holdings of Mineral Resources and Ore Reserves in their annual report does not abrogate their continuous disclosure obligations to report any material and price sensitive information immediately on becoming aware of it.

Option 6B – Introduction of a requirement for a reconciliation of changes in Mineral Resource and Ore Reserve estimates from year to year

166. Under this option, the reporting requirements set out in option 6A above would be introduced, together with a requirement for the disclosure of a reconciliation of the aggregated Mineral Resources and Ore Reserves estimates with that from the proceeding year. It is proposed that the reconciliation would identify the changes resulting from: discoveries; revisions of previous estimates, which may be the result of greater geological knowledge or a change in commodity price assumptions; converting Mineral Resources to Ore Reserves or upgrading estimates from Inferred to Indicated or Indicated to Measured and Probable to Proved; production; and the acquisition or disposal of Mineral Resources and/or Mineral Reserves.
167. Overall, this is the preferred option because of the transparency it provides in relation to the Mineral Resource and Ore Reserve estimates (and the main reason for significant changes to the estimates) across the entire operations of the issuer and, as a result, makes it easier for investors to compare across years and to evaluate the issuer's performance in converting discoveries into Mineral Resources or converting Mineral Resources into Ore Reserves.

Consultation questions

- Q23. Would the proposed requirement for the disclosure of the results of the annual review and the Mineral Resources and Ore Reserves held by issuers in the annual report or a separate document released at the same time as the annual report provide additional accessibility of this information and generally be useful to investors?
- Q24. What are your views on requiring that the aggregated holdings of Mineral Resources and Ore Reserves be reported in the annual report or other separate document as at the company's balance date?
- Q25. Is it appropriate for issuers to determine the appropriate level of disaggregation in reporting based on materiality or would it be more appropriate for reporting by project/deposit?
- Q26. Would a reconciliation of estimates of Mineral Resources and Ore Reserves against the estimates from the preceding year in the annual report or other separate document provide a useful source of information for investors on the issuer's management of its portfolio of Mineral Resources and Ore Reserves?
- Q27. What are your views on the proposal that the reconciliation identify the changes in estimates resulting from: discoveries; revisions of previous estimates; converting Mineral Resources to Ore Reserves or upgrading estimates from Inferred to Indicated or Indicated to Measured and Probable to Proved production; and the acquisition or disposal of Mineral Resources and/or Mineral Reserves? Are there any categories that should be included?
- Q28. Would the proposed requirement for a reconciliation of the estimates of Mineral Resources and Ore Reserves in the annual report or other separate document involve a significant compliance cost for issuers?
- Q29. Should the proposed requirement for a reconciliation of the estimates of Mineral Resources and Ore Reserves in the annual report or other separate document prescribe the form in which it takes, that is, tabular or narrative, or is it more appropriate to allow the issuer to determine the most effective method of communicating this information based on the level of disaggregation in reporting the estimates?

Part B: Oil and Gas Company Petroleum Reserves and Resources Reporting

Executive Summary

168. ASX has commenced a review of current industry reporting practices and recent international developments in the requirements applicable to listed entity reporting of petroleum reserves and other petroleum resources with a view to comprehensively updating the Listing Rule reporting requirements.
169. The primary objective of the review is to facilitate greater consistency in, and enhance the quality of, public reporting of petroleum exploration activities and results, petroleum reserves and other petroleum resources, and production targets to promote greater efficiency in the capital formation process for listed oil and gas exploration and production companies. More specifically, the review is aimed at ensuring the reporting requirements under the Listing Rules:
- 169.1. promote the disclosure of sufficient information about petroleum exploration activities and results, petroleum reserves and other petroleum resources, and production targets to enable investors and their advisors to make informed investment decisions;
 - 169.2. promote balanced public reporting of exploration and drilling results, petroleum reserves and other petroleum resources to enable investors and their advisors to understand not only the significance of the results and estimates reported, but also the key risks and limitations relevant to the reported information;
 - 169.3. take into account the increasing importance of unconventional resources;
 - 169.4. establish a reporting framework that enables the disclosure of a company's full inventory of petroleum resources and which provides for a more complete picture of a company's prospects to generate future cash flows;
 - 169.5. reduce the potential for the disclosure of information that may confuse or mislead investors and their advisors, in particular, in relation to the disclosure of prospective resources and production targets and related forecast financial information based on petroleum resources in the early stages of project development; and
 - 169.6. establish a reporting framework that is sufficiently flexible to accommodate the rapid evolution of technology in the oil and gas industry.
170. In seeking to achieve the regulatory objectives of promoting greater efficiency in the capital formation process for listed oil and gas E & P companies, the review is focussed on ensuring the adequacy of information reported such that the reporting burden is proportionate to the expected benefits to investors from being better able to assess publicly reported exploration results and petroleum reserves and other petroleum resources at the time when such information is reported to the market.
171. The key issues and proposals examined in this paper are:
- 171.1. **Standardised petroleum resources definitions and a common classification system** – it is proposed that a new listing rule requirement be introduced mandating the reporting of petroleum reserves and other petroleum resources in accordance with the 'Petroleum Resources Management System' (SPE-PRMS) sponsored by the Society of Petroleum Engineers (SPE), the American Association of Petroleum Geologists (AAPG), the World Petroleum Council (WPC) and the Society of Petroleum Evaluation Engineers (SPEE) (see pages 54-58);
 - 171.2. **General reporting requirements for reporting of reserves and resources** - it is proposed that a number of general reporting requirements applicable to all public reporting of petroleum reserves and other petroleum resources be introduced in the Listing Rules to provide a regulatory framework to complement SPE-PRMS (see pages 59-63);

- 171.3. **Annual reserves and resources reporting requirements** – it is proposed that a requirement be introduced requiring annual reporting, either in the annual report or a separate reserves and resources document released concurrently with the annual report, of company level reserves and other aggregated reserves information as at the company's balance date. It is also proposed that a reconciliation of reported estimates of company level reserves against the estimates from the previous year be reported annually (see pages 64-66);
- 171.4. **Disclosure of exploration and drilling results** - it is proposed that the reporting requirements under Listing Rule 5.9 applicable to the reporting of exploration and drilling results be updated to provide for the disclosure of more meaningful information for the purpose of assessing the significance of the reported results. It is also proposed that the guidance currently included in Guidance Note 8 relating to the adoption of a regime of structured disclosure for each drilling programme be deleted, to the extent that it promotes the reporting of immaterial exploration and drilling information (see pages 67-70);
- 171.5. **Disclosure of key assumptions underpinning reserve and resource estimate** – consideration is being given to the introduction of a requirement for the key assumptions and other specific information to be disclosed to support the booking of initial estimates of reserves, contingent resources and prospective resources (and materially upgraded estimates) in relation to a specific field, property or project when such estimates are publicly reported (see pages 71-74);
- 171.6. **Disclosure of production targets** – consideration is being given to the introduction of reporting requirements for production targets and related forecast financial information to provide a better basis for investors to understand and assess the basis for, and the key risks and level of uncertainty associated with, the reported production target and related forecast financial information. It is proposed that when reporting a production target and related forecast financial information, an issuer should also disclose:
- 171.6.1. the key assumptions underpinning the production target;
 - 171.6.2. where the production target includes or is based on contingent resources, the key contingencies, risks and level of uncertainty associated with converting the contingent resources to reserves;
 - 171.6.3. where the production target includes sub-marginal contingent resources, the key risks associated with those estimates and the proportion of the production target that is based on the sub-marginal contingent resources, together with a proximate cautionary statement;
 - 171.6.4. where the production target includes prospective resources, the discovery risk, the basis for including the prospective resources and the proportion of the production target that is based on the prospective resources, together with a proximate cautionary statement;
- It is also proposed that reporting a production target and related forecast financial information based solely off prospective resources will be prohibited (see pages 75-77);
- 171.7. **Qualified reserves and resources evaluator requirements** – it is proposed that the Listing Rule requirements in relation to the minimum professional qualifications and experience required to be recognised as a 'qualified reserves and resources evaluator' for the purpose of estimating publicly reported petroleum reserves and resources be updated to enhance alignment with industry and international best practice (see pages 78-80).

Background

Current regulatory arrangements

172. The main listing rule requirements specific to listed oil and gas exploration and production companies (E & P companies) are set out in Chapter 5 of the Listing Rules.
173. E & P companies are required under Chapter 5 of the Listing Rules to release to the market on ASX's company announcements platform specific quarterly reports. E & P companies are required to report on their production, development and exploration activities and to provide a brief summary of the expenditure incurred on these activities over the quarter. Oil and gas exploration companies are also required to release to the market a quarterly cash flow report in accordance with Appendix 5B of the Listing Rules. In the quarterly cash flow report, exploration companies are required to provide the details of their cash flows for the quarter and provide the details of estimated cash outflows for the next quarter in relation to expected exploration and evaluation, development, production and administration expenses.
174. An exploration company is also required under Listing Rule 4.10.15 to provide a list of its interests in mining tenements, the location of the tenements and the interest held in each tenement in its annual report.
175. Additional guidance is provided to E & P companies regarding disclosure of oil and gas exploration in Guidance Note 8 'Continuous Disclosure: Listing Rule 3.1'. Under paragraphs 74-76 of Guidance Note 8, guidance is provided indicating that if exploration results (test results or progress in drilling programmes) is information that a reasonable person would expect to have a material effect on the price or value of securities of the entity concerned, then Listing Rule 3.1 requires that information be disclosed as it is unlikely that all the pre-requisites in the exception to Listing Rule 3.1 would be met.
176. Guidance Note 8 also sets out an expectation that entities adopt a regime of structured disclosure at regular intervals for each drilling programme following disclosure of progress in that programme under Listing Rule 3.1. The guidance indicates that while reporting had historically been required on a weekly basis (and that it may continue to be appropriate), the interval for reporting adopted by an entity should be such that, in the circumstances of the entity, useful information is reported on a regular basis. The type of information that Guidance Note 8 suggests may be relevant for inclusion in such disclosures is:
 - 176.1. the name of the well;
 - 176.2. the permit in which the well is located;
 - 176.3. the well's position in the permit with respect to previous wells, known oil or gas fields, or towns;
 - 176.4. the depth of the well
 - 176.5. progress since the last disclosure;
 - 176.6. details of any indications of hydrocarbons and fluids observed while drilling;
 - 176.7. the entity's beneficial percentage interest in the well; and
 - 176.8. the time to which progress is reported.
177. On an ongoing basis, all listed E & P companies (and any entity which has, or whose child entity has, acquired an interest in a well) are required to comply with Listing Rules 5.9 and 5.11-5.17 when publicly reporting hydrocarbon reserves, other hydrocarbon resources and exploration results. Since the introduction of these Listing Rules in 1996, there have been significant changes and developments in the oil and gas industry and in the reporting of hydrocarbon reserves and other hydrocarbon resources internationally.

178. Listing Rules 5.15-5.17 set out the existing general reporting requirements applicable to all public reporting of hydrocarbon reserves, which are primarily aimed at not allowing the disclosure of best and high estimates of hydrocarbon reserves in isolation or using the term 'reserves' in connection with resources that are not deemed to be commercially recoverable. Additional details on the existing general reporting requirements are discussed under 'Issue 2' of this paper.
179. When publicly reporting on hydrocarbon reserves and other resources, the following requirements under the Listing Rules apply:
- 179.1. the public report on an entity's hydrocarbon reserves must be based on the information compiled by a qualified person;
 - 179.2. the person responsible for compiling the underlying reserves information must satisfy certain educational and professional experience criteria; and
 - 179.3. the name and employments details of the person compiling the underlying reserves information must be disclosed in the relevant public report, together with a statement setting out that the relevant person consented to the inclusion of that information in the form and context in which it appears.
180. Chapter 19 of the Listing Rules provides the definitions of hydrocarbons, pre-hydrocarbon reserves, hydrocarbon reserves, proved hydrocarbon reserves, probable hydrocarbon reserves and possible hydrocarbon reserves for the purpose of reporting under the Listing Rules. The Chapter 19 definitions of hydrocarbon reserves are discussed in more detail under 'Issue 1' of this paper.

Previous proposal for hydrocarbon reporting requirements under the Listing Rules (2007)

181. In 2006 and 2007, ASX undertook public consultation on updating the requirements under the Listing Rules applicable to the reporting of petroleum reserves and other petroleum resources.
182. Following the consultation process, in late 2007, ASX proposed a number of amendments to Chapter 5 of the Listing Rules, including the introduction of Listing Rule 5.6A. Under the then proposed Listing Rule 5.6A, E & P companies, when reporting on their petroleum reserves and other resources, would have been required to:
- 182.1. report in accordance with SPE-PRMS; or
 - 182.2. report in accordance with the SEC/US FASB requirements; or
 - 182.3. disclose the standard or methodology that they used.
183. ASX withdrew the proposed Listing Rule amendments for petroleum resources reporting from the regulatory approval process required to amend the Listing Rules in late 2009. The proposed amendments were withdrawn on the basis that, in the time that had elapsed since ASX consulted on the proposed reporting rules in 2006 and 2007, there had been significant international developments in the reporting of petroleum reserves with the release of the revised SPE-PRMS and the introduction of substantive amendments to the SEC reporting requirements.
184. In light of the changes to SPE-PRMS and the SEC reporting framework, ASX is of the view that there is merit in undertaking further consultation on a revised approach to petroleum resources reporting under the Listing Rules, which involves mandating reporting in accordance with SPE-PRMS and the introduction of specific rules to provide the regulatory framework to complement the use of SPE-PRMS.

Overview of reporting regimes in other jurisdictions

185. There have been considerable developments in the reporting frameworks for petroleum reserves and other petroleum resources in other developed listing markets for oil and gas companies over the last decade or so since the current hydrocarbon reserves reporting requirements were introduced in the Listing Rules. The industry-developed petroleum resource definitions and classification guidelines in the SPE-PRMS framework have also evolved considerably over this period.
186. In developing revised reporting requirements that are more aligned with those in other relevant markets and with industry practices more generally, the review and this paper examines the reporting regimes in Canada and the United States of America (SEC regulations), and the SPE-PRMS guidelines.

Canadian reporting regime

187. The Canadian regime for reporting oil and gas reserves and other resources by listed companies is comprised of:
- 187.1. a suite of instruments implemented by the Canadian Securities Administrators³⁰ (CSA):
 - 187.1.1. National Instrument 51-101 *Standards of Disclosure for Oil and Gas Activities* (NI 51-101), which sets out the annual filing requirements and the general disclosure requirements for the reporting of upstream oil and gas activities³¹;
 - 187.1.2. Companion Policy 51-101CP *Standards of Disclosure for Oil and Gas Activities* (Companion Policy), which sets out how certain provisions in NI 51-101 will be interpreted and applied³²;
 - 187.1.3. Form 51-101 F1 *Statement on Reserves Data and other Oil and Gas Information*, Form 51-101 F2 *Report on Reserves Data by Independent Qualified Reserves Evaluator or Auditor*, Form 51-101 F3 *Report of management and Directors of Oil and Gas Disclosure*, which set out the annual reserves filing requirements³³; and
 - 187.1.4. CSA Staff notice 51-324 *Glossary to NI 51-101 Standards of Disclosure for Oil and Gas Activities* and CSA Staff Notice 51-327 *Oil and Gas Disclosure: Resources other than Reserves Data* and; and
 - 187.2. the *Canadian Oil and Gas Evaluation Handbook* (COGE Handbook) prepared by the Society of Petroleum Evaluation Engineers (Calgary Chapter) and the Canadian Institute of Mining, Metallurgy & Petroleum (Petroleum Society).
188. NI 51-101 includes annual filing requirements, corporate governance requirements relating to the internal controls and procedures for reviewing and reporting reserves data, and general disclosure requirements that are applicable to all disclosure of hydrocarbon reserves and other hydrocarbon resources. NI 51-101 requires annual filing of the following:
- 188.1. *a statement of reserves data and other oil and gas information* - the information requirements for which are specified in Form 51-101 F1. Amongst other things, Form 51-101 F1 requires the disclosure of:

³⁰ The Canadian Securities Administrators is the Canadian equivalent of ASIC. It comprises provincial and territorial regulators.

³¹ NI 51-101 *Standards of Disclosure for Oil and Gas Activities* is available at: [http://www.bcsc.bc.ca/uploadedFiles/securitieslaw/policy5/51-101\[NI\]-2010-12-30.pdf](http://www.bcsc.bc.ca/uploadedFiles/securitieslaw/policy5/51-101[NI]-2010-12-30.pdf)

³² Companion Policy 51-101CP is available at: [http://www.bcsc.bc.ca/uploadedFiles/securitieslaw/policy5/51-101CP\[CP\]-2010-12-30.pdf](http://www.bcsc.bc.ca/uploadedFiles/securitieslaw/policy5/51-101CP[CP]-2010-12-30.pdf)

³³ Forms 51-101 F1, F2 and F3 are available at: <http://www.bcsc.bc.ca/policy.aspx?id=11440&cat=5%20-%20Ongoing%20Requirements%20for%20Issuers%20and%20Insiders>

- 188.1.1. a range of aggregated reserve estimates by specific reserve category and by country for each product type;
 - 188.1.2. a reconciliation of changes in reserves from the previous year;
 - 188.1.3. net present value of future net revenue attributable to the reserve holdings and the disclosure of specific forecast prices and costs that are used to calculate estimated future net revenue;
 - 188.1.4. pricing assumptions;
 - 188.1.5. additional information relating to undeveloped proved reserves, including plans for developing those reserves;
 - 188.1.6. the significant factors or uncertainties affecting the reserves data;
 - 188.1.7. future development costs; and
 - 188.1.8. a range of additional information on abandonment and reclamation costs, exploration and development activities, production estimates and production history and oil and gas properties with no attributed reserves;
- 188.2. *a report by an independent qualified reserves evaluator or auditor* – the auditor or evaluator is required to assess or evaluate at least 75 per cent of the net future revenue attributable to proved plus probable reserves. The purpose of this report is to assess whether the reserves data has been determined in accordance with the COGE Handbook and free of material misstatement. The report must be provided in accordance with Form 51-101 F2;
- 188.3. *a report of management and directors* – this report confirms the responsibility of management and directors for the information included in the statement of reserves data and other oil and gas information. The report must be provided in accordance with Form 51-101 F3.
189. NI 51-101 also prescribes the ongoing or general reporting requirements applicable to all public reporting of reserves and other oil and gas information. The main ongoing reporting requirements under NI 51-101 are discussed under 'Issue 2' of this paper.

US SEC reporting regime

190. The main reporting requirements for publicly listed E & P companies concerning their upstream oil and gas activities are prescribed in Subpart 1200 of Regulation S-K and Rule 4-10 of Regulation S-X under the Securities Act of 1933 and the Securities Exchange Act of 1934. Subpart 1200 of Regulation S-K provides the disclosure rules for oil and gas companies in filings with the U.S. Securities Exchange Commission (SEC), including in annual reports. Rule 4-10 of Regulation S-X prescribes the financial accounting and reporting standards for companies involved in oil and gas activities. Rule 4-10 of Regulation S-X also sets out the oil and gas definitions.
191. Regulation S-K requires E & P companies to provide a summary of oil and gas reserves information as at fiscal year end. The main reporting requirements for the disclosure of oil and gas reserves information as at the close of the financial year in annual reports include:
- 191.1. mandatory reporting of aggregate proved reserves by product type;
 - 191.2. mandatory reporting of proved developed reserves and proved undeveloped reserves by product type and by geographic area and for each country with 15 per cent or more of the company's proved reserves;

- 191.3. reporting of aggregated probable developed and probable undeveloped reserves, and possible developed and possible undeveloped reserves is optional;
 - 191.4. the disclosure of hydrocarbon resources that are not classified as reserves, or any estimated values of such resources, is prohibited;
 - 191.5. total reported reserves must be a simple arithmetic sum of all estimates for individual properties or fields within each reserves category (i.e. when probabilistic estimation methods are used, reserves cannot be aggregated probabilistically beyond the field or individual property level);
 - 191.6. material reserves for specific product types must be disclosed separately;
 - 191.7. if a company discloses that a third party prepared its reserves estimates or conducted a reserves audit, the company is required to file a third party report disclosing a range of information including the assumptions, methods and procedures used, the uncertainties of the reserves estimates, the proportion of the issuer's reserves covered by the report, a brief summary of the third party's conclusions and the consent of the third party;
 - 191.8. production, average sales price per unit and the average production cost must be disclosed for each of the previous three years by geographic area and for each country that with 15 per cent or more of the company's total proved reserves;
 - 191.9. for each of the previous three years, the number of the net productive and dry exploratory and development wells drilled, and any other exploratory and development activities conducted by geographic area must be disclosed;
 - 191.10. a company's present activities, such as the number of wells in the process of being drilled, waterfloods in the process of being installed, pressure maintenance and any other related activities of material importance, must be disclosed;
 - 191.11. information relating to how a company is able to meet its delivery commitments in relation to the supply of a specific quantity of oil and gas in the near term under existing contracts must be disclosed; and
 - 191.12. information relating to the total gross and net productive wells, the total gross and net developed acreage, the amount of undeveloped acreage and the minimum remaining terms of leases and concessions must be disclosed by geographic area.
192. On 1 January 2010, the SEC introduced significant revisions to modernize the disclosure rules for oil and gas companies under Regulation S-K and Rule 4-10 of Regulation S-X. While the SEC did not adopt SPE-PRMS generally, many of the revised oil and gas definitions in Rule 4-10 and a number of the revisions in Regulation S-K were designed to provide for greater consistency and alignment between the US reporting rules and SPE-PRMS. The most significant changes to the disclosure rules included:
- 192.1. the definition of 'oil and gas producing activities' was revised to include the extraction of oil and gas from unconventional resources (i.e. bitumen, shale gas, coalbed methane) and, by doing so, allow the reporting of such resources in SEC filings;
 - 192.2. the introduction of a requirement for the disclosure of reserves in tabular form by final product which distinguishes between final products that are traditional oil and gas from final products of synthetic oil and gas;
 - 192.3. the definition of 'proved reserves' was revised to allow the use of new reliable technologies to establish the reasonable certainty required for assigning reserves (in particular, proved reserves) and to determine the levels of the lowest known hydrocarbons and highest known oil through methods other than well penetrations. The definition of 'reliable technology' introduced is more principles-based to accommodate the relatively rapid technological advancement in the industry;

- 192.4. the introduction of new rules that allow a company to assign proved undeveloped reserves beyond the development spacing areas that are immediately adjacent to developed spacing areas if the company can establish with reasonable certainty that the reserves are economically producible;
- 192.5. the introduction of new rules that allow companies to disclose probable and possible reserves on a voluntary basis;
- 192.6. the introduction of new rules defining 'reasonable certainty', 'probable reserves', 'possible reserves', 'developed reserves' and 'undeveloped reserves', which are broadly consistent with the SPE-PRMS definitions;
- 192.7. the introduction of the requirement for the filing of third party reports where a company discloses that its reserve estimates were prepared or audited by a third party; and
- 192.8. the introduction of a revised pricing mechanism required to be used in estimating reported reserves based on the unweighted arithmetic average of the first-day-of-the-month price for each month for the 12 month period prior to the end of the reporting period.

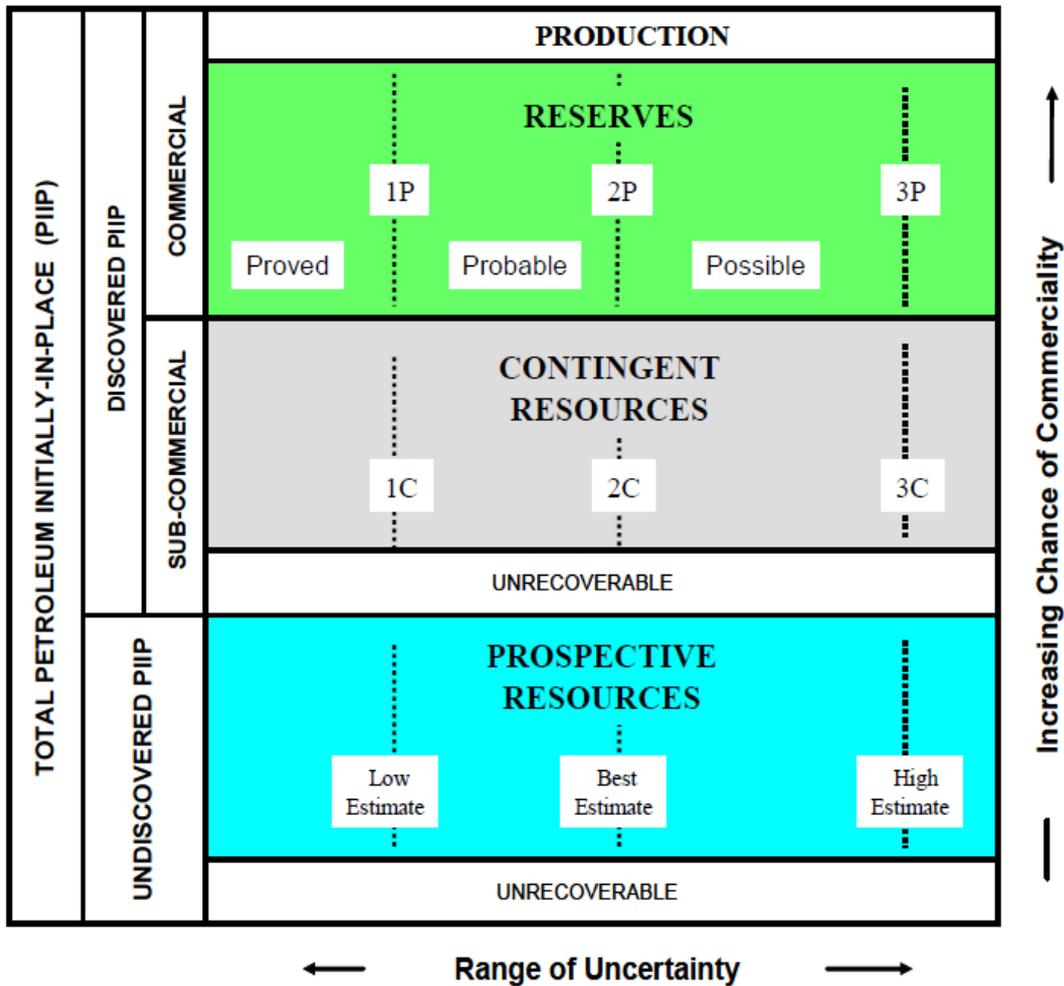
SPE-PRMS

- 193. SPE-PRMS is an industry-developed project-based management system aimed at providing a consistent approach to both the estimation of petroleum resources and the evaluation of development projects. SPE-PRMS provides technical definitions of petroleum resources and a comprehensive classification system for all petroleum resources.
- 194. SPE-PRMS was adopted in 2007 following a significant review process to update its predecessor the "Petroleum Resources Classification System and Definitions", which was adopted in 2000. Efforts to standardise petroleum reserves definitions for all categories of reserves (and subsequently for other classes of resources) and update the definitions and guidelines have been ongoing since the late 1980s by the sponsors (both separately and jointly) of SPE-PRMS.
- 195. The amendments to the "Petroleum Resources Classification System and Definitions" implemented through the adoption of SPE-PRMS in 2007 were focused on updating the definitions and guidelines to reflect technological advancement in relation petroleum exploration, development, production and processing. The amendments also sought to ensure that SPE-PRMS accommodated unconventional resources given the increasing importance of unconventional resources in the industry.
- 196. The SPE-PRMS definitions and classification system are now commonly used by oil and gas companies globally. While SPE-PRMS is a principles-based and not a rules-based framework, SPE-PRMS goes a long way in terms of representing a set of clear and standard definitions and providing a consistent approach to classifying and categorizing all petroleum reserves and resources. Not only is such a framework useful for companies seeking a consistent internal approach to project evaluation, but it has increasingly provided a common reference point for companies communicating with investors about their petroleum resources.
- 197. The principles-based approach under SPE-PRMS provides companies with the flexibility to accommodate the range of petroleum product types, different types of reservoirs, traditional and unconventional resources, the different stages in project development from undiscovered resources through to commercially producible reserves, evolving technology and the particular circumstances of the company.
- 198. SPE-PRMS provides a framework for classifying and categorizing the entire petroleum resource base in which companies may hold an interest. Under SPE-PRMS, the term 'resources' refers to all quantities of petroleum including that which is discovered and undiscovered, that which is recoverable and unrecoverable and those

quantities that have been produced. It also includes all types of petroleum, that is, petroleum from 'conventional' and 'unconventional' sources³⁴.

199. Under SPE-PRMS, a project is applied to an accumulation(s) or a potential accumulation(s) is 'classified' based on its chance of commerciality (i.e. the chance that the project will be developed and reach commercial production) and estimates of recoverable and marketable quantities associated with each project are 'categorised' to reflect the uncertainty that the forecast petroleum quantities will be produced and sold in the future from that development project. The major recoverable resource classes are: production, reserves, contingent resources and prospective resources.
200. Figure 1 below, taken from SPE-PRMS, sets out a graphical representation of the SPE-PRMS system.

Figure 1 – SPE-PRMS Resources Classification Framework



201. The vertical axis of Figure 1 represents the chance of commerciality. The key vertical categories relate to the quantities of petroleum that are estimated to be remaining and recoverable:

- 201.1. reserves – which are discovered and commercially recoverable;
- 201.2. contingent resources – which are discovered and potentially recoverable, but are sub-commercial; and

³⁴ *Petroleum Resources Management System*, sponsored by Society of Petroleum Engineers (SPE), American Association of Petroleum Geologists (AAPG), World Petroleum Council (WPC) and Society of Petroleum Evaluation Engineers (SPEE), (2007), page 2. Hereafter, it will be simply referred to as SPE-PRMS.

- 201.3. prospective resources – which are potentially recoverable from undiscovered accumulations.
202. The horizontal axis of Figure 1 represents the range of uncertainty, which reflects that remaining recoverable quantities can only be estimated, not measured. There are three uncertainty categories for estimates of recoverable resources – low estimate (which is a conservative estimate), best estimate and high estimate (which is an optimistic estimate). For Contingent Resources, these are denoted as 1C, 2C and 3C, respectively. The corresponding reserves categories are proved reserves (1P), proved plus probable reserves (2P), and proved plus probable plus possible (3P).
203. SPE-PRMS is supplemented by the *2001 Guidelines for the Evaluation of Petroleum Reserves and Resources* published by SPE, WPC and AAPC and the *Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information* published by SPE.
204. SPE-PRMS does not provide the reporting rules for E & P companies reporting on their petroleum reserves and other petroleum resources. The relevant reporting requirements are implemented by either the national securities regulator or the securities exchanges in individual jurisdictions. The approach proposed by ASX in this paper is to supplement SPE-PRMS with listing rule reporting requirements.

Key Issues for Review

Issue 1: Reserves and Resources definitions & a common classification system

205. The Listing Rule definitions of hydrocarbon reserves were adopted in 1996 and are not currently aligned with the definitions that have been progressively developed by the main international petroleum industry bodies and those used in the reporting regimes of other major listing markets for E & P companies. The hydrocarbon reserves definitions and the reporting requirements under the Listing Rules are also not currently underpinned by a comprehensive classification system for petroleum resources or industry developed technical guidelines for the estimation and classification of petroleum resources.
206. Generally, E & P companies have used industry developed technical guidelines for the classification of petroleum resources for the purpose of reporting their petroleum reserves and other petroleum resources under the Listing Rules. While significant standardisation of petroleum resources definitions and the classification systems for petroleum resources has been achieved over the last decade or so by the sponsors of SPE-PRMS, there are a number of different classification systems used in other jurisdictions that companies may be using to estimate and classify their reported petroleum reserves and other petroleum resources. Some companies would also appear to use internally generated classification systems.
207. The use of differing petroleum resources classification systems and definitions by oil and gas companies makes it more difficult for investors to compare the petroleum resource assets held by different companies. The use of different petroleum resources classification systems and definitions that employ the same terminology may also lead to investor confusion.

Current requirements

208. Chapter 19 of the Listing Rules provides the following definitions of hydrocarbons, hydrocarbon resource classes and reserve categories that are recognised under the Listing Rules:
- 208.1. *hydrocarbon* – a compound of the elements of hydrogen and carbon, in either liquid or gaseous form. Natural gas and petroleum are mixtures of hydrocarbons;
 - 208.2. *pre-hydrocarbon reserves* – from the earliest investigations until proved hydrocarbon reserves can be estimated;
 - 208.3. *hydrocarbon reserves* – proved hydrocarbon reserves, probably hydrocarbon reserves or possible hydrocarbon reserves;
 - 208.4. *proved hydrocarbon reserves* – reserves that, to a high degree of certainty, are clearly recoverable at commercial rates under currently anticipated production methods, operating conditions, prices and costs;
 - 208.5. *probable hydrocarbon reserves* – reserves that may reasonably be assumed to exist because of geophysical or geological indications and drilling done in regions which contain proved hydrocarbon reserves. This category may also include reserves commercially recoverable as a result of beneficial effects which may be derived from the future institution of some form of pressure maintenance or other secondary recovery methods, or as a result of a more favourable performance of the existing recovery mechanism than that which would be deemed proved at the present time. There is equal risk of there being larger or smaller volumes of reserves resulting; and
 - 208.6. *possible hydrocarbon reserves* – reserves less well defined by geological and geophysical control than probable hydrocarbon reserves and consisting of extensions to the proved hydrocarbon

reserves and probable hydrocarbon reserves areas where so indicated by geophysical and geological studies.

Requirements in other relevant jurisdictions

Canadian requirements

209. NI 51-101 provides a number of definitions relevant to the reporting of petroleum reserves and other petroleum resources, and it prescribes the use of the COGE Handbook definitions. The COGE Handbook includes definitions of petroleum reserves and other resources and provides for the classification of all petroleum resources. Following the respective amendments to both SPE-PRMS and the COGE Handbook in 2007, there is broad alignment between the COGE Handbook and the SPE-PRMS definitions and guidelines.

US SEC Requirements

210. Rule 4-10 of Regulation S-X includes the oil and gas definitions for SEC filings. It includes definitions for proved oil and gas reserves (and both proved developed and proved undeveloped), probable reserves and possible reserves. Given oil and gas resources not classified as reserves are prohibited from being disclosed in SEC filings, no definitions or a broader classification system is provided for petroleum resources outside the reserves class.
211. The SEC reporting requirements for upstream oil and gas activities are not directly underpinned by SPE-PRMS, but the amended reserves definitions introduced in 2010 were largely derived from the SPE-PRMS definitions. The main difference between the definitions relate to the criteria that proved reserves under the SEC requirements must be based on 'economic producibility', whereas under the SPE-PRMS, the criteria for proved reserves is based on 'commerciality', which factors in the reporting company's hurdle rate of return.

SPE-PRMS

212. The definitions for the key classes and categories of petroleum resources in SPE-PRMS are as follows.
213. *Reserves* – “are those quantities of petroleum anticipated to be commercially recoverable by application of development projects to known accumulations from a given date forward under defined conditions.”³⁵ Under the SPE-PRMS guidelines, reserves must satisfy four criteria: they must be discovered, recoverable, commercial and remaining (as at the evaluation date) based on the development project(s) applied. Reserves are further categorised according to the range of uncertainty of the recoverable and potentially recoverable volumes being produced:
- 213.1. *Proved Reserves* – “are those quantities of petroleum, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be commercially recoverable, from a given date forward, from known reservoirs and under defined economic conditions, operating methods, and government regulations.”³⁶ If deterministic methods are used, the term reasonable certainty is intended to express a high degree of confidence that the quantities will be recovered. If probabilistic methods are used, there should be at least a 90 per cent probability that the quantities actually recovered will equal or exceed the estimate. If probabilistic or deterministic scenario methods are used, Proved Reserves are generally referred to as the 'low estimate', which is denoted as 1P;
- 213.2. *Probable Reserves* – “are those additional Reserves by which analysis of geoscience and engineering data indicate are less likely to be recovered than Proved Reserves but more certain than to be recovered than Possible Reserves.”³⁷ It is equally likely that actual remaining quantities recovered will be greater than or less than the sum of the estimated Proved plus Probable (2P). In this context, when probabilistic methods are used, there should be at least a 50 per cent probability that the actual quantities recovered will equal or exceed the 2P estimate. If probabilistic or

³⁵ SPE-PRMS, page 3.

³⁶ Ibid, page 11.

³⁷ Ibid, page 11.

deterministic scenario methods are used, Proved plus Probable Reserves (2P) correspond to the 'best estimate'; and

- 213.3. *Possible Reserves* - "are those additional reserves which analysis of geoscience and engineering data suggest are less likely to be recoverable than Probable Reserves."³⁸ The total quantities ultimately recovered from a project have a low probability to exceed the sum of Proved plus Probable plus Possible Reserves (3P), which is equivalent to the 'high estimate' scenario. In this context, when probabilistic methods are used, there should be at least a 10 per cent probability that the actual quantities recovered will equal or exceed the 3P estimate;

Reserves can also be subdivided based on the operational and funding status of wells and associated facilities within the reservoir development plan according to:

- 213.4. *Developed Reserves* – "Developed Reserves are expected to be recovered from existing wells including reserves behind the pipe. Improved recovery reserves are considered 'developed' only after the necessary equipment has been installed, or when the costs to do so are relatively minor compared to the cost of a well. Developed Reserves may be further sub-classified as Producing or Non-Producing."³⁹
- 213.5. *Undeveloped Reserves* – "Undeveloped Reserves are quantities expected to be recovered through future investments: (1) from new wells on undrilled acreage in known accumulations, (2) from deepening existing wells to a different (but known) reservoir, (3) from infill wells that will increase recovery, or (4) where a relatively large expenditure (e.g. when compared to the cost of drilling a new well) is required to (a) recomplete an existing well or (b) install production or transportation facilities for primary or improved recovery projects."⁴⁰

214. *Contingent Resources* – "are those quantities of petroleum estimated, as of a given date, to be potentially recoverable from known accumulations, but the applied project(s) are not yet considered mature enough for commercial development due to one or more contingencies."⁴¹ Contingent resources may include, for example, projects for which there are currently no viable markets, or where commercial recovery is dependent on technology under development, or where evaluation of the accumulation is insufficient to clearly assess commerciality. Contingent Resources are further categorised according to the level of certainty associated with the estimates and may be sub-classified based on their economic status:

- 214.1. the different categories of Contingent Resources and the corresponding levels of certainty are equivalent to Reserves categories. The low/best/high estimates for Contingent Resources are referred to as 1C, 2C and 3C respectively;
- 214.2. in relation to economic status, Contingent Resources can be sub-classified as Marginal Contingent Resources and Sub-Marginal Contingent Resources;
- 214.3. *Marginal Contingent Resources* are the estimated quantities of petroleum that are associated with projects that are technically feasible and are either currently economic or are projected to be economic under reasonably forecasted improvements in commercial conditions, but have not been committed for development due to one or more contingencies⁴²; and
- 214.4. *Sub-Marginal Contingent Resources* are the estimated quantities of petroleum associated with discoveries for which analysis indicates that technically feasible development projects would not be economic and/or other contingencies would not be satisfied under current or reasonably forecast improvements in commercial conditions⁴³;

³⁸ Ibid, page 11.

³⁹ Ibid, page 34.

⁴⁰ Ibid, page 46.

⁴¹ Ibid, page 3.

⁴² Ibid, page 9.

⁴³ Ibid, page 9.

215. *Prospective Resources* – “are those quantities of petroleum estimated, as of a given date, to be potentially recoverable from undiscovered accumulations by application of future developments projects. Prospective Resources have both an associated chance of discovery and a chance of development”⁴⁴. Prospective Resources are further categorised according to the level of certainty associated with recoverable estimates (assuming their discovery) with the general cumulative terms of low/best/high estimates applying (corresponding to P90, P50 and P10, respectively). Prospective Resources may be sub-classified based on project maturity:
- 215.1. *Prospect* – “a project associated with a potential accumulation that is sufficiently well defined to represent a viable drilling target.”⁴⁵;
 - 215.2. *Lead* – “a project associated with a potential accumulation that is currently poorly defined and requires more data acquisition and/or evaluation in order to be classified as a prospect.”⁴⁶; and
 - 215.3. *Play* – “a project associated with a prospective trend of potential prospects, but which requires more data acquisition and/or evaluation in order to define specific leads or prospects.”⁴⁷

Proposal to facilitate greater consistency in reserves and resources classification

216. It is proposed that the hydrocarbon reserves definitions included in Chapter 19 of the Listing Rules be removed and that the Listing Rules adopt by reference, the SPE-PRMS petroleum resource definitions. Further, it is proposed that a new listing rule be introduced to require companies to classify and report their petroleum reserves and other petroleum resources in accordance with the SPE-PRMS definitions and guidelines. It is also proposed that the term ‘pre-hydrocarbon reserve stage’ be removed from the Listing Rules and that terminology consistent with SPE-PRMS (such as contingent resources and prospective resources) be adopted in the Listing Rules where appropriate.
217. It is proposed that additional new listing rules will be introduced to provide the reporting framework, which will be underpinned by SPE-PRMS. The additional listing rules will set out the minimum reporting requirements for companies reporting on petroleum exploration, petroleum reserves and other petroleum resources, and production targets and related forecast financial information. These proposed additional new listing rules are discussed in the remainder of this paper. Listing Rules 5.9 and 5.11-5.17 will be updated and amended in this process.
218. Updating the petroleum resources definitions under the Listing Rules so that they are more closely aligned with industry practices and introduction of a requirement for the use of a single petroleum resources classification system is expected to:
- 218.1. provide for a more consistent framework for the classification petroleum resources across the industry and reduce the potential for investor confusion in relation to the terminology;
 - 218.2. provide a greater degree of comparability between the petroleum reserves and other petroleum resources reported to the market by E & P companies; and
 - 218.3. help develop a more comprehensive and better understanding of petroleum reserves and other petroleum resources by investors.

⁴⁴ Ibid, page 3.

⁴⁵ Ibid, page 26.

⁴⁶ Ibid, page 26.

⁴⁷ Ibid, page 26.

Consultation questions

- Q30. What are your views on the proposal to introduce a requirement for listed E & P companies to report in accordance with the SPE-PRMS definitions and classification system when reporting on petroleum reserves and other petroleum resources?
- Q31. What are the implications, including from a compliance cost perspective, of ASX adopting this proposal?

Issue 2: General reporting requirements applicable to the reporting of petroleum resources

219. As discussed in the background section of this paper, Listing Rules 5.11-5.13 and 5.15-5.17, which set out the general reporting requirements for companies publicly reporting petroleum reserves and other petroleum resources, have been in place since 1996 and require updating to ensure that they align with best international reporting practice and SPE-PRMS.
220. Since SPE-PRMS is a principles-based project management system for petroleum resources and does not set out clear requirements for the reporting of petroleum reserves and other petroleum resources, there is a need for the Listing Rules to provide the regulatory framework and the minimum disclosure requirements applicable to the reporting of petroleum reserves, other petroleum resources and related information.
221. This section sets out a number of proposed general reporting requirements applicable to all public reporting of petroleum resources. The remainder of the paper discusses specific reporting issues and proposes minimum reporting requirements to address those issues. Broadly, the general reporting requirements are aimed at ensuring a consistent approach to reporting petroleum resources by E & P companies and minimising the potential for investor confusion in relation to the main risks and uncertainty of reported reserves and other resources estimates.

Current requirements

222. When reporting on petroleum reserves and other petroleum resources, Listing Rules 5.15-5.17 require that:
- 222.1. probable hydrocarbon reserves cannot be reported in isolation and without proved hydrocarbon reserves being reported;
 - 222.2. possible hydrocarbon reserves cannot be reported in isolation and without proved hydrocarbon reserves and probable hydrocarbon reserves being reported;
 - 222.3. a report relating to the pre-hydrocarbon reserve stage must not use the words “reserves”; and
 - 222.4. a report relating to the results of exploratory investigations which have reached the stage where a hydrocarbon reserve can be estimated must use the expressions for the categories of hydrocarbon reserves included in the Listing Rules.
223. The Listing Rules require a public report on an entity’s hydrocarbon reserves to be based on the information compiled by a qualified person. The Listing Rules also set out the relevant qualifications and experience required for a person compiling the reserves information underpinning a public report on hydrocarbon reserves.
224. The employment details of the person who compiles the reserves information on which the relevant public report is based are required to be disclosed in the said public report. The Listing Rules also require that the person who compiles the relevant reserves information must consent in writing to the inclusion of that information in the public report. The public report must also include a statement setting out that the person consents to the inclusion of that information in the form and context in which it appears.

Requirements in other relevant jurisdictions

Canadian requirements

225. The main ongoing reporting requirements applicable to all reporting of petroleum reserves, other petroleum resources and other oil and gas information under NI 51-101 include:

- 225.1. estimates of reserves or related future net revenue or other resources not classified as reserves must be prepared or audited in accordance with the COGE Handbook and must have been prepared or audited by a qualified reserves evaluator or auditor;
- 225.2. where estimates of possible reserves or related future net revenue are disclosed, a cautionary statement proximate to the estimate must be included in the disclosure highlighting the low level of certainty associated with the estimate;
- 225.3. where a high estimate of reserves and other resources not classified as reserves is disclosed, the low and best estimates must also be disclosed;
- 225.4. restrictions against disclosing the summation of estimated quantities across different resources classes (for example, summed estimates of reserves and contingent resources or summed estimates of the unrecoverable portion of undiscovered petroleum initially-in-place and prospective resources);
- 225.5. where resources that are not classified as reserves are disclosed, the disclosure must include information on (among other things): the significant positive and negative factors relevant to the estimate; and in respect of contingent resources, the specific contingencies that prevent the classification of the resources as reserves. The disclosure must also include a specific cautionary statement proximate to the estimate, with the applicable cautionary statement being dependent on whether the resources have been discovered or remain undiscovered;
- 225.6. where the reserves are disclosed in units of equivalency between oil and gas, there are specific requirements in relation to the conversion ratios to be used; and
- 225.7. where finding and development costs are disclosed, there are specific requirements for the method of calculation of the costs that must be used, and for the disclosure of particular information relating to the results, the methodology used and the comparative costs for the three most recent financial years.

US SEC Requirements

- 226. The SEC reporting requirements under Subpart 1200 of Regulation S-K and Rule 4-10 of Regulation S-X provide the disclosure requirements and financial accounting standards for oil and gas company filings with the SEC, such as, in registration statements and annual reports on Forms 10-K and 20F. They do not set out specific ongoing reporting requirements outside formal filings with the SEC.

Proposals for updating the general reporting requirements applicable to petroleum reserves and other petroleum resources

- 227. Consideration is being given to the introduction of the following general reporting requirements, which would be applicable to all public reporting by issuers in relation to their petroleum reserves and other petroleum resources:
 - 227.1. a requirement for a public report concerning an oil and gas company's exploration results and petroleum reserves and other petroleum resources, including contingent resources and prospective resources, to be based on, and fairly reflect, information prepared by a 'qualified reserves and resources evaluator'. It is proposed that Listing Rule 5.11 be updated to reflect the concept of a 'qualified reserves and resources evaluator'. The professional qualifications and experience that it is proposed be required for a person to be recognised as a 'qualified reserves and resources evaluator' for the purpose of the Listing Rules is considered under 'Issue 8' below;
 - 227.2. consistent with 'Issue 1' above, a requirement that estimates of petroleum reserves and other petroleum resources must be prepared, classified and reported in accordance with SPE-PRMS;
 - 227.3. when publicly reporting estimates of reserves, contingent resources and prospective resources, a requirement for the public report to disclose the evaluation date of the estimate;

- 227.4. a requirement that the term 'reserves' not be used in any other context than the reporting of estimates of commercially recoverable quantities of petroleum. It is proposed that when estimates of contingent resources, prospective resources or other resources not classified as reserves (such as, in-place quantities) are publicly reported, companies will be prohibited from using the term 'reserves' in this context or when referring to these estimates to give the impression that the resource estimates are subject to a development project at a more advanced stage of maturity;
- 227.5. a requirement that estimates of petroleum reserves and other petroleum resources be classified and reported according to the most specific resource class (i.e. reserves or contingent resources or prospective resources) and most specific reserve category (i.e. 1P, 2P, 3P or the equivalent incremental quantities) or contingent resource category (i.e. 1C, 2C, 3C) or prospective resource category (low estimate, best estimate, high estimate). It is proposed that the reporting of total petroleum-initially-in-place (PIIP) or total resource base or estimated ultimate recovery or remaining recoverable resources or discovered PIIP will be prohibited unless each classification component of the summation is also reported. For example, if total PIIP is reported, the relevant estimates of reserves, contingent resources and prospective resources will also be required to be disclosed proximate to the reported total PIIP;
- 227.6. if a high estimate of reserves (3P/ proved plus probable plus possible reserves) is reported, a requirement that the issuer also disclose the relevant best estimate (2P/proved plus probable reserves) and the relevant low estimate (1P/proved reserves). Similarly, if a high estimate of contingent resources or a high estimate of prospective resources is reported, a requirement that the respective best estimates and low estimates of the contingent resources (2C and 1C) and prospective resources will also be reported;
- 227.7. a requirement that prohibits the reporting of a mean estimate of reserves and, in the case of contingent resources and prospective resources, a requirement that where a mean estimate of the contingent resources/prospective resources is reported, the disclosure must include the probability that the quantities actually recovered will equal or exceed mean estimate reported and the disclosure must also include the relevant low, best and high estimates;
- 227.8. if estimates of prospective resources are reported in relation to a specific field, property or project, a requirement that a cautionary statement be included in the disclosure proximate to the reported estimates indicating that "the estimated quantities of petroleum that may potentially be recovered by the application of a future development project(s) relate to undiscovered accumulations. These estimates have both an associated chance of discovery and a chance of development. Further appraisal and evaluation is required to determine the existence of a significant quantity of potentially moveable hydrocarbons";
- 227.9. a requirement that reported estimates of petroleum reserves and other petroleum resources not classified as reserves (including contingent resources and prospective resources) be based on a reasonable forecast of future economic conditions by the issuer or, if there are fixed or presently determinable future prices and/or costs that the issuer is legally bound by a contractual or other obligation, those prices and/or costs be used to estimate the relevant petroleum reserves and other petroleum resources rather than issuer's reasonable forecast prices and/or costs;
- 227.10. consistent with SPE-PRMS, it is proposed that reserve and other resource estimates may be prepared using either deterministic (incremental or scenario method) or probabilistic methods;
- 227.11. where resource estimates are prepared using deterministic methods, it is proposed that for publicly reported estimates the method of aggregation of estimates from the reservoir level through to the company level should be by arithmetic summation of estimates by category (i.e. low, best, high estimate). Where resource estimates are prepared using probabilistic methods, it is proposed that for publicly reported estimates companies may aggregate probabilistically up to the field, property or project level, but that further aggregation beyond the field, property or project should generally be by simple arithmetic summation by category;

- 227.12. a requirement that estimates of petroleum reserves and other petroleum resources not classified as reserves (including contingent resources and prospective resources) be reported on a net working interest basis, that is, based on the company's beneficial interest in / share of the respective reserves and other resources, and after deductions for royalties;
- 227.13. a requirement that estimates of petroleum reserves and other petroleum resources not classified as reserves be reported net of lease fuel;
- 227.14. a requirement that the estimates of petroleum reserves and other petroleum resources be reported as at the reference point which is the first custody transfer point; and
- 227.15. if estimates of petroleum reserves and other petroleum resources not classified as reserves are reported in units of equivalency between oil and gas, such as, BOE or McfGE, it is proposed that the conversion factor used to convert gas to oil, in the case of BOE, and the conversion factor used to convert oil to gas, in the case of McfGE, be disclosed.

Consultation questions

- Q32. What are your views on whether specific testing requirements should be introduced for the purpose of confirming commercial producibility of a known accumulation and assigning reserves and, in particular, proved reserves?
- Q33. In some jurisdictions, evidence of commercial producibility from actual production or flow testing is generally required for assignment of proved reserves. However, in certain cases flow testing may be considered highly impractical given the hydrocarbon type and the reservoir. It may be considered that there is sufficient technical evidence of commercial producibility from core and log data, regional analogs and fluid contacts for proved reserves to be assigned. On this basis, when proved reserves are reported in relation to a specific field, property or project, rather than introduce specific testing requirements, would it be better to consider a requirement for the disclosure of a brief description of the basis for assigning the proved reserves in situations where proved reserves are assigned without supporting evidence from production tests and flow tests? Would this type of approach also be more appropriate given the increasing significance of unconventional resources for which different assessment methods may be more appropriate depending on the type of hydrocarbon and given technology and assessment methods are rapidly evolving in relation to unconventional resources?
- Q34. Do you agree that the best estimate (2P / proved plus probable reserves) and the low estimate (1P / proved reserves) of the relevant reserves should be disclosed when a high estimate of reserves (3P / proved plus probable plus possible reserves) is disclosed to ensure that investors have a better understanding of the full range of uncertainty in the reserves estimates for a specific project? Are there circumstances where it may be appropriate for proved reserves to be assigned as zero and for 2P and 3P to be disclosed? If so, should consideration be given to introducing an exception to the requirement for 1P to be disclosed when 3P estimates are reported provided the company discloses an explanation of the reasons for the existence 2P and 3P in the absence of 1P reserves?
- Q35. What are your views on the requirement for reserves and other resources estimates to be based on a reasonable forecast of future economic conditions, including price, by the issuer? Would reporting of estimates of reserves that are prepared using a reasonable forecast of future prices provide investors with more meaningful information than prescribing the use of a current price (similar to the case under the SEC reporting regime) on the basis that investment decisions are based on the company's view of future commercial conditions that may impact development feasibility? What are your views on whether the guidance should be provided in relation to what 'reasonable' means in this context?
- Q36. What are your views on the introduction of a general requirement that companies may only aggregate probabilistically up to the field/property/project level and beyond that level estimates for individual fields/properties/projects should be aggregated by simple arithmetic summation? Are there specific cases where probabilistic aggregation may be more appropriate than arithmetic summation beyond the field, property and project level? If so, should an exception to the requirement for arithmetic summation beyond the field, property and project level be available provided the approach taken, and a short explanation of the rationale, is disclosed?

- Q37. What are your views on whether there is a need for a requirement for the inclusion of a cautionary statement regarding the effects of aggregation when estimates of reserves, contingent resources and prospective resources are reported?
- Q38. What are your views on whether there should be a requirement to report reserves and other resources not classified as reserves (including contingent resources and prospective resources) net of lease fuel?

Issue 3: Annual Reserves and Resources Reporting

228. Currently, there is significant variation in the annual reporting of company level and other aggregated petroleum reserves and contingent resources information by companies. Some companies include a reserves statement in their annual report or have a separate annual reserves and resources document released concurrently with their annual report that sets out aggregated 1P and 2P reserves by product as at the end of their financial year. Some companies also include a reconciliation of company level reserves against the estimates from the previous year. Some companies also report aggregated best estimate contingent resources by product with a reconciliation against previously reported estimates. However, other companies report considerably less aggregated reserves and other resources information and do not disclose a reconciliation of their company level reserve estimates against the estimates from the previous year in their annual report or on their website.
229. Given petroleum reserves and contingent resources holdings are such significant assets of E & P companies, and that the value of such assets are generally not reflected on the balance sheet in current value, there would appear to be a strong case for requiring the inclusion of company level, and other aggregated, petroleum reserves and potentially contingent resources information in the annual report or in a separate reserves and resources document released concurrently with the annual report.
230. Annual reporting of an issuer's petroleum reserves and contingent resources in the annual report, or a separate reserves document cross-referenced in the annual report, would provide for additional transparency and investor accessibility to aggregated and company level petroleum reserves and contingent resources estimates. It is also expected to make it easier for investors to both make year on year comparisons of the petroleum reserves and contingent resources holdings of E & P companies and to understand an issuer's performance in relation to converting exploration into discoveries and converting contingent resources into reserves.

Current requirements

231. Apart from the requirements for E & P companies to report quarterly on their production, development and exploration activities and to provide a brief summary of the expenditure incurred on these activities over the quarter, there are currently no listing rule requirements or other regulatory requirements for E & P companies to report at a company level on their petroleum reserves and resources holdings.

Requirements in other relevant jurisdictions

Canadian requirements

232. Under NI 51-101, E & P companies are required to annually file a 'statement of reserves data and other oil and gas information' as at the end of their financial year in accordance with Form 51-101F1. Under Form 51-101F1, E & P companies are required to report on a range of categories of reserves - proved developed producing, proved developed non-producing, proved undeveloped, proved, probable, and proved plus probable - by country and in aggregate for each product type.
233. Form 51-101F1 also requires the disclosure of a reconciliation of changes in total gross proved reserves, gross probable reserves, and gross proved plus probable reserves by country and for each product type. The reconciliation and separate identification of changes resulting from: extensions and improved recovery; technical revisions; discoveries; acquisitions and dispositions; economic factors; and production.
234. The other main requirements under Form 51-101F1 relate to the disclosure of information concerning: the issuer's estimated proved undeveloped reserves and probable undeveloped reserves, including the timing for developing each of the categories of undeveloped reserves; the pricing assumptions used in the estimates; the net present value of future net revenue of each of the reserves categories required to be reported and the various elements of future net revenue; and a range of other oil and gas information including abandonment and reclamation costs, production estimates, production history, and exploration and development activities.

US SEC Requirements

235. Under Regulation S-K, oil and gas companies are required in their annual filings to provide a summary of oil and gas reserves information as at fiscal year end. In the summary of oil and gas reserves information, it is mandatory for companies to report aggregated proved developed reserves and proved undeveloped reserves by geographic area and for each country with 15 per cent or more of the issuer's proved reserves for each product type. Reporting of aggregated probable developed and undeveloped reserves, and possible developed and undeveloped reserves, is optional. Reporting of aggregated contingent resources is prohibited.
236. In annual filings, E & P companies are required to report their aggregated proved undeveloped reserves at financial year end and the material changes in proved undeveloped reserves that occurred during the year. Companies are also required to report on the progress made during the year in converting proved undeveloped reserves to proved developed reserves and provide an explanation for the reasons why material quantities of proved undeveloped reserves in individual fields or countries have remained undeveloped for five years or more after their initial disclosure.

Proposal for annual reserves and resources reporting

237. It is proposed that a listing rule be introduced requiring listed E & P companies to report annually on their company level reserves, and other aggregated reserves information, as at the company's balance date. It is also proposed that a reconciliation of reported estimates of company level reserves against the estimates from the previous year be reported annually. It is proposed that this information be either reported in a company's annual report or a separate reserves and resources document released concurrently with, and cross-referenced in, the annual report.
238. In relation to the level of aggregation and the breakdown of the specific information required to be reported, consideration is being given to requiring the following reserves information to be disclosed annually:
- 238.1. company level 1P, 2P and 3P reserves and company level 2C contingent resources;
 - 238.2. company level 1P, 2P and 3P reserves and company level 2C contingent resources for each product type;
 - 238.3. company level developed and undeveloped 1P, 2P and 3P reserves for each product type;
 - 238.4. the aggregated 1P reserves, aggregated 2P reserves, aggregated 3P reserves and aggregated 2C contingent resources for each product type by geographical area (to be determined by the company based on materiality) and by material fields, properties or projects;
 - 238.5. the aggregated developed and the aggregated undeveloped 1P, 2P and 3P reserves for each product type by geographical area (to be determined by the company based on materiality) and material fields, properties or projects;
 - 238.6. a reconciliation of company level 1P, 2P and 3P reserves for each product type against the estimates reported in the previous year, with the reconciliation identifying changes that resulted from: revisions to the previous estimates; extensions and discoveries; enhanced or improved recovery; acquisitions and divestments; and production;
 - 238.7. a reconciliation of company level 2C contingent resources for each product type against the estimates reported in the previous year, with the reconciliation identifying changes that resulted from: revisions to the previous estimates; the conversion of contingent resources to reserves; extensions and discoveries; and acquisitions and divestments;
 - 238.8. for producing companies, the total and the organic reserves replacement ratio for 1P and 2P reserves for the year; and

238.9. for companies with material unconventional resources, separately identify the company level 1P, 2P and 3P reserves that are based on unconventional resources.

239. It is proposed that, in addition to requiring the reporting of company level and other aggregated petroleum reserves and resources information annually, a requirement be introduced for companies to annually report on the governance arrangements and internal controls that have been put in place, including the frequency and scope of any reviews or audits undertaken, relating to its estimates of reserves and contingent resources and the estimation process.

Consultation questions

Q39. What are your views on the proposal that it be mandatory for E& P companies to report annually on company level (and other aggregated) 1P, 2P and 3P reserves and 2C contingent resources? Similar to the case in other jurisdictions, do you think that there is a strong case for only mandating the reporting of company level (and other aggregated) 1P reserves and leaving it up to companies to voluntarily report company level (and other aggregated) 2P and 3P reserves and 1C, 2C and 3C contingent resources?

Q40. Given the different risk profiles of developed reserves and undeveloped reserves, there would appear to be merit in introducing a requirement for annual reporting of the breakdown between developed and undeveloped company level and other aggregated reserves information. What are the implications in terms of compliance costs for issuers if this requirement was introduced?

Q41. What are your views on the proposed requirement for E & P companies to annually report reserves and contingent resources for each product by geographical area and for material fields, properties or projects based on a materiality assessment by the company? Do you think that this approach adequately balances the compliance costs for companies reporting this information and, at the same time, ensures that the reported information is meaningful?

Q42. Since under SPE-PRMS reserves and contingent resources are reported in terms of the final sales product, would reporting on product types 'synthetic oil' and 'synthetic gas' adequately capture those reserves and contingent resources derived from unconventional resources such that it would be clear from reporting what proportion of a company's reserves and contingent resources is derived from unconventional resources?

Q43. What are your views on whether there should be a requirement for the annual disclosure of a brief explanation of the reasons why material concentrations of reserves in material fields, properties or projects have remained undeveloped for five or more years after being assigned as undeveloped reserves? What are your views on whether the disclosure of the company's development plans and the projected timing of development with respect to those undeveloped reserves should also be required to be disclosed?

Issue 4: Disclosure of drilling progress and exploration information

240. Listing Rules 5.9 and 5.14, which set out the minimum reporting requirements for companies that publicly report on exploration results and on the progress of any geophysical survey undertaken, have been in place since 1996 and may require updating to ensure that they are aligned with current industry practices and technological developments.

Current requirements

241. In relation to reporting on the results of hydrocarbon exploration, Listing Rule 5.9 requires, at a minimum, that the following information be disclosed:
- 241.1. the depth of the zone tested;
 - 241.2. the age and, if appropriate, the rock type and formation name of the zone tested;
 - 241.3. any liquids recovered;
 - 241.4. the flow rate;
 - 241.5. the choke size used during testing; and
 - 241.6. any other relevant basic data.
242. In relation to reporting on the progress of any geophysical survey, Listing Rule 5.14 requires that the name, nature and status of the survey and the permit under which the survey is being conducted be disclosed.
243. As discussed in the background section of this paper, listed E & P companies are required to report quarterly on their production, development and exploration activities. Annually, oil and gas exploration companies are also required to provide a list of their interests in mining tenements, the location of the tenements and the interest held in each tenement in their annual reports.
244. Additional guidance is provided to listed E & P companies regarding the disclosure of oil and gas exploration in Guidance Note 8 'Continuous Disclosure: Listing Rule 3.1'. Guidance Note 8 also sets out an expectation that entities adopt a regime of structured disclosure at regular intervals for each drilling programme following disclosure of progress in that programme under Listing Rule 3.1. The interval for reporting adopted by an entity should be such that, in the circumstances of the entity, useful information is reported on a regular basis. The type of information that it is suggested may be relevant for inclusion in such drilling reports includes:
- 244.1. the name of the well;
 - 244.2. the permit in which the well is located;
 - 244.3. the well's position in the permit with respect to previous wells, known oil or gas fields, or towns;
 - 244.4. the depth of the well;
 - 244.5. progress since the last disclosure;
 - 244.6. details of any indications of hydrocarbons and fluids observed while drilling;
 - 244.7. the entity's beneficial percentage interest in the well; and
 - 244.8. the time to which progress is reported.

Requirements in other relevant jurisdictions

Canadian requirements

245. Neither NI 51-101 nor Form 51-101F prescribe the disclosure of particular technical information, the results from drilling operations or any geophysical survey undertaken when a company publicly reports on the results or progress of its exploration in relation to a specific field, property or project.
246. However, under NI 51-101, companies are required, when reporting on pay thickness, flow rates or hydrocarbon content in relation to resources that are not classified as reserves, to disclose:
- 246.1. their interest in the resources;
 - 246.2. the location of the resources;
 - 246.3. the product types reasonably expected; and
 - 246.4. the risks and the level of uncertainty associated with recovery of the resources.
247. Under Form NI 51-101F, companies with properties that do not have reserves attributed to them are required to report annually on the location of such properties by country, the gross and net acreage (representing their interest) of the properties and the details of any work commitments. Companies are also required to disclose the net acreage by country of the properties for which it expects its right to explore, develop and exploit to expire within one year.
248. Under Form NI 51-101F, companies are required to report the following information separately for exploratory wells and development wells by country:
- 248.1. the number of gross wells and net wells completed in the most recent financial year; and
 - 248.2. the number completed as oil wells, gas wells, service wells and stratigraphic test wells, and the number that were dry holes (on a gross and net basis and by country).

US SEC Requirements

249. The SEC reporting regime does not prescribe the disclosure of particular technical information, the results from drilling operations or any geophysical survey undertaken when a company publicly reports on the results or progress of its exploration in relation to a specific field, property or project.
250. Under Regulation S-K, oil and gas companies are required to report annually (by geographic area) on the number of wells in the process of being drilled, waterfloods in the process of being installed and pressure maintenance operations as at the end of the most recent financial reporting period.
251. Under Regulation S-K, companies are required to report annually on the total gross and net productive oil wells and gas wells, and the total gross and net developed acreage by geographic area. Companies are also required to report annually on the amount of gross and net undeveloped acreage held by geographic area and, if material, the remaining terms of leases and concessions.

Proposal to update the requirements for reporting on exploration activities & results

252. It is proposed that the guidance be removed from Guidance Note 8 'Continuous Disclosure: Listing Rule 3.1' which sets out the expectation that companies adopt a regime of structured disclosure at regular intervals for each drilling programme following disclosure of progress in that programme under Listing Rule 3.1. The basis for removing the said guidance is that the requirement to disclose information under Listing Rule 3.1 is based on whether the information in question would be expected to have a material effect on the price or value of the entity's securities. Removing the guidance would not remove the obligation on entities under Listing Rule 3.1 to report on the progress of any drilling operation where the relevant information would be expected to have a material effect on the price of the entity's securities, but it would remove the expectation that companies report

regularly on progress where the information relating to that progress would not be expected to be material. As such, removing the guidance from Guidance Note 8 is aimed at improving regulatory efficiency and removing unnecessary compliance costs associated with reporting exploration information that is not material.

253. It is also proposed that Listing Rule 5.9 and the reporting requirements therein relating to what should be disclosed when a company publicly reports on progress in a drilling programme or exploration results be updated and incorporate some of the material that will be removed from Guidance Note 8. When a company reports on exploration results from drilling operations that are subject to Listing Rule 3.1, consideration is being given to requiring the disclosure of information relating to the following, where applicable:
- 253.1. the name and type of the well;
 - 253.2. the location of the well and the details of the permit in which the well is located;
 - 253.3. the entity's working interest in the well;
 - 253.4. if the gross pay thickness is reported, the net pay thickness;
 - 253.5. the geological rock type of the formation drilled;
 - 253.6. the depth of the zones tested;
 - 253.7. the type of test(s) undertaken and duration of the tests;
 - 253.8. the hydrocarbon phases recovered in the tests;
 - 253.9. any other recovery, such as sand and water, associated with the test(s);
 - 253.10. pressure data, including pressure build-up;
 - 253.11. if applicable, the choke size used, the flow rates and, if measured, the volumes of the hydrocarbon phases measured; and
 - 253.12. any other basic data or information that is material to understanding the reported results.
254. For clarity, it is not proposed that the information listed above would be required to be disclosed in relation to all wells drilled when exploration and drilling activity updates are provided in quarterly reports.

Consultation questions

- Q44. What are your views on the proposal to remove the guidance in Guidance Note 8 'Continuous Disclosure: Listing Rule 3.1' related to regular reporting on drilling progress so that it is clearer that companies are only required to report on progress in drilling programmes under Listing Rule 3.1 when the relevant information would be expected to have a material effect on the price or value of the entity's securities?
- Q45. What are your views on information related to the items set out at paragraph 253 being required to be disclosed when a company reports on material exploration results involving drilling operations? Would information on the items set out in those paragraphs provide for the disclosure of meaningful and sufficient information for the purpose of investors seeking to make a considered and balanced judgement of the significance of the reported exploration results? Would the disclosure of information related to the findings on fluid contacts and the lowest known hydrocarbon provide useful information for these purposes?
- Q46. Would information relating to sub-paragraphs 86.6-86.11 generally not be available at the time that initial drilling progress is reported and is more likely to be applicable to supporting the disclosure of a discovery and initial estimates of contingent resources?

- Q47. Given the increasing importance of unconventional resources and that different evaluation approaches may be required for unconventional resources, is there a need for separate or additional information (to that set out above) that is more relevant to the exploration and evaluation procedures used in relation to unconventional resources which should be required to be disclosed when exploration progress and results are reported? Should there be a requirement for the findings in relation to the carbon dioxide content to be included in disclosures on the results of exploration in unconventional resources?
- Q48. In relation to reporting on the progress of a geophysical survey, does the current requirement for the disclosure of the name, nature and status of the survey and the permit under which the survey is being conducted provide for adequate disclosure? Should additional information be required to be disclosed, such as, a diagram of the subsurface geology? Given the increased use of seismic surveys and seismic data in the evaluation and estimation of petroleum resources, is there specific information that should be disclosed when a company reports on the progress of a seismic survey which is not captured by the existing reporting requirement?
- Q49. In addition to the existing requirement for oil and gas exploration companies to disclose in their annual report a list of their mining tenements, the location of the tenements and their working interest in the tenements, would requiring companies to also disclose: their gross and net acreage associated with the tenements; the wells drilled during the year; the status of those wells; and the number of dry wells drilled during the year, provide investors with useful information on their exploration activities?

Issue 5: Disclosure of key assumptions underpinning reserve & resource estimates

255. There is significant variation in the level and type of information that is disclosed by E & P companies to support the disclosure of an initial booking of reserves, contingent resources or prospective resources estimates when they are reported in relation to a specific field, property or project. Industry practice has been, to some extent, to take a minimal approach to the disclosure of the key assumptions and the key technical information underpinning these reserves and other resources estimates when they are reported.
256. Greater disclosure of the key assumptions and key technical information underpinning reserves and other resources estimates may facilitate due diligence assessments by analysts, institutional investors and the public. It may provide these users with useful information for the purpose of evaluating the nature and extent of the main risks and uncertainties associated with the estimates and the relevant project.

Current requirements

257. There are currently no listing rule requirements for the key assumptions and key technical information underpinning initial reserve and other resource estimates to be disclosed when oil and gas companies report these estimates for a specific field, property or project to the market.
258. However, E & P companies are required to report quarterly on their production, development and exploration activities and provide a brief summary of the expenditure incurred on these activities over the quarter. Oil and gas exploration companies are also required to release to the market a quarterly cash flow report in accordance with Appendix 5B of the Listing Rules.

Requirements in other relevant jurisdictions

Canadian requirements

259. Under Form 51-101F, oil and gas companies are required to disclose in their annual statement of reserves data the pricing assumptions underpinning their aggregated 1P and 2P reserves (by country and at the company level), the net present value of future net revenue attributable to their aggregated 1P and 2P reserves (by country and at the company level) and a breakdown of the forecast revenue and various costs (e.g. royalties, operating costs, development costs, abandonment and reclamation costs, income tax expenses) components of their future net revenue.

US SEC Requirements

260. Under Regulation S-K, if an oil and gas company represents that a third party prepared, or conducted an audit of, its reserves estimates it is required to file a report of the third party disclosing, among other things, a discussion of the primary economic assumptions underpinning the estimates and a discussion of the inherent uncertainties of the reserves estimates.
261. Under the SEC reporting regime, oil and gas companies are required to use a prescribed current price (the unweighted arithmetic average of the first-day-of-the-month price for each month over the previous 12 months) to calculate the reserves estimate filed with the SEC. The rationale for prescribing the price is to provide for greater comparability of reserve holdings between companies.

Options for facilitating greater disclosure of key assumptions and information

262. Consideration is being given to the introduction of a requirement that would facilitate greater disclosure of the key assumptions and key technical information underpinning the booking of initial reserves and other resources estimates (and materially upgraded estimates) for specific fields, properties or projects when these estimates are reported to the market.

263. Consideration is being given to whether information related to the following should be required to be disclosed to support the booking of initial reserves estimates in relation to a specific field, property or project when the booking of these estimates are reported to the market:
- 263.1. the key economic assumptions used to calculate the reserves estimates;
 - 263.2. whether the issuer has operator or non-operator interests in the relevant field, property or project;
 - 263.3. the type of permits and/or licences held with respect to the field, property or project for which the estimates are disclosed;
 - 263.4. the basis for confirming commercial producibility and assigning reserves (i.e. the tests performed, logging and coring analysis, analogous information etc);
 - 263.5. the estimated quantities to be recovered from existing wells and facilities and those estimated quantities that are expected to be recovered through future investments (i.e. developed and non-developed);
 - 263.6. if the reserves estimates reported relate to undeveloped reserves, a brief discussion of when development is anticipated, the status of the project and whether there is a development plan in place, whether the infrastructure and transportation facilities are available or will be available, and the marketing arrangements that justify development;
 - 263.7. a brief description of the proposed extraction method; and
 - 263.8. if applicable, a brief description of any specialised processing required following extraction.
264. In relation to the proposal for the disclosure of information on the key economic assumptions underpinning the reserves estimates, the main issue for consideration is how to take account of the commercial sensitivity associated with pricing assumptions for particular product types and still promote the disclosure of more meaningful information about the pricing assumptions used. A requirement for the disclosure of the pricing assumptions underpinning reserve estimates in relation to a specific field, property or project could be to the detriment of the existing shareholders given the competitive dynamics and particular features (i.e. JV arrangements) of the E & P industry. ASX listed E & P companies also compete domestically with large global E & P companies that are not listed on ASX and who would, therefore, not be required to disclose the pricing assumptions.
265. An approach that could be considered is whether the disclosure of a price range within which there would be no material change to the reserve estimates instead of requiring the disclosure of the specific price assumptions used would adequately address the issues around commercial sensitivity. Consideration could also be given to requiring companies to disclose a brief explanation of the methodology used to determine the price assumptions underpinning the reserve estimates.
266. Consideration is also being given to whether information related to the following should be required to be disclosed to support the assignment of initial contingent resources estimates in relation to a specific field, property or project when these estimates are reported to the market:
- 266.1. the types of permits and/or licences held with respect to the field, property or project for which the estimates are disclosed;
 - 266.2. the basis for determining the existence of a discovery (i.e. of a significant quantity of potentially moveable hydrocarbons);
 - 266.3. a brief description of the analytical procedures used to estimate the contingent resources;
 - 266.4. categorise the contingent resources according to their project maturity sub-class, that is, whether, or what proportion of, the contingent resources are categorised as development pending, development unclarified or on hold, or development not viable;

- 266.5. a brief description of the key contingencies preventing the contingent resources being classified as reserves. If one of the key contingencies is that technology is currently under development, consideration is being given to requiring the disclosure of:
- 266.5.1. whether the technology is under active development and whether a pilot is planned and budgeted; and
- 266.5.2. whether the technology has been demonstrated to be commercially viable in analogous reservoirs and, if it has not been demonstrated to be commercially viable in analogous reservoirs, whether it has been demonstrated to be commercially viable in other reservoirs;
- 266.6. a brief description of any further appraisal drilling and/or evaluation work to be undertaken to assess the potential for economic recovery and progress the project.
267. Consideration is also being given to whether information related to the following should be required to be disclosed to support the assignation of initial prospective resources estimates in relation to a specific field, property or project when these estimates are reported to the market:
- 267.1. the permits and/or licences held with respect to the field, property or project for which the estimates are disclosed;
- 267.2. categorise the prospective resources according to their project maturity sub-class, that is, whether, or what proportion of, the prospective resources are categorised as play, lead or prospect
- 267.3. a brief description of the basis for the estimates of prospective resources (i.e. analogous information, seismic surveys and non-seismic surveys and techniques); and
- 267.4. a brief description and the expected timing of proposed exploration activities, including drilling, and further evaluation to be undertaken.
268. For clarity, the proposals being considered in this section relate to the disclosure of initial bookings of reserves, contingent resources and prospective resources in relation to a specific field, property, project or group of projects as the case may be. It is not proposed that these reporting requirements will apply to the annual reserves statement requirements discussed in 'Issue 3'.

Consultation questions

- Q50. What are your views on a requirement for the key economic assumptions used to calculate the reserves estimates and other information identified in paragraph 263 to be disclosed when the booking of initial reserve estimates are reported to the market in relation to a specific field, property or project? In particular:
- Q50.1 are there specific products where the pricing assumptions used to calculate reserve estimates are commercially sensitive? If so, what products?
- Q50.2 for the products where the pricing assumptions are commercially sensitive, would a requirement for the disclosure of a price range for which there would be no material impact on the reserve estimates and the disclosure of an explanation of the methodology used to determine the price assumptions underpinning the estimates adequately address concerns about disclosing commercially sensitive information? Would the disclosure of such information provide a better basis for investors and analysts to assess and understand the reserve estimates?
- Q51. What are your views on a requirement for the disclosure of the basis for confirming commercial productibility and for a brief description of the analytical procedures used to estimate the relevant reserves?

- Q52. What are your views on a requirement for the contingent resource estimates to also be disclosed according to their project maturity sub-class when an initial booking of contingent resource estimates are disclosed to the market in relation to a specific field, property or project?
- Q53. What are your views on whether there should be greater disclosure of the key contingencies preventing contingent resources being classified as reserves and, in particular, where a key contingency involves technology under development?
- Q54. Is there additional information relevant to unconventional resources that has not been captured in this section, but which should be required to be disclosed to support the booking of initial estimates of reserves, contingent resources and prospective resources in relation to a specific field, property or project when these estimates are reported to the market? For example, in relation to the disclosure of an initial booking of estimates of contingent resources that are sourced from unconventional resources, should there be a requirement that the specific land area and the number of wells that the estimated contingent resources are based on be disclosed?

Issue 6: Disclosure of production targets

269. Forward looking statements, such as production targets, must have a reasonable basis, otherwise the disclosure of such information risks being misleading to investors and may be in breach of the Corporations Act. Concern has been raised by some stakeholders about whether the disclosure of a production target or of potential future production in certain circumstances may potentially be misleading. In this context, the disclosure of sufficient information that underpins the disclosed production target may also be important to allow investors to be able to judge the reliability of the forecast information.
270. The Listing Rules do not currently provide reporting requirements for the reporting of production targets and related forecast financial information by listed E & P companies. However, there may be merit in considering options to bring the reporting of production targets within the scope of the Listing Rules to reduce the potential for such disclosures to confuse or mislead investors.

Requirements in other relevant jurisdictions

Canadian requirements

271. NI 51-101 does not include explicit restrictions in relation to the level of project maturity or the resource class (i.e. reserves, contingent resources, prospective resources) or category (low, best, high estimates) that can form the basis for the disclosure of a production target or forecast financial information derived from a production target.
272. However, NI 51-101 does include general reporting rules applicable to the disclosure of aggregate future net revenue and to the disclosure of a valuation of resources not classified as reserves. In relation to reporting possible reserves or related future net revenue, oil and gas companies are required to include a proximate cautionary statement indicating that 'possible reserves are those additional reserves that are less certain to be recovered than probable reserves. There is a 10% probability that the quantities actually recovered will equal or exceed the sum of proved plus probable plus possible reserves'.
273. In relation to reporting resources not classified as reserves and the associated valuation of these resources, oil and gas companies are required to disclose, among other things:
- 273.1. the risks and the level of uncertainty associated with the recovery of the resources;
 - 273.2. if the value is disclosed and the property does not have reserves attributed to it, the basis of the calculation of its value and whether the value was prepared by an independent party;
 - 273.3. in respect of contingent resources, the specific contingencies which prevent the resources being classified as reserves;
 - 273.4. in the case of discovered resources or a sub-category of discovered resources (i.e. contingent resources), the inclusion of a proximate cautionary statement indicating that 'there is no certainty that it will be commercially viable to produce any portion of the resources'; and
 - 273.5. in the case of undiscovered resources or a sub-category of undiscovered resources, the inclusion of a proximate cautionary statement indicating that 'there is no certainty that any portion of the resources will be discovered. If discovered, there is no certainty that it will be commercially viable to produce any portion of the resources'.
274. In relation to reporting aggregate future net revenue, oil and gas companies are required to comply with certain requirements for the determination of future net revenue as set out in Form 51-101F. Form 51-101F also includes requirements for the disclosure of net present value of future net revenue for reported reserves estimates by country and in the aggregate using forecast prices and costs and prescribed discount rates. There are also requirements for the disclosure of the following for 1P, 2P and 3P reserves by country and in the aggregate: the unit value for each production group; the price assumptions; and the prescribed elements of future net revenue (e.g. revenue, royalties, operating costs, development costs, abandonment and reclamations costs,

future net revenue before deducting future income tax expenses, future income tax expenses and future net revenue after deducting future income tax expenses).

US SEC requirements

275. U.S. GAAP requires the annual disclosure in Form 10K of the standardized measure of discounted future net cash flows, after income taxes, abandonment and reclamation costs are deducted, from forecast production from proved oil and gas reserves. The 'standardised measure' requires the use of constant prices and costs and a discount rate of 10 per cent. The price used must be the average price during the 12 month period prior to the end of the reporting period. The disclosure of future net cashflows related to resources not classified as reserves in SEC filings is prohibited.

Possible option to improve disclosure practices in relation to production targets and related forecast financial information

276. Consideration is being given to whether general disclosure requirements should be introduced for the reporting of production targets and forecast financial information derived from production targets by E & P companies. In this context, the following requirements are being considered:
- 276.1. where an issuer reports a production target and forecast financial information derived from a production target, the issuer must disclose information relating to the key assumptions underpinning the production target;
 - 276.2. where an issuer reports a production target or potential future production and forecast financial information derived from a production target that includes or is based on contingent resources, the issuer must:
 - 276.2.1. disclose the key contingencies associated with converting the relevant contingent resources into reserves;
 - 276.2.2. disclose the proportion of the production target that is based on the contingent resources and the respective proportions of the production target that is based on contingent resources classified as 'development pending', 'development unclarified or on hold' and 'development not viable'; and
 - 276.2.3. include a proximate cautionary statement in the disclosure that highlights the uncertainty that it will be commercially viable to produce any portion of the relevant contingent resources.
 - 276.3. where an issuer reports a production target or potential future production and related forecast financial information that includes estimates of prospective resources, the issuer must:
 - 276.3.1. disclose the proportion of the production target that is based on the prospective resources and the respective proportions of the production target that is based on prospective resources classified as a 'prospect', 'lead' and 'play';
 - 276.3.2. disclose whether the production target is based on risked or un-risked estimates of prospective resources; and
 - 276.3.3. include a proximate cautionary statement in the disclosure that highlights that the production target and/or forecast financial information is derived, or partly derived, from estimates of undiscovered resources and that there is no certainty that any portion of the resources will be discovered. The cautionary statement should also highlight that, if the resources are discovered, there is no certainty that it will be commercially viable to produce any portion of the relevant resources.

Consultation questions

- Q55. Would the proposal for the disclosure of information relating to the key assumptions, the key contingencies where relevant, together with a cautionary statement where relevant, as outlined above provide investors with a better basis to evaluate the reported forward looking information and reduce the potential for it to confuse or mislead investors?
- Q56. What are your views on whether the specific disclosure requirements proposed in paragraph 276, including the requirements for the proposed respective cautionary statements, would be effective in reducing the potential for the disclosure of production targets based on contingent resources at an early stage of project maturity and prospective resources to confuse or be misunderstood by investors?
- Q57. What are your views on whether the disclosure of a production target or potential future production linked to or based on contingent resources classified under the project maturity sub-class 'development not viable' being prohibited?
- Q58. What are your views on whether the disclosure of a production target or potential future production linked to or based on prospective resources should be prohibited?

Issue 7: Qualified reserves and resources evaluator requirements

277. Since reserves and resources estimation is a somewhat imprecise science due to the inherent uncertainties in, and the limitations of, what is known about an accumulation and how the data is interpreted, it is important that the persons estimating reserves and resources have the relevant educational background, professional training and professional experience to ensure that the appropriate petroleum engineering and evaluation principles are applied and to support the numerous judgements that have to be made in the estimation process.
278. Notwithstanding that a public report concerning an E & P company's petroleum resources is the responsibility of the company, most jurisdictions have requirements for publicly reported estimates of petroleum reserves and other petroleum resources not classified as reserves to be prepared by an appropriately qualified reserves evaluator. Requirements for publicly reported estimates of petroleum reserves and other petroleum resources to be evaluated by an appropriately qualified reserves evaluator have been introduced in a number of jurisdictions to help ensure that the estimates are as reliable as possible given the limitations inherent in the estimation process, and to provide for greater confidence in the reported information.
279. In order to help provide for greater reliability in reported reserves and resources information and to promote confidence in this information, requirements for a qualified reserves and resources evaluator generally include specific requirements pertaining to the professional qualifications and professional experience of the evaluator. This includes requirements for a qualified reserves and resources evaluator to be a registered professional in some jurisdictions or a member of a relevant professional organisation.
280. The listing rule requirements for a qualified reserves and resources evaluator, and the professional qualifications and experience required to be considered 'qualified' for the purpose of estimating the reported reserves information, require updating to be better aligned with industry practice.

Current requirements

281. Listing Rule 5.11 sets out the requirement for a public report on an entity's hydrocarbon reserves to be based on the information compiled by a qualified person. Listing Rule 5.11 also requires the person compiling the reserves information underpinning a public report on hydrocarbon reserves must satisfy the following:
- 281.1. have a degree (or equivalent) in geology, geophysics, petroleum engineering or a related discipline;
 - 281.2. is practising or teaching geology, geophysics, or petroleum engineering; and
 - 281.3. has practised or taught one of them for at least 5 years.
282. Under Listing Rule 5.12, the employment details of the person who compiles the reserves information on which the relevant public report is based must also be disclosed in the said public report. Listing Rule 5.13 also requires that the person who compiles the relevant reserves information must consent in writing to the inclusion of that information in the public report. The public report must also include a statement setting out that the person consents to the inclusion of that information in the form and context in which it appears.

Requirements in other relevant jurisdictions

Canadian requirements

283. Under NI 51-101, reported petroleum reserves and other petroleum resources information must be prepared by a qualified reserves evaluator or auditor and in accordance with the COGE Handbook. Under NI 51-101, a qualified reserves evaluator must possess the professional qualifications and experience appropriate for the estimation, evaluation and review of the reported reserves and resources information. A qualified reserves evaluator must also be a member in good standing of a professional organisation.

284. The Calgary Chapter of SPEE requires that qualified evaluators are:
- 284.1. a registered professional in good standing and licensed to practice in engineering, geology, geophysics or other discipline of physical science; and
 - 284.2. have a minimum of five years' practical experience in petroleum engineering, geology or geophysics, with at least three recent years of such experience in the evaluation of reserves and resources. The evaluator must also be current and competent in the methods and practices of reserves evaluation.
285. In the province of Alberta, there is a statutory requirement for engineers, geologists and geophysicists to be licensed and registered by the Association of Professional Engineers, Geologists and geophysicists of Alberta (APEGGA). The criteria that must be satisfied to become licensed member of APEGGA includes having a four year degree in engineering, geology and geophysics or equivalent, and between two and four years work experience.

US SEC Requirements

286. For annual reporting of petroleum reserves in SEC filings, Regulation S-K does not prescribe specific professional qualifications and experience that must be satisfied by those persons responsible for preparing reserves estimates. However, the issuer must disclose in the SEC filing the qualifications of the technical person primarily responsible for overseeing the preparation of the reserves estimates.

Proposal to update the requirements for a qualified reserves and resources evaluator

287. The determination of whether a reserves and resources evaluator is adequately qualified to estimate reserves and other resources in a particular reservoir or accumulation should be made on an individual-by-individual basis, subject to meeting any listing rule requirements. It is proposed that there is merit in the Listing Rules continuing to set out minimum professional qualifications and experience necessary to be recognised as a qualified reserves and resources evaluator. This is primarily because there are not the comparable professional organisations in the Australian market for which membership is an adequate proxy for the minimum criteria relating to professional qualifications and experience.
288. It is proposed that Listing Rule 5.11 be updated and amended to reflect the following:
- 288.1. publicly reported estimates of petroleum reserves and other petroleum resources not classified as reserves and the results of drilling and other exploration activities must be evaluated and prepared by a qualified reserves and resources evaluator;
 - 288.2. to be recognised as a qualified reserves and resources evaluator, the person must be able to satisfy the following requirements:
 - 288.2.1. has obtained a bachelors or advanced degree in petroleum engineering, geology, geophysics or other discipline of engineering or physical science; and
 - 288.2.2. has a minimum of three years recent practical experience in petroleum engineering or petroleum production geology, with at least 1 full year of such experience being in the evaluation and estimation of reserves and resources.
289. The proposed minimum educational and professional experience requirements to be recognised as a qualified reserves and resources evaluator are consistent with the approach taken to the professional qualifications of reserves estimators set out in the SPE "Standards Pertaining to the Estimation and Auditing of Oil and Gas Reserves information"⁴⁸.

⁴⁸ SPE, *Standards Pertaining to the Estimation and Auditing of Oil and Gas Reserves Information*, Approved by the SPE Board in June 2001 and revised on 19 February 2007.

290. While some consequential amendments to Listing Rules 5.12 and 5.13 will be required to reflect the proposed amendments to Listing Rule 5.11, it is proposed that the existing requirement for the relevant public report to disclose the name and employment details of the person responsible for preparing the reserves information will continue to apply. It is also proposed that the existing requirements for the person responsible for preparing the reserves and resources information included in a public report to have consented to the inclusion of that information in relation to the form and context in which it appears will also continue to apply.

Consultation questions

- Q59. In the absence of a licensing regime for petroleum engineers, geologists or geophysicists or comparable domestic professional organisations to those in Canada and the United States for which professional membership could be required, what are your views on the Listing Rules continuing to set out specific minimum professional qualifications and experience for 'qualified reserves and resources evaluators'?
- Q60. What are your views on whether the proposed minimum professional experience required to be a 'qualified reserves and resources evaluator' should be aligned with the SPE *Standards Pertaining to the Estimation and Auditing of Oil and Gas Reserves Information* or do you think a minimum of five years recent practical experience in petroleum engineering or petroleum production geology, with at least three years of such experience in the evaluation and estimation of reserves and resources would be more appropriate?
- Q61. What are your views on whether the objective of promoting market confidence in publicly reported reserves and resources information would be better achieved by also requiring the disclosure a brief summary of the professional qualifications and relevant experience of the person responsible for evaluating and preparing the reserves and resources information in the relevant public report?